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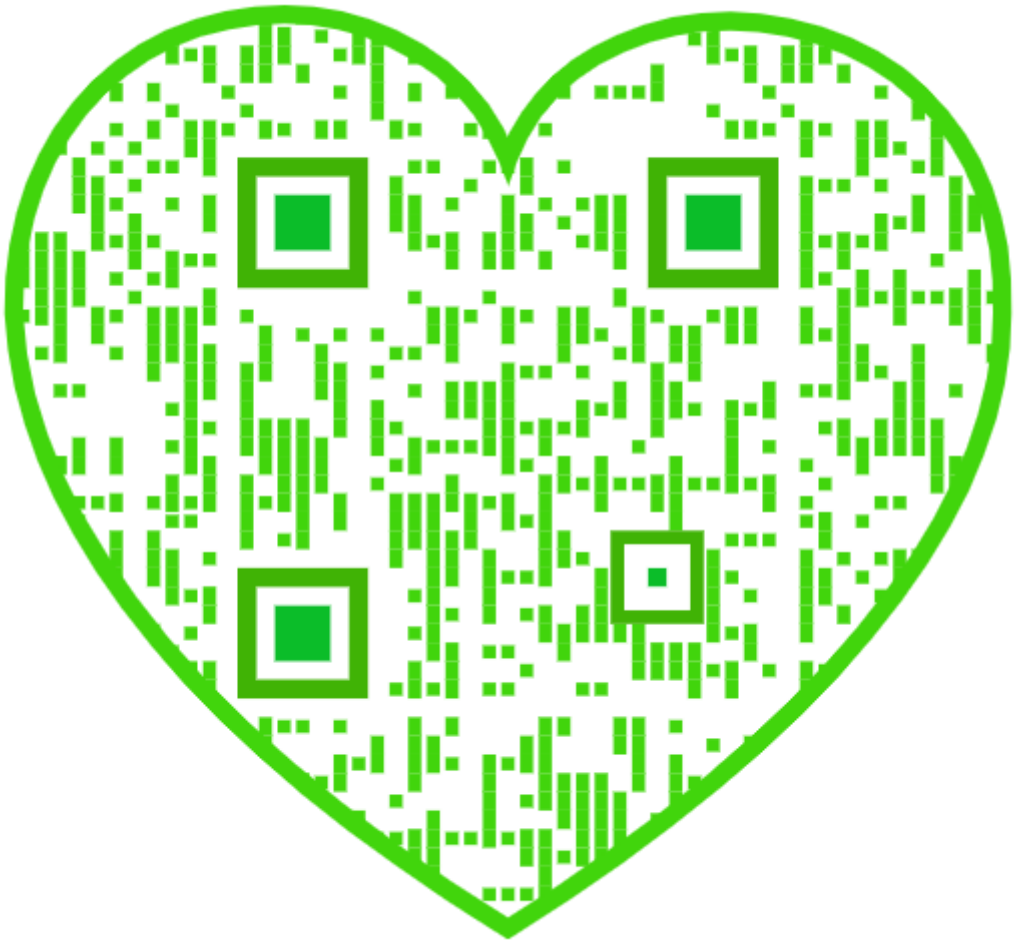

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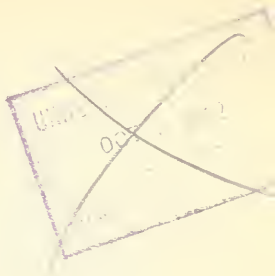

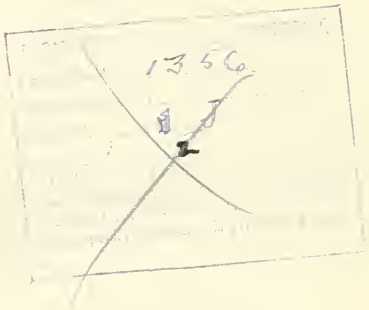

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COAL AGE

With Which is Consolidated The Colliery Engineer

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DEVOTED TO COAL MINING AND COAL MERCHANDISING

EXTRACTION METHODS, EQUIPMENT AND MINING NEWS
MARKET REPORTS, PRICES AND STATISTICS
OF THE COAL INDUSTRY

ISSUED WEEKLY

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With Which is Consolidated
The Colliery Engineer

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July—December, 1921

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COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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Army Bids an Interesting Barometer

ARMY bids submitted on June 1 at the South Brooklyn supply base depot covered more than 250,000 net tons of coal for use during the fiscal year ending June 30, 1922. In all, sixty-four bids were received, and the wide spread of prices shown may be taken as an indication of the variety of opinion in the trade on what coal is worth today and also of some unexampled eagerness to obtain tonnage. The largest proposal, which called for 27,000 net tons of Pool 9 coal, brought bids ranging from $2.98 to $3.63, while on 12,420 net tons of bituminous for the Aberdeen Proving Grounds the range was from $2.10 to $4.25, which constituted the low and high of all bids submitted.

When comparing these lower bids with those received two years ago, it is interesting to note that prices are on about the same level as in the beginning of the summer of 1919, despite subsequent wage increases, which were added to the earlier army contracts during the life of those agreements made for the fiscal year 1919-1920. Anthracite bids, on the other hand, showed no tendency to weaken, stove, chestnut and broken ranging in most cases well over $8 per gross ton to a high of $9.15 for stove.

British Strike Ends

SOCIALISM is not justly a matter for acrimonious debate but rather for patient discussion. That method of curing human ills fails only partly from our moral defects. A larger fault to which it is subject is that socialism does not test every action by the important question whether that action will benefit any human beings sufficiently that they will be willing to pay for it.

Under socialism men would be contented to work at certain occupations long after their fellows had ceased to show such a keen appreciation of the service rendered that they could be induced individually to pay their good money for the product. The miners of Great Britain sought a provision that would have kept all the mines of the country working whether the production cost in wage was $5 or $20 a ton. They were ill disposed to have the questions of operation or non-operation, of high pay or low pay, subjected to the touchstone of economic advantage. Yet only by this measure can the value of physical effort be tested. "Is it worth while?" is answered only when the other question "Does it pay?" has been met.

Labor is not as mobile in Great Britain as in the United States. When there is no work in his own town the British workingman is apt to think long before he drifts to another. But this mobility from town to town, from employment to employment, or from job to job is really the true basis of economic thrift, and it is well that the idea should not get abroad that it is the business of government to wipe out the economic necessity of doing work that the public values and shows that it values by a willingness to pay for it. The word "job" in politics has a bad meaning—it describes a place where the duties are planned solely with the idea of keeping a man in the receipt of wages. The question of the value of his work is a secondary matter.

The same condition would have existed in the coal mines of Great Britain had pooling been introduced. Men would have had "jobs." Their work, not being related to profit, would have had no relation to service. Half the joy of life is in the filling of an essential part in the world's economy, and it is one of the unfortunate results of certain classes of political jobs that they give opportunities for getting a salary without rendering any commensurate service. Public employment is a bane or a blessing to its participants according to the degree with which their office permits them to render a service or gives no such opportunity.

Logomachy Beclouds the Issue

EXTRAVAGANT statements, wild charges and psuedo arguments have characterized the quasi-debate between Senator Frelinghuysen and the most vociferous of his opponents in the coal industry over the pending coal industry stabilization legislation. The Senator says he is opposed to regulation of business and of coal; the coal men are likewise opposed to regulation. The Senator says that all he wants is to make information about coal available to the consuming public; the coal men say that they have no objection to giving the information, in fact many are strongly in favor of having the data collected by the government. The real point at issue then is whether the coal industry stabilization act as framed by the Senator from New Jersey is regulatory in its provisions. The Senator says that it is not; the coal men say that it is, and we agree that inasmuch as it provides for compulsory reporting it is regulation in its beginning.

As none professes to favor regulation, however, why all this fuss, oratory and literary effort? Why has it not been possible for Senator Frelinghuysen and representatives of the coal industry to get together and take the regulation out of his bill and thus make it acceptable to those directly affected? A conference heralded in advance as having that for its purpose was held in Washington the first of last month, but no effort was made to discuss the provisions of the bill. Instead the coal men offered categorical opposition and the Senator talked to the newspaper reporters, and the friendly meeting broke up with a declaration of war.

A sample of the oratory delivered to the Senate follows: "As this is a supremely important question, involving the happiness, the health—indeed, the very life—of the public, the country should understand what this fight means. If these bills are defeated, a tragedy

next fall and winter, in the nature of a coal famine, worse than ever experienced before, is inevitable. The fact is, owing to existing conditions, I doubt if the tragedy can be averted. But we can prevent a second tragedy a year later."

If the Senator considers the literary "fusillades" of George Cushing as containing an "atom of fact and a ton of misrepresentation," what may not the coal man think of this? The Senator has gone as far in one direction as Mr. Cushing has in the other. The fight in the open is between these two personalities; Mr. Cushing, backed by wider experience and deeper knowledge of the industry, with his sharp and caustic pen and Senator Frelinghuysen with his forceful personality and outstanding presence. In the extremes to which they have gone in invective we do not consider that the one represents the sentiment of the majority of Congress any more than the other echoes the sentiment of the coal industry.

It is just as unjust to say that the proposed legislation is bolshevism as that the coal men desire to continue the "stranglehold on the necks and purses of the coal buyers." It is as unreasonable to charge the Senator with sinister motives as to charge that the operators are not and never have been sincere in reporting their profits. There is so much of right and reason in what both have said about coal that it is a pity that the fight over this legislation has resolved itself into a contest of extravagant words. There is considerab'e difference between a "bitter-end" policy of obstinate opposition to everything and an uncompromising opposition to regulatory legislation. From a disposition to be sympathetically helpful a year ago, Senator Frelinghuysen has veered or been forced to a position militantly critical if not hostile to the coal industry.

Those who disclaim any public interest in coal—and there are such—and demand only that they in their business be not inquired into, who at once aver that they are willing to furnish facts and argue that no one can benefit from the knowledge thus obtained except the seller of coal, are in as untenable position as Senator Frelinghuysen when he promises the consumer plenty of coal at low prices, freedom from shortages and all fuel troubles simply through the collection by the government of these same facts. We are quite in agreement with the central theme of George Cushing's argument to the effect that the coal business cannot be stabilized by law; that no one, not even the government, can gain control or otherwise monopolize the soft-coal industry and thus regulate in any way its seasonal fluctuations in output and price. The consumers are the arbiters of the destiny of the coal industry. The business men who produce and distribute coal are primarily concerned in steady operation with a reasonable profit, and they know that the better the consumer is informed about the condition of the market, production, consumption and stocks, the more likely they are to enjoy peaceful and profitable progress. It is those who live off the coal business by their wits alone, who perform no continued useful service, that really oppose a forward-looking program by which the government, for the consumer, may ascertain the facts about coal, not semi-occasionally but regularly. Because the Frelinghuysen plan "is not consistent with the liberty which private business ordinarily expects" it is opposed by the whole coal industry, but that does not mean that the whole industry subscribes to the theory that what is is right.

Still Another Reason

WHO is willing to propose a law to protect the seller of soft coal from the buyer? There are only some six or seven thousand producers and the number of shippers probably is about the same and there are at least 100,000 buyers of coal in carload lots; therefore it would appear that the few thousand sellers could more easily get together to control distribution and prices than could so much larger a number of consumers. But it happens that buying is more concentrated than the selling. The railroads, for instance, represent buying power in concentrated form.

Consuming 27 per cent of the annual output of bituminous coal, the steam railroads are the largest coal consumers in the country, their total yearly requirements ranging from 125,000,000 to 155,000,000 net tons. Something less than two hundred railroad purchasing agents control the buying of a quarter of the soft coal of the United States. There were on Jan. 1 of this year 8,722 recognized shipping coal mines with an average rated capacity of seven cars, or about 350 net tons each, per day. The Pennsylvania Railroad, for instance, had on this date 1,476 rated mines with an average capacity of 7.2 cars per day. This road consumes between ten and sixteen million tons of fuel coal per year, equivalent to 2 per cent of the output of the mines on the road.

Public utilities and central power plants consume about 36,000,000 net tons of steam coal a year, a comparatively small percentage of the total produced but a large portion in some markets, as Chicago and New York. Some 10 per cent of the total number of companies producing this power control at least 90 per cent of the 36,000,000 tons of steam coal used, and thirteen holding companies with widespread interests control the purchase of the coal for about 25 per cent of the total output. To a very large extent the 100,000,000 net tons of coal normally required by the iron and steel industry is supplied by mines owned and operated by the consumers themselves.

The U. S. Government is a heavy purchaser of coal under centralized control. The Shipping Board this year asked for bids on 2,500,000 net tons and the navy for 2,000,000 tons. Of the industrial plants, between 4 and 5 per cent consume 60 per cent of the bituminous coal used by this class of users, and less than 30 per cent of the total number of plants, controlled by an even smaller percentage of companies, consume 90 per cent of the soft coal going to industries. Less than 1 per cent of the buyers and consumers of bituminous coal take at least 45 per cent of the coal that is produced and sold.

There is a pronounced tendency toward greater centralization of purchasing power and the acquisition of mining properties by consumers. There is likewise a steady, progressive consolidation of producing mines into larger units. Both operate to keep the price of coal down and to decrease the possibility for development of speculative markets. Hundreds if not thousands of small producers and a host of parasitic middlemen thrive only when the market is unhealthly. They want no stabilized market—they have no desire that the buyer know too much about coal—and the reasons therefor are obvious. On the other hand, producers and wholesalers who supply an honest product, perform an honest service, and who outnumber the speculative element, desire nothing more than an even tenor to business and a reasonable profit.

Some of the Many Problems in the Cleaning of Coal*

Can Pick Lump for 22c. per Ton, Slack for $164—Six Tons of Water Wash One Ton of Coal—Water Loads Freight Car as Badly as Ash—After Week's Drying Water Retained by Fine Coal Adds 15 Per Cent to Weight

By Edward O'Toole†
Gary, W. Va.

COAL is a carbonaceous substance of variable composition, formed from vascular vegetation of past geologic ages. It is found stratified in beds between layers of rock of all eras from carboniferous to quaternary, its age generally determining its character. These beds are of variable composition and thickness, and when broken into, or mined, the particles tend to cleave into cubical or prismatic blocks. Sometimes, however, the cohesion between the particles is so feeble that when struck they break into pieces along well-defined cleavage planes; these particles are porous and the pores contain hydro-carbon gases, water or air. These peculiarities may vary considerably within a small area of the same seam. The cleavage planes often contain small films of other inorganic minerals and generally some sulphur, either inorganically combined or as iron pyrites, ranging from less than ½ per cent up to 8 or 10 per cent. The specific gravity of coal varies from 0.5 for the lightest of brown coals to 1.7 for the heaviest of anthracite, the density of the substance depending largely on the quantity of mineral matter contained. The interstitial substances compose the "ash," a term applied to the residue remaining after the combustible matter has been consumed. In quantity this varies from 1 to 30 per cent, although a coal containing as much as 30 per cent of incombustible generally is considered worthless. The position of some of the above-mentioned inorganic substances in the coal is shown on the X-ray photograph, Fig. 1.

Carbon Translucent to X-Ray; Ash Opaque

The spots in the photograph were not visible to the naked eye until close scrutiny was given to those points as revealed under the X-rays. This material was carefully dug out and it was found to analyze as follows: Upper spot—iron 9.94 per cent, sulphur 10.66 per cent, or approximately 20.50 per cent iron pyrites; lower spot—iron 15.43 per cent, sulphur 17.93 per cent, or approximately 33.36 per cent iron pyrites.

When exposed to X-rays and viewed through the fluoroscope, the carbon contained in the coal shown in this photograph is translucent, while the mineral matter is opaque. This highly interesting quality is quite distinctly revealed. Some coal beds are divided into benches by bands of mineral matter of variable thickness and composition. The layers near the bottom and those near the top, or on either side of a band of mineral matter, generally carry a greater proportion of impurities than does the center of the bench.

Some seams of coal are banded by alternate bright and dull layers, the brightness or dullness of these layers being due to variations in the admixture of organic and mineral matter and to the different ways in which coal and mineral are distributed. Usually the bright bands of coal contain the least ash; they also are the most porous and therefore contain the most moisture when saturated.

The producer and consumer have long since recognized the advisability of producing and obtaining, respectively, coal that is as clean as possible. In the early stages of the industry this was not difficult to accomplish; the purer seams or portions of seams could be selected and mined, for they were abundant at that time. At present, when it is advisable to mine all portions of the bed and the less pure seams, for the good ones are getting scarce, as may be judged from the accompanying photographs, it is difficult to produce clean coal.

How Coal May Be Cleaned at the Source

In the mining of the many beds of coal the miner uses different methods of attack, the nature of the coal determining which will be chosen. Some beds are removed by hand tools, the miner hewing and breaking down the coal; in others a combination of hewing, drilling and blasting is employed; others are simply drilled and blasted; while in still others electric or air-driven "mining machines" are used to undercut the coal before it is shot down.

In some beds it is customary to leave unmined those portions that are well known to be impure, such as the layer near the bottom or that near the top. In some it is desirable to leave both a top and bottom bench, although this hardly ever is necessary at the same place

FIG. 1. X-RAY PHOTOGRAPH OF A PIECE OF "CLEAN" COAL FROM NO. 4 POCAHONTAS SEAM

The stratifications represent thin beds of dirt. The spots in the upper and lower right-hand corners also mark impurities, which, being of something other than carbon, resist the light rays.

*From a paper entitled "Dry Cleaning of Coal by Means of Tables," presented before the American Iron and Steel Institute, New York City, May 27, 1921.

†General superintendent, United States Coal & Coke Co., Gary, W. Va.

FIG. 2. X-RAY PHOTOGRAPH OF COAL FROM "C" SEAM, LYNCH, HARLAN COUNTY, KENTUCKY

Note the discontinuous bands of impurity, which are thicker and darker than those in Fig. 1.

in the same seam. As an example, in mining the Pittsburgh bed of western Pennsylvania, in the "Pittsburgh district" proper, the impurities are generally in the bottom bench and prior to the introduction of mining machines it was the universal custom to leave from 10 to 20 in. of the bottom bench of coal unmined, because its ash and sulphur content was in general excessive.

On the other hand in that portion of the same measure located in the "Connellsville region" the impurities generally are in the top. Here for the same reason it is still the custom to leave 10 to 12 in. of coal unmined. Some portions of the Pocahontas coal beds of West Virginia are similarly affected, the dirt and sulphur being in the top in the eastern section of the field, while they are in the bottom in the western section. These beds furnish a large percentage of the coal used for metallurgical purposes throughout the United States.

Separation Performed Often Unsatisfactory

When the coal is broken from the bed by the means above mentioned, slate bands and portions of the overlying and underlying strata generally are broken loose and mixed with it. As this mixture is loaded into mine cars by hand, or by the aid of hand shovels, an attempt is made to separate the dirt from the coal by requiring the miner, when loading his cars, to sort out the coal from the impurities by hand. This means of separation usually is incomplete and unsatisfactory, as the mine is poorly lighted and the miner's eye cannot distinguish a large percentage of the mineral or inorganic matter from the coal, because both are of the same color.

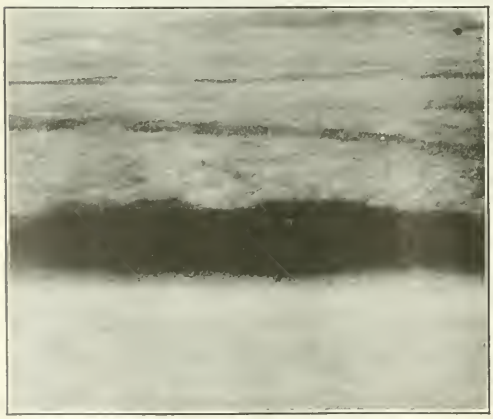

FIG. 3. ANOTHER X-RAY OF A BAND OF DIRT WITH COAL ABOVE AND BELOW

Note how clear of impurity is the coal immediately below the band. It is almost perfectly translucent to the X-ray.

Furthermore the miner is seldom, if ever, directly compensated for the removal of such impurities; he is a contractor and his contract generally is on a "per ton" basis, he being paid a stipulated price for what he sends out of the mine. At times he is very careless, particularly when there is a great demand for coal and he realizes that his services are indispensable. In pitching beds where the coal from the chambers is loaded from chutes into the mine cars or where the seam is so steep that the coal runs away from the miner, it is impossible for him to separate the rock and refuse from the coal, and the entire product is loaded together.

When the mine product reaches the surface the treatment it receives varies with the kind of coal mined. In some instances no cleaning is necessary: in others no effort is made to clean the coal, although it may require it; in others it is cleaned by hand as it is being dumped into railroad cars, while in still other cases large expenditures are made for the purpose of separating the good from the bad material. Of late years the general practice at modernly-equipped mines has been to separate the coal into various sizes, pass those above 1½-in. over steel or rubber belts, known as "picking tables," along which men or boys (and in Europe, women) are stationed for the purpose of taking the dirt out of the coal by hand as it is passed by them.

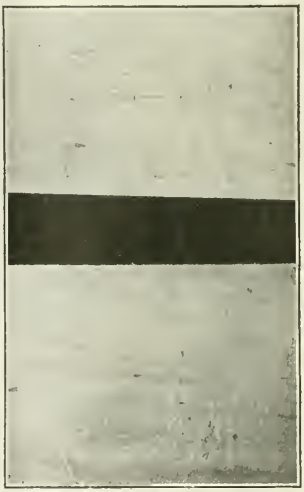

FIG. 4. THIS X-RAY PHOTOGRAPH IS OF A "BUILT-UP" SECTION

Two pieces of coal and a piece of slate from the "C" seam at Lynch.

The speed of these tables is regulated according to the amount of coal to be passed over them and to the amount of deleterious matter the coal contains. The "through 1½-in." coal cannot be treated in this manner, as such treatment has been found too expensive. Thus it is practically impossible to make this separation by hand. The amount of this small coal varies with the different beds being worked. In the Pocahontas field of West Virginia it represents about 50 per cent of the total product of the mine and carries a higher percentage of mechanically-mixed dirt than does the larger sizes, as it contains all the fine particles of rock, slate and clay produced in the mining.

Results of twenty-three tests conducted at various mines of the United States Coal & Coke Co. to deter-

FIG. 5. ANOTHER VIEW OF THE PITTSBURGH COAL IN THE CONNELLSVILLE REGION

The top 10 to 12 in. usually is so full of impurity that it is frequently left unmined.

mine the actual amount of bone and slate in the various sizes of coal as it comes from the mine as well as the exact expense entailed in the complete removal of such material by hand-picking show that the cost per ton of hand cleaning the various sizes (including interest and depreciation on the investment with labor at 55c. per hour) is as follows:

TABLE 1. COST OF HAND CLEANING A TON OF COAL OF VARIOUS SIZES

Over 4-in.	$0 22
Through 4-in. and over 1¼-in.	1 0141
Through 1¼-in. and over 1-in.	4 5540
Through 1-in. and over ½-in.	7 8072
Through ½-in. and over ¼-in.	9 8752
Through ¼-in. and over ⅛-in.	27 6257
Through ⅛-in. and over $\frac{1}{16}$-in.	164 3823

This is shown graphically in Fig. 8.

In Washing Water Carries Away Fine Coal

Various methods have been used in cleaning the small sizes of coal, the most successful of which heretofore has been washing. Washeries are in general use throughout the coal-mining districts of the world. Modern installations of this kind are of large capacity and necessarily costly to construct. They involve large expenditures for water supply, as approximately six tons of water is required to wash one ton of small coal. In the most efficient plants the water is used over and over many times, but approximately 500 lb. of water must be added to the system for each ton of coal treated, the loss being caused by leakage, waste and water carried away by the coal and refuse.

Coal washing has followed the miner and has been applied to cleaning the fines from the purer beds or the purer portions of the seams worked. Washing of coal began in France in 1851, in England in 1858 and 1860, in Austria in 1870, and in the United States in 1875.

Coal washing has two defects, namely, the loss of good coal in the washing process and the loss of fine coal in the water coming from the washery. All the waste water leaving the jigs carries with it a portion of very fine coal. Various devices for the recovery of this fine material have been tried, but except in the more modern plants they are not eminently successful. The proposal has been made that the waste water containing the fine coal be passed before discharge through a separating device of some kind, like a continuous filter, but this process would be expensive and add to the cost of the coal.

So far as is known there is no washery in this country, except the large installation of the United States Steel Corporation at Benton, Ill., which contemplates this refinement in the saving of fine coal. In addition to the loss of fine coal with the water there generally is a loss of good coal in the refuse. Auxiliary equipment for the recovery of such coal can be installed, but this also adds to the initial expense.

When Ash Is Removed Water Is Added to Coal

The coal when coming from the washery necessarily is wet and requires drying. This is a problem that so far has not been solved satisfactorily. Where the coal has to be transported for a great distance at a high freight rate per ton, the benefit derived from washing may be lost, as the cost of freight on the excess water in the coal may equal if not even exceed what the freight charges would have been on the mineral matter removed, and the economy may be little if any greater.

Washed coal shipped from the mines in Indiana to

FIG. 6. LOWER PART OF THE PITTSBURGH COAL IN THE CONNELLSVILLE REGION OF PENNSYLVANIA

The coal has broken off from the top of the big band downward. To the right of the illustration the black coal below the band can be seen.

the St. Louis Coke & Chemical Co. at Granite City, Ill., when received carried a minimum moisture content of 12.7 and a maximum of 18.5 per cent.* W. D. Langtry, president of the Commercial Testing & Engineering Co., of Chicago, advises that the delivered moisture in Illinois unwashed coal averages from 6.5 to 11 per cent, depending on the size of the material. Delivered moisture in unwashed Pocahontas coal is 2.32 per cent. Laboratory tests made at Gary, W. Va., on the dewatering of the washed product show on No. 4 Pocahontas coal the results indicated in Table II.

In winter the discharge at destination piers, etc., of railroad cars carrying washed coal is frequently expensive and slow, as the wet material freezes, particularly in colder parts of the United States. Some railroad companies have provided sheds, where the frozen coal is thawed by live steam before any attempt is made to dump it. The Norfolk & Western Railway Co. has found it necessary to shatter frozen coal with dynamite blasts before dumping cars at its Lamberts Point pier, in Virginia, and this notwithstanding the fact that during discharge it turns the railroad cars completely over. Costs of such operations have been estimated at 10c. to 20c. per ton of coal thawed or blasted. The expense usually is borne by the railroad

FIG. 5. FACE OF COAL IN NO. 4 POCAHONTAS SEAM
The biggest band is that near the roof, as is the rule in the eastern section of the field.

companies or the consumers of the coal, but properly should be added to the cost of washing.

The washing of coal has been under process of development during the last seventy-five years and has been brought to the point where it is hardly to be expected that there will be any great improvement in methods. Attempts have been made to separate a mixture of dirt and small coal by running it down spiral chutes, the difference in the friction of the coal and slate being relied on to make the segregation. Separation has been attempted by passing the coal through currents of air where the heavier particles, such as the bone and slate, would fall short and the lighter particles—the coal—would be carried over. Breaking machines also have been used—machines that throw the coal containing dirt from side to side, thus shattering it, the theory being that the coal, being softer, would break first and pass off through the perforations in the sides of the machine, and the slate, being harder, would be discharged at the end before it became broken fine enough to pass through the perforations.

*Courtesy of R. A. Schott, chief engineer, St. Louis Coke & Chemical Co.

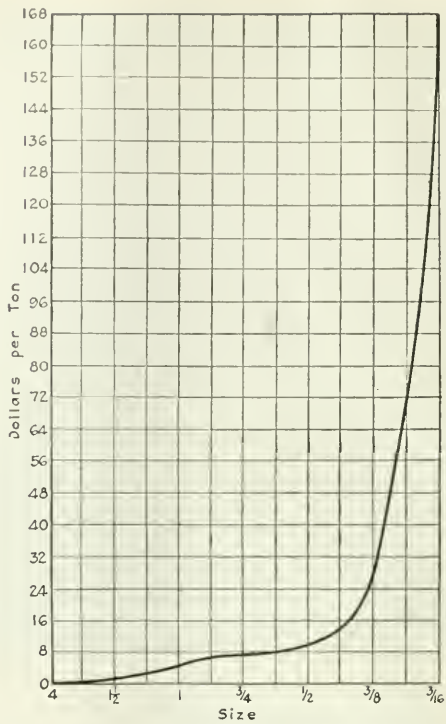

FIG. 8. CHART SHOWING TOTAL COST OF THOROUGH REMOVAL OF SLATE AND BONE
The figures were obtained from experiments in cleaning Pocahontas coal. The costs of maintenance, of depreciation and of interest on the picking table as well as the labor of picking were taken into consideration.

TABLE II. TESTS ON LOSS OF WATER IN WASHED COAL FROM POCAHONTAS NO. 4 SEAM

Test No.	Size* of Coal	Amount Taken for Test		Water Added to Coal, per Cent	After First 12 Hours		After 24 Hours		After 3 Days		After 6 Days			
		Coal, Lb.	Water, Lb.		Loss of Water, Lb.	Water in Coal, per Cent	Loss of Water, Lb.	Water in Coal, per Cent	Loss of Water,† Lb.	Water in Coal, per Cent	Loss of Water, Lb.	Water in Coal, per Cent	Determined Moisture in Coal, per Cent	Discrepancy
1	¾-in.	388	180	46 39	89	23 45	94	22.16	101	20.36	110	18.04	17.50	—0 54
2	½-in.	450	162	36 00	112	11 11	114	10.66	104	8.44	136	5 77	6.36	+0 59
3	1-in.	480	130	27 08	93	7 70	98	6.66	106	5 00	107	4 9	5.46	+0.67

* All to pass size of screen given. † Water in coal on arrival at scales at Portsmouth, Ohio.

Experiment in the Use of Carbon Tetrachloride and Foamite Firefoam for Extinguishing Mine Fires*

With Draft Entirely Closed Off Tetrachloride Developed Deadly Quantities of Phosgene—Chemical Is Efficient and, Where Ventilation Is Good, Is Also Safe—Desirable for Electric Fires—Foamite Is Harmless and Effective

By A. C. Fieldner† and S. H. Katz‡

RECENT experiments (Fieldner, A. C.; Katz, S. H.; Kinney, S. P.; and Longfellow, E.S.: "Poisonous Gases from Carbon Tetrachloride Fire Extinguishers," *Journal of the Franklin Institute*, October, 1920, pp. 543-565) by the Bureau of Mines have shown that carbon-tetrachloride extinguisher liquids when applied to fires produce small quantities of irritating and poisonous gases which may be dangerous in closely confined spaces where conditions are such that the user cannot escape without breathing the fumes.

The results of these experiments have been confirmed in an independent investigation by the Underwriters Laboratories (Nuckolls, A. H.: "Corrosive Action and Products Formed When Carbon-Tetrachloride Extinguisher Liquids Are Applied to Fires," *National Fire Protection Association Quarterly*, vol. 14, January, 1921, pp. 221-236), which conducted similar experiments for the purpose of determining the corrosive action of these fumes on metals. Both investigations showed that carbon-tetrachloride vapor, hydrochloric-acid gas, and phosgene were produced in addition to the ordinary products of combustion, such as smoke, carbon monoxide and carbon dioxide.

The Bureau of Mines' tests were made by applying a one-quart extinguisher to a wood fire of excelsior in a gastight room of 1,000 cu.ft. capacity. The glass and metal construction of this chamber limited the experimental fire to small dimensions. It was, therefore, deemed desirable to make a test on a larger scale in the entry of the bureau's experimental mine in order to simulate more nearly the practical use o fcarbon-tetrachloride and other types of extinguishers in mines.

Two series of tests were made under identical conditions on different days. Commercial carbon-tetrachloride extinguishers were used in the first series of tests and "foamite firefoam" extinguishers in the second series of tests.

The carbon-tetrachloride extinguishers were purchased on the open market, the extinguishing liquid consisting mainly of carbon tetrachloride (Fieldner, A. C., and others, work cited), with small quantities of other substances contained as impurities or added to prevent freezing of the liquid at low temperature.

Glue Extract of Licorice Toughens Bubbles

The "foamite firefoam" extinguishers were the portable 2½-gal. size, similar in appearance to the usual soda and acid extinguishers. Foamite extinguishers differ from soda and acid extinguishers in that they throw a stream of frothy water or foam, having carbon dioxide gas entrapped in the bubbles, instead of a solid stream of clear water. Glue extract of licorice root, or other organic compound is used to impart toughness to the bubble films, making them resistant to heat, shock, and strains, so that the froth often persists for hours.

The foam filled with carbon dioxide therefrom has a blanketing effect in excluding air, which makes it particularly adapted to extinguishing fires in oil and other inflammable liquids. (Bowie, C. P.: "Extinguishing and Preventing Oil Fires," Bureau of Mines, Bulletin 170, 1918, 50 pp.)

The "foamite firefoam" extinguishers used in the tests contained two solutions in separate compartments —aluminum-sulphate solution in a central cylindrical tube, and sodium-carbonate-licorice solution in the annular space around this tube. The central tube is closed with a stopper that falls out when the extinguisher is inverted for use, allowing the two solutions to mix. Carbon dioxide gas is quickly generated according to the reaction:

$$6Na\text{-}HCO_3 + Al_2(SO_4)_3 = 6CO_2 + 2Al(OH)_3 + 3Na_2SO_4,$$

and in a few seconds produces sufficient pressure to eject a stream of foamy liquid through the hose and nozzle to a distance of 30 or 40 ft.

Fire One Hundred and Five Pounds of Wood

The tests were conducted at the Bureau's experimental mine near Bruceton, Pa. Fig. 1 shows the general arrangements, which were the same for both series of tests. The outer end of the return entry was bratticed at the portal and 125 ft. inside, inclosing a total space of 6,750 cu.ft. The entry is about 6 ft. high and 9 ft. wide. The sides and roof are coated with concrete. Electric lights were placed along one side approximately 15 ft. apart.

Grate bars were laid 100 ft. from the portal. Upon these approximately 5 lb. of excelsior was spread and upon the excelsior 100 lb. of dry pine kindling about 1 in. x 1 in. x 12 to 18 in. was loosely piled. The pile measured about 3 ft. 3 in. x 2 ft. 6 in. x 2 ft. 3 in. high above the grate bars. This material was intended to produce a fire which would kindle rapidly and one which would be readily susceptible to the action of the small portable type of fire extingusher.

The roof above the kindling was protected from direct action of the flames and hot gases by a sheet-iron plate. Vacuum tubes for taking gas samples of one liter or more capacity were placed at points 5, 25, 45 and 75 ft. outby the fire. The ventilating fan was stopped during the test.

Six Extinguishers Used to Put Out Fire

When all was ready, six men wearing goggles and Gibbs oxygen-breathing apparatus and each carrying a one-quart fire extinguisher, lighted the fire at several points. It was allowed to burn for a minute or more until the mass of kindling was burning freely on all sides. Then an attempt was made to extinguish it with

*Reports of Investigations, U. S. Bureau of Mines, June, 1921.

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‡Assistant physical chemist, Pittsburgh experiment station, Bureau of Mines.

a single extinguisher. That had little effect, so another was worked simultaneously. Two were seen to be insufficient and two more were added. Difficulty was still experienced, then the six extinguishers were operated.

After all the liquid had been used the fire seemed extinguished. Dense yellow smoke rolled from the fire when the carbon tetrachloride was played upon it. At first the smoke stayed low, but soon all were enveloped in a cloud so thick that it was impossible for one man to see another standing immediately beside him or to observe his operations in the subsequent work of sampling.

To take the samples one man picked up the vacuum tubes and handed them to another to be opened. After the samples had been taken two men attended to the sealing and another laid the tubes down. The sixth man saw that the party was kept together. While the third set of samples, 45 ft. from the grate, was being taken, it was noticed by the light, cracking and increasing temperature that the fire was blazing again. The heat increased and undoubtedly subsequent samples contained additional gas from the rekindled fire.

Hydrogen Stings Their Faces and Hands

The presence of hydrogen was evident because of the stinging of the exposed parts of the face and hands. Two men who purposely abstained from wearing goggles found their eyes so irritated that they found it necessary at intervals to keep them tightly closed to obtain relief from the stinging sensation. Some inflammation of their eyes was noticed after they returned to fresh air.

Of course, the smoke from the wood alone would cause this. One man who removed his mouthpiece while passing through the brattice took a breath of the fumes; they were very irritating and choking. Hydrochloric-acid gas and phosgene were easily recognized. The time of the experiment to this point was twenty minutes.

After the outer brattice was removed one of the authors approached the portal without protection and found that phosgene odor was strong there. The ventilating fan was started and black and yellow smoke rolled from the mine.

The composition of the atmosphere is shown by Table I, which indicates the position at which each sample was taken and the result of its analysis.

TABLE I. ANALYSES* OF GASES FROM FIRE EXTINGUISHED WITH CARBON TETRACHLORIDE IN EXPERIMENTAL MINE

Position of Sample (Distance from Fire)	Analyses: Phosgene Parts per Million	Hydrogen Chloride, P.P.M.	Chlorine, P.P.M.	Carbon Dioxide, Per Cent	Oxygen, Per Cent	Carbon Monoxide, Per Cent	Methane, Per Cent	Nitrogen, Per Cent
5	30	180	0	0 39	20 52	0 18	0 01	78 90
25	.	150	0	0 43	20 47	0 16	0 03	78 91
45	90	.	0	0 53	20 37	0 15	0 03	78 92
75	20	250	0	3 05	17 80	0 31	0 01	78 83

*Methods of analysis are described in the paper, Fieldner, A.C., and others: "Poisonous Gases from Carbon-tetrachloride Fire Extinguishers," *Journal of the Franklin Institute*, Vol. 190, October, 1920, pp. 543-565.

The tests with foamite extinguishers were conducted in the same manner as those with carbon tetrachloride. Six men equipped with oxygen-breathing apparatus and carrying five 2½-gal. foamite firefoam extinguishers lighted the fire and permitted it to burn until it was well kindled throughout. The heat kept the fire fighters at a distance of about 10 ft. from the fire. First a single extinguisher was played upon it, but made little headway. When it was largely exhausted another was used with apparently little effect. Then two extinguishers were used simultaneously and the fire was almost extinguished on the near side. The fifth extinguisher could now be used close up. Flames on the far side were subdued and the fire apparently was extinguished except for a few sparks which showed when the pile was knocked over. Later, however, it rekindled.

Foamite Causes Fire to Emit Dense Smoke

It should be stated that the test does not show well the action of a frothy mixture as a fire extinguisher because, on account of the dense smoke, the operators overshot the fire, as was shown by the thick layer of foamite covering the floor and walls of the entry back of the fire. During the burning of the kindling but little smoke was evolved. When the extinguishers were turned on the fire, however, dense white smoke was evolved, which at first spread out over the lower part of the entry and then some rose, filling the entire space with smoke of such density that one could not see an incandescent lamp at a distance of more than 2 ft. from the observer's eyes.

When the fire was subdued, samples of the atmosphere were taken for analysis at the same points and in the same manner as in the carbon-tetrachloride tests. The results of the analyses are given in Table II.

On starting up the ventilating fan to clear out the entry, dense clouds of yellow and dark smoke quite similar to that of the carbon-tetrachloride tests rolled out of the entry. The smoke was very irritating to the eyes and respiratory passages. No trace of sulphur dioxide could be detected by odor or chemical tests.

TABLE II. ANALYSES OF GASES FROM FIRE EXTINGUISHED WITH FOAMITE IN EXPERIMENTAL MINE

Time After Start of Fire, Minutes	Position of Sample: Distance from Fire, Ft.	Height Above Ground, Ft.	Analyses: Carbon Dioxide, Per Cent	Carbon Monoxide, Per Cent	Hydrogen, Per Cent	Oxygen, Per Cent	Nitrogen, Per Cent
0	.	.	Fire started				
4	.	.	First extinguisher started				
5			Second extinguisher started				
6	.	.	Third and fourth extinguishers started				
7			Fifth extinguisher started. Fire was apparently extinguished				
10	5	1	1 87	0 16	0 04	18 98	78 93
11	5	1	1 84	0 14	0 02	18 88	79 12
11½	5	5	1 34	0 13	0 00	19 66	78 87
14	25	1	1 10	0 08	0 02	19 86	78 94
14½	25	1	0 65	0 06	0 00	20 35	78 94
14½	25	5	1 13	0 09	0 01	19 82	78 90
14½	25	5	0 13	0 00	0 00	20 80	79 07
18½	45	1	Sample lost. 17½ minutes after start, the fire again blazed up				
18½	45	1	Sample lost				
18½	45	5	0 81	0 13	0 02	20 14	78 90
19	45	5	2 01	0 27	0 05	18 89	78 78
20	75	1	0 50	0 00	0 00	20 51	78 93
20½	75	1	2 37	0 27	0 05	18 51	78 80
20½	75	5	1 07	0 11	0 60	20 02	78 80
20½	75	5	2 19	0 26	0 96	18 60	78 89

Table III gives a summary of the important constituents of the atmosphere produced in the use of carbon-tetrachloride and foamite extinguishers in the wood-fire experiments.

TABLE III. SUMMARY OF RESULTS

Constituent	Types of Extinguisher: Carbon Tetrachloride	Foamite
Phosgene, parts per million	20 to 90	None
Chlorine, P.P.M.	None	None
Hydrochloric acid gas, P.P.M.	150 to 255	None
Sulphur dioxide, P.P.M.	Trace	None
Irritant wood-smoke constituents	Strong	Strong
Carbon monoxide, per cent	0 15 to 0 31	0 0 to 0 27
Carbon dioxide, per cent	0 39 to 3 05	0 13 to 2 37
Oxygen, per cent	20 52 to 17 80	20 80 to 18 51

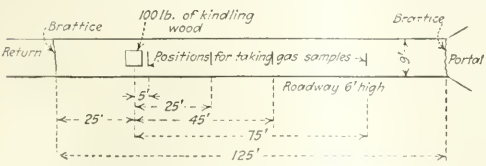
The foamite tests produced no dangerous gases. Only the normal constituents of wood smoke were present including up to 0.27 per cent of carbon monoxide, which is sufficient to cause severe headache and nausea after twenty to thirty minutes' exposure and to overcome a man on longer exposure. Practically the same per-

centage of this gas was found in the tests with carbon tetrachloride.

The tetrachloride tests produced, in addition, carbon-tetrachloride vapor (amount not determined), hydrochloric-acid gas (150 to 255 parts per million) and phosgene (20 to 90 parts per million). Military authorities consider 25 parts per million of phosgene sufficient to produce death on thirty minutes' exposure. It is probable that 90 parts would be dangerous if inhaled with the hydrochloric-acid gas, undecomposed carbon-tetrachloride vapor and carbon monoxide present for five to ten minutes.

Locomotives Should Have Tetrachloride Gun

Care must, therefore, be observed in the use of fire extinguishers of the carbon-tetrachloride type in underground fire fighting. Such extinguishers are in common use for putting out fires in and around electrical equipment, for carbon-tetrachloride is a non-conductor of electricity, and, indeed, such extinguishers should be a part of the equipment of all mine locomotives. The operator need not inhale the fumes, as electric locomotives usually are in well-ventilated entries or haulageways. The ventilating current will at once dilute the fumes to a point where there is no greater danger than may be expected from the smoke itself.



AREA BRATTICED OFF FOR TETRACHLORIDE AND FOAMITE FIREFOAM EXPERIMENT.

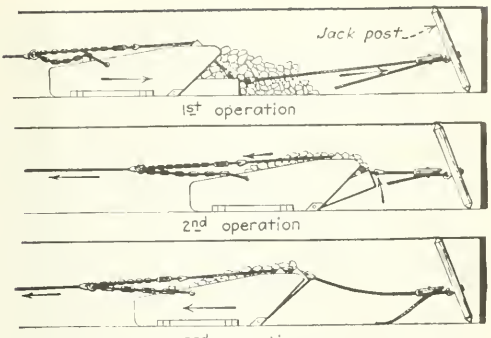
Samples were taken at distances of 5, 25, 45 and 75 ft. respectively from the front of the fire that was undergoing extinguishment to determine the percentage and nature of the gases liberated by the extinguishers and the fire.

It is in small closed rooms, where the operator cannot avoid breathing the fumes, that dangerous conditions are created. There is, of course, no more effective method of putting out ordinary fires than the liberal use of water. Soda and acid portable extinguishers depend on the more effective use of a limited amount of water. Foamite extinguishers have an added advantage for oil fires in that they place a blanket of carbon dioxide on the oil surface, thus smothering the flame. The Bureau of Mines has made no experiments on the relative extinguishing efficiency of soda and acid extinguishers and foamite extinguishers for ordinary fires. The experiments just described show that neither of them adds any extra hazard due to evolved gases.

The following members of the staff of the Pittsburgh experiment station assisted in carrying out the tests: J. W. Paul, coal-mining engineer; E. H. Denny and G. S. McCaa, assistant mining engineers; H. C. Howarth, J. H. Zorn and J. V. Berry, foreman miners; J. J. Bloomfield, junior chemist.

Scraper with Gate to Scrape Coal on the Advance and Trap It on the Retreat

A NEW type of shovel known as the Strange scraper bucket, invented by Charles H. Strange, superintendent Pine Hill Coal Co., Minersville, Pa., has been developed and placed upon the market by the Co-operative Utilities Co., of Philadelphia, Pa. It differs both in construction and operation from those that have preceded it.

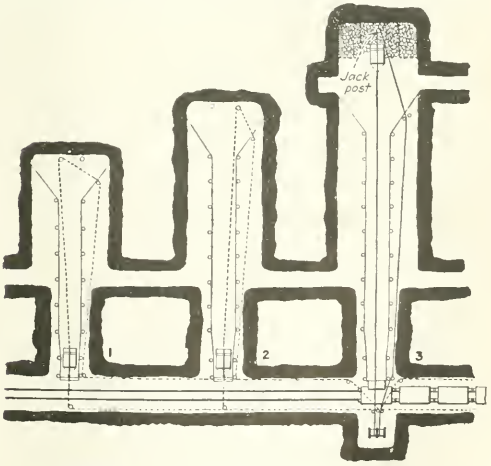


THREE STAGES IN PROCESS OF SCRAPING—GATHERING, LOADING AND DRAWING OUT

In the first operation the endgate is lowered and working its way under the coal. On the tightening of the rope to the left the gate is lifted, filling the scraper and closing it. When the gate is completely closed the drag of the rope on the left acts on the scraper, drawing it away from the face and to the dumping point.

As may be seen in the accompanying illustrations, it is provided with a digging lip at one end that is hinged at its lower edge. The arrangement is such that when the scraper is pulled forward into the room this lip lies parallel with and close to the floor. After the pile of coal has been penetrated to the desired amount, slack is given the head rope and the tail rope is reeled in. The latter rope first shuts or lifts the digging lip to such a position that it closes the end of the scoop, then as tension comes on the bail chains it pulls the scoop to the discharge point.

This arrangement is believed to result in many advantages. The scoop moves in straight lines forward and backward. The main rope leads direct to the sheave on the jackpipe and thence to the engine drum or guide pulley on the heading. After the product of the buster shot has been cleaned away the jackpipe at the face can



THREE ROOMS SHOWING VARIOUS POSITIONS OF JACK POST

In the third room the post has been securely set in the advance position provided by a buster shot. When the other shots are made, coal is broken down on either side and the machine can start to load with the jack post in this place of advantage.

be set in position before the following shots are fired, thus permitting operation immediately after firing. Only one man is required at the face to set the jackpipes and thus govern the movement of the scoop to the various portions of the face.

By the methods above described the scoop is never turned around either in loading or hauling the coal from the face. It simply shuttles back and forth from the coal shot down to the dumping point. Thus much time and labor are saved and operation speeded up accordingly. By using two or three jackpipes at the face also much time may be saved, as one of these may be set while another is being used. The coal at the face thus may be removed with successive settings of the jackpipe.

Portable Buildings of Fabricated Steel Are Fireproof and Inexpensive

NO MATTER to what expense a coal company may go in making its colliery modern and efficient, no matter how permanently its main buildings may be constructed, certain structures are necessarily of a temporary nature. These it would be folly to make of a permanent character. Brick, stone, concrete do not lend themselves readily to removal and re-erection, to say nothing of the cost of building them in the first instance.

Buildings of a temporary nature include shelters for

PEACH ORCHARD COLLIERY OF GLEN ALDEN COAL CO.
Buildings are of concrete, steel and brick. The building on the extreme right is the boiler house. Next to it on the left is the hoisting-engine house and the substation, and back of the latter is the fan house, one of the steel headframes being still further in the rear. At the lower corner of headframe is a portable steel building for the shaft tender.

men on the slate dump, shops at points where their usefulness is soon ended, engine houses at slopes or other openings where re-arrangements eventually will be made or a larger machine finally will be installed. Where such buildings are constructed of wood, if built cheaply they are in most cases unsightly and in any event cannot be torn down and moved without waste of material. Furthermore such buildings always are liable to destruction by fire.

At the Peach Orchard colliery of the Glen Alden Coal Co., near Wilkes-Barre, Pa., the main buildings are of brick and concrete and are of attractive design. These structures consist of a boiler house, engine house, substation and a steel headframe. In addition to these, however, it was necessary for the company to erect several smaller units, which for sundry reasons it was not desirable to build of permanent materials. As a result small portable steel buildings were purchased from the Truscon Steel Co. These have served their purpose admirably. They are erected in places from which it will be necessary some day to remove them. Others serve temporary purposes and their usefulness will end before that of the rest of the plant. Hence the

PORTABLE STEEL BLACKSMITH SHOP
Though the building is portable a degree of permanence is afforded by the concrete foundation on which the building is erected.

percentage of amortization is high, and it is important for this reason to keep down the first cost.

At the foot of the headframe the shaft tender's house is placed. This is of steel of the type mentioned and if for any reason it becomes desirable to alter the hoisting arrangements on the surface this structure can be taken down readily and moved to a new position. No damage would be done to the building in this operation. In one of the accompanying illustrations is shown a blacksmith shop. The location of this building probably will not be changed during its life and consequently it has been placed on a concrete foundation. In a second illustration may be seen another building of similar construction housing a hoisting engine that operates two rope-haulage systems underground.

For temporary mine structures generally and especially for those of small size, the portable steel building possesses many advantages that those of other materials do not have. Such a structure is fireproof and may be quickly erected or dismantled and moved to a new location without injury. It is neat and attractive even though not of ornamental design, and if properly painted harmonizes well with the rest of the installation.

HOISTING ENGINE HOUSED IN PORTABLE STEEL SHED
This engine operates two haulage systems in the Kidney vein, the ropes passing down through boreholes.

Plane Head Where Hoistman Places All Cars

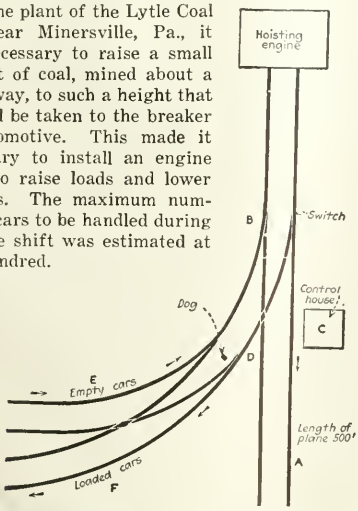
By Dever C. Ashmead
Wilkes-Barre, Pa.

ONE of the handicaps of the anthracite region is the inability to obtain an intensive operation. The irregularity of the measures and the layouts which an earlier generation has imposed on the present often makes it difficult to obtain a large output except by marshaling small tonnages of coal from many and sometimes distant areas. As a result of this distributed effort there are many sources of loss in anthracite mines that are avoided in large bituminous operations, where it is possible to obtain a large enough tonnage at all times to keep every man busy or at least to keep him at work a fair percentage of the time.

Many planes are employed in the hard-coal region both under and above ground. Some are used for raising and some for lowering coal. Underground they are sometimes used to transfer coal from one level to another or to lower the coal down the steep places in the seam. On the surface they are built and operated to lift or lower coal to the breaker. In many places such inclines have to handle only a few cars at a time and a comparatively small aggregate number—say from twenty-five to one hundred—per day. Yet they are frequently so arranged that from two to four or even five men are needed to handle the cars at the head of the plane. It is sometimes possible through arrangement of the tracks, the position of the hoist or its control, or through a change in the type of machine installed, to effect a decided saving in the number of men necessary.

By dispensing with the services of one man at $5 per day for 200 days a sum is saved equal to the interest charges on an investment of $15,000. When added to other economies similarly effected throughout the year this amounts to a considerable sum, especially if at the planes thus rearranged the services of more than one man are saved.

At the plant of the Lytle Coal Co., near Minersville, Pa., it was necessary to raise a small amount of coal, mined about a mile away, to such a height that it could be taken to the breaker by locomotive. This made it necessary to install an engine plane to raise loads and lower empties. The maximum number of cars to be handled during any one shift was estimated at one hundred.



SWITCH FOR EMPTIES AND LOADS AT HEAD OF PLANE

On this plane there is no knuckle, the cars being hoisted to the switch and dropped into the switch with the end of the car which was rearward on the incline at the forward end of the landing.

SMALL ONE-TRACK PLANE AT LYTLE COLLIERY

One man hoists the cars, uncouples loads and couples empties, yet one hundred cars are handled daily. His work is made less onerous by placing him at the knuckle and not at the hoist. By a step-saving grouping of control and the use of switches and a catch he is enabled to do several men's work.

A single-track plane with an electric hoist at its head accordingly was installed. Instead, however, of placing the control mechanism at the hoist itself, which naturally was beyond the knuckle, this control was placed close to the knuckle or at the place where it would be on an ordinary incline. The upper landing consists of two storage tracks, one empty and one loaded, set almost at right angles to the plane. These are both connected with the track up the incline by an automatic switch which is shown in an accompanying illustration.

In operation, a footman attaches a loaded car to the rope at the lower end of the plane. The engineer then starts the hoist and hauls the car to the top. As soon as it passes the automatic switch he lowers it to the loaded track, a dog preventing the car from moving more than 5 ft. away from the plant track. The engineer now leaves the control house, moves about 12 ft. to the car, uncouples the rope and with his foot releases the dog, or catch, whereupon the car moves by gravity into the yard for loaded cars.

Hoistman Couples Rope to Empty and Lowers It

He next walks a few feet to the empty track and releases the first car standing there, which then gravitates to a point beyond the dog against which the loaded car was lowered. Here he attaches the cable to it, after which he returns to the control house and hoists the empty clear of the switch, which is now held open by means of a lever, placed near the control. The car is then lowered to the foot of the plane, after which the whole cycle of operation is repeated.

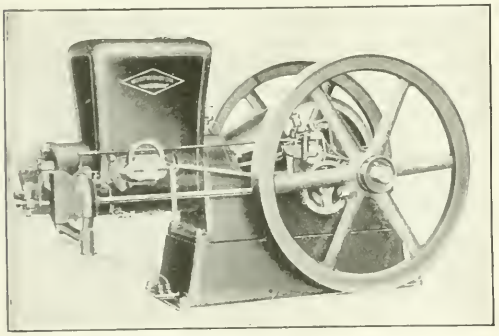
It will be readily perceived that the success of this whole arrangement at the head of the plane lies in keeping the loaded and empty tracks, the dog, the switch lever, and the engine control all in close proximity to each other. The tracks also must be given proper grades so that no pushing or hand movement of the cars is necessary. Should an empty car attain such momentum when moving to the plane as to pass the switch it can-

not run down the incline, as the switch will return it to the dog. To permit a car to move down the plane, this switch must be thrown by hand, which can be done only from the control house.

By this arrangement one headman handles regularly 100 cars per day and sometimes many more. If only a few cars are to be hoisted per shift and the locomotive bringing the cars to the foot of the plane is not too busy for the motorman to wait for his trip, it will be possible to dispense with the services of a footman, the locomotive driver performing the footman's duties. At the foot of this plane, however, on account of the number of cars hoisted, it has been found necessary to provide a man.

Small Kerosene Engines Supply Power for Local or Temporary Purposes

EVERY mining man, particularly if his work lies on the surface, has at some time or other wished that he had available some small portable source of power supply. Such power may be needed for driving a concrete mixer, a pump, a pipe-threading machine, the tools of a shop, a wood saw, a small ventilating fan or for some other purpose. Of course, many mines nowadays



KEROSENE ENGINE FOR TEMPORARY WORK

A large number of internal combustion engines are used at small mines or for isolated work at larger operations. This engine will use either gasolene or kerosene. The machine can be mounted on a truck and so is truly portable.

are so well supplied with power circuits and transmission lines that a motor may be quickly set up in most places and current obtained from some nearby source without serious difficulty. On the other hand, many are the more or less out-of-the-way places where power is desired and to which current cannot easily be brought.

Equally Efficient When Run with Gasoline

To fill this need for a small easily-portable power unit about the mines and elsewhere the Worthington Pump & Machinery Corporation recently placed on the market a line of internal-combustion engines fitted to operate on kerosene. They will run with equal efficiency on gasoline and this fuel is used to start the engine. After it has run a short time, however, change can be made to kerosene without difficulty or interruption to service.

These engines, as may be seen from the accompanying illustration, are of the horizontal type, provided with two flywheels. They are built with throttling governors in sizes ranging from 2½ to 25 hp. Sizes smaller than 2½ hp. are made with hit-and-miss governors.

Various details of construction embodied in this engine are worthy of notice. Thus the fuel tank is located in the sub-base, the fuel pump is submerged, the level of kerosene in the mixer or reservoir is constant and any excess pumped to this point drains back to the tank, and ignition is by make-and-break mechanism from a Webster oscillating magneto. Other details are great simplicity and ruggedness of design together with ease and reliability of lubrication. The latter is secured by means of sight-feed oil cups on the cylinder and its contained parts, grease being used on the main bearings and cam.

These Engines May Be Mounted on Trucks

The cylinder is overhung, as on a modern steam engine, thus minimizing stresses arising from expansion. In all but the largest of these machines the cylinder and head are waterjacketed by means of a water hopper cast integral with the cylinder. This, of course, is kept full of water, the supply being replenished from time to time as it boils away. The opening to this hopper is placed at the end furthest from the head and thus away from the point of greatest heat and most violent ebullition. On the large sizes continuous circulation is obtained either from a city supply or by the aid of a radiator and circulating pump. Any of these machines may be mounted on trucks rendering them highly portable.

While no new principle is involved in the operation of these machines much common sense and experience are built into their details. It was the intention of the designers to produce an engine sufficiently simple to be operated by unskilled hands, rugged enough to successfully withstand the abuse and "punishment" to which such a machine is invariably subjected and reliable enough to be absolutely dependable. It is believed that all these goals have been reached.

Don't Overload Your Electrical Wiring*

By W. L. Murray
St Louis, Mo.

WHENEVER a current of electricity flows through a conductor, heat is developed. With small currents the amount of heat generated may be so small that it cannot be detected, but it is present nevertheless. If a relatively large current flows through a conductor, the conductor will be heated excessively, and with extreme currents the heat developed may be so great that the conductor will be melted.

The tables of safe current-carrying capacities that are given in handbooks indicate the amperes—that is, the volume of current—that a conductor will carry without becoming so hot as to damage its insulation or any other object that may be near it. If a current greater than the safe value specified in the tables flows in the conductor, it will merely become hotter than when the safe current is passing through it. However, if the safe value is too far exceeded the conductor may become red or white hot or may even melt.

A current 10 or 15 per cent in excess of the safe values given in the tables will, ordinarily, do no harm, but as a general rule the tabulated capacities should never be exceeded. Where the insulation does not contain rubber the wires may be permitted to carry greater current. This is because a relatively slight increase in temperature may permanently damage rubber insulation.

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Have Mining Engineers Accepted All That Developments In Machinery for Handling Coal Imply?*

Machinery Demands Concentration of Labor Forces—Is of Value Only If Kept at Work—Transfer Tables Suggested for Car Switching —Full Trips or a Conveyor Should Afford Service to Loading Machine

By R. Dawson Hall†
New York City

IN THE beginning of the last century "cottage industry" gave way to the factory system, and at present manufacturing that once was performed in homes is done wholly in factories. Division of labor came into being at the same time. In earlier years rarely more than a half-dozen men worked at the home of the master workman. Each group performed all the labor involved in changing crude material to the finished article, and many of the masters in a cottage industry themselves took the raw material and converted it by their own efforts into a highly-specialized product ready for the market.

Mining has in a degree moved in the same direction. But for the most part every man still has his own room. Pick miners in many places get their cars at the room neck, push them to the face, undercut their coal, drill their shotholes, load and fire them, complete the breaking down of their coal, fill their cars, push them to the entry and also test their roof for weak spots, examine for gas, timber their rooms, bail them out and lay their own track. Mining is still in a way a "cottage" industry, only the cottage is a room in the mines instead of a home. The men who gather the coal and take it to the tipple are in a measure like the middlemen who went from cottage to cottage and gathered the product of the owners or "masters," to use the term then prevalent.

Machinery Made Factory System Imperative

The change in ordinary industry from old methods to new came with machinery. The machines then introduced needed power for their operation, and distribution of power from house to house was too great a task for those times. Power could not readily be taken to machinery where water power only was available. It was necessary for the machinery and its worker to go to the power. Nor when steam was harnessed could every cottage have its steam engine. Compressed air and electricity had not arrived, and consequently there was no transmission of power other than by mechanical means. Ropes and pulleys were poor means of distributing energy for long distances. Then again cottages could not accommodate the large machinery and, as there were many machines, enough people to keep the many large units operating could not be crammed into the four walls of such a dwelling.

In the mining industry, as we have had only a little machinery and as we have made that machinery fairly portable and have introduced compressed air and electricity, we have been able to continue a cottage system—the room-and-pillar method. There is a large loss in taking machinery from place to place. Machinery, like the garrulous miner, is found traveling from working face to working face, and, because this traveling is necessary, we have been disposed to dispense with machinery to a large extent, using only undercutting machines where shearing machines, electric drills, loading machines and face conveyors might well be employed.

We lose money by moving these machines from place to place. They hold up car distribution. Yet with expensive machines it is important to keep cars moving without delay. Of course, the work of cutting is frequently, almost usually, done at night, and this difficulty is thus obviated, but if men are going to work at night why not work twenty-four hours a day and get the full worth of the machines? Why use cutters and scrapers only at night and let the machines do only an eight-hour stunt?

Valuable Only If We Keep Them at Work

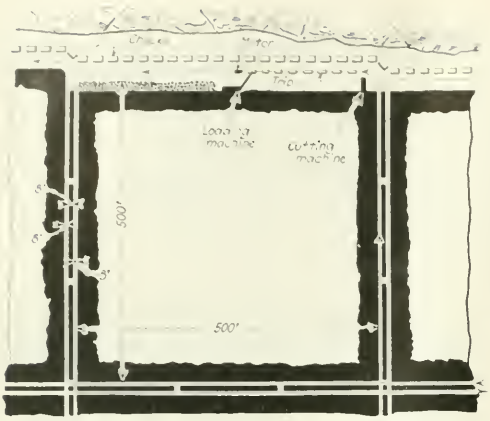
The value of the electric drill, the loading machine, and in low coal the face conveyor would be unquestioned if we could keep them hard at work. It is the fact that they must in the nature of things be peripatetic, wandering around from place to place, or else must be idle much of the time, and sometimes that they must be both peripatetic and idle, which makes their introduction slow and halting. Give the drill, the loading machine and the face conveyor steady work, and flesh and blood shall not prevail against them.

Machinery in farming has done away with the small field and with the short furrow, and machinery in coal mining similarly has made it imperative that we dispense with the room and the short undercut. Unfortunately, when we replace the room with advancing longwall workings we save trouble at the face only to encounter greater trouble in the broken area in the rear, and no great advantage is gained. The work involved in building and maintaining gateways is so considerable as to counteract the economy afforded in cutting, shooting and loading.

The longwall-retreating or "endwall" method is really the only cure, and it is quite possible that even with longwall retreating the gains will be frittered away by a lack of determination to utilize the retreat to full advantage. First of all, then, the longwall retreat must be made possible by the use of heading machines. These reduce the interest costs of an extensive development by shortening the time needed to attain the desired results. Carl Scholz is authority for saying that a Jeffrey heading machine will drive 500 ft. a week.

The limit of progress seems largely to be fixed by the operator's ability to keep the machine supplied with cars. It would appear more than probable that with a better car-delivery system even greater results

*Article presented at Rocky Mountain Coal Mining Institute meeting, Salt Lake City, Utah, June 29, 1921.
†Editor, *Coal Age*.



PLAN TO GIVE MAXIMUM OUTPUT FOR MACHINERY.
This plan requires a minimum of narrow work, less than 8 per cent of the coal being so extracted. Consequently the pillars can be made thin without fear that roadways will close. The cutting and the loading machines have a 500-ft. fairway and should do a big day's work.

could be attained. If the heading machine were served by two tracks laid as close as clearance between the cars stationed on them would allow and a transfer track were laid behind the machine, the cars could be brought in by trips, spotted one by one under the delivery, loaded and then shifted on the transfer carriage to the other track, after which the transfer carriage could then be pushed back into place. Another car could then be advanced and little or no time lost by the heading machine. To shift each car, as loaded, back one or two hundred feet and then bring up an empty the same distance is a prodigious waste of time and effort.

Chain pillars should be made small. In driving crosscuts too much time is lost. Making them interferes unduly with progress, and it is at least open to question whether a single airway with a large sewer-pipe return properly laid would not serve the purpose, provided there was no gas and that entries were driven 500 ft. apart and crosscuts—or should we say "headings"?—constructed at, say, 500 ft. intervals as soon as they could be completed. The sewer-pipe return would, however, have to be connected with a booster fan. Of course no working place should ever be driven more than 1,000 ft. without a regular airway for the return air.

But if this is not permissible under the law it might be feasible, when the amount of coal extracted in first mining is less than 5 per cent, to leave only 20-ft. pillars between intake and return entries and about 9 ft. in the headings which are driven between entries and about 500 ft. apart.

Advantages Obtainable from Longwall Face

These headings, whether they are driven single or advanced in pairs with a 9-ft. pillar between them, would serve with the entries to cut up the area to be mined into blocks about 500 ft. square. These blocks could be attacked by retreating longwall, or endwall, methods, beginning at the far end of the entry which is nearest the mine entrance. The trunk entries should, of course, be provided with good side pillars and fair chain pillars, the first about 200 ft. wide and the second from 30 to 50 ft. in width, according to the ability of the coal to resist slabbing.

The coal would be cut with a longwall machine of a size that would prove most desirable for that work—perhaps far larger than those now used. It would take up little room because it is a longwall cutter. On it could be mounted, or after it could follow, either an electric drill or some other type of machine, thus providing for the breaking down of the coal if the fall of the undermined material could not be effected by roof pressure.

Following this would come the loading machine working at an angle and either loading on a track running along the face or onto a face conveyor. Where height was available the cars could be brought up by a full-sized locomotive and spotted as in steam-shovel practice. There need be no delay, as one locomotive trip could be followed by another at the necessary interval, so that the undercutter and loader as well as their respective crews would be kept working at full capacity.

The cost of such loading should be well below 8c. per ton, which has been the rate attained with far less effective operating methods. The cost of cutting should be not more than 2c. per ton with an 8-ft. bed of coal. In all, the expense involved in cutting and loading, timbering and drainage should be about 15c. per ton.

Timbering, of course, is a difficult problem, as the roof has to be carefully controlled over a long straight face, but after a good fall has once been obtained the roof is in the form of a cantilever and should break readily on the line of timber support, thus preventing excessive weight. Chocks of sawn timber set on slack coal might be used, to be freed by the removal of the slack and drawn out when it was desirable to extend the caving of the roof, other chocks having been set meanwhile to protect the face.

Room-and-Pillar Work Complicates Drainage

Or, again, it might be possible to devise some form of hydraulic propping machine—several propping units placed on a wheeled carriage which could be set in operation by a pump and fitted with a weighted valve which would prevent the water pressure from becoming unduly excessive through roof movement. The props, of course, would put their weight not on the carriage but on the main floor. When it was decided to move the prop carriage it would be necessary only to attach to it a cable from a room hoist, release the water and draw the propping machine to the desired location, where it would be under the protection of another device of the same kind. Such a system should commend itself as one pre-eminently safe though not wholly inexpensive. As the device should serve for several years, however, it should in the long run be cheaper than timber.

One great trouble with the room-and-pillar method is that if the rooms go to the dip each room is a separate problem. The mine foreman, after a heavy rain, may be importuned to provide for the draining of many places and may find it impossible to care for them all. The tonnage immediately falls; there is much dissatisfaction all around and no little expense. Drainage in a strip pit usually is handled by a single pump or by ditching. With a longwall face as with a strip-pit working it is quite easy to carry the water to some specific point and provide for its removal.

Some few mines are electrically lighted in all working places. This should be much easier to arrange in a mine that has only about ten or twelve faces than in one with several hundred. There is no question

but that it facilitates operation and makes for safety and its cost should be far less prohibitive with longwall operation. Electrical distribution should be more readily provided also, as there would be fewer machines to be operated and they would not be working irregularly or moving about from place to place with long cables to be abraded, run over and severed. The load factor during working hours should be almost constant except in so far as the locomotives are concerned.

With such a system of working also a ventilation plan could be adopted that would require a minimum of power. The resistance to air travel would be greatly reduced, and the number of places needing ventilation would be few. The cost for timber also would be low.

Some Operators Favor Long Sidewall Faces

It is easy to question how this plan would adapt itself to peculiarly difficult places, such as heavily-pitching or deep-seated workings, but it should first be tried where the conditions are most favorable and extended to those where they are most adverse, knowledge of the best methods being gained meantime. The general plan of operation is not wholly new. The longwall-retreating method has been worked in the Pittsburgh region. Whether it is being used now I do not know. Mechanical loaders were not utilized at the time, it is true, and the cover was not heavy. Many plans have been tried having for their justification a desire to obtain long faces of operation. In the Logan and the Kanawha fields attempts are being made to work on the ribs of rooms by longwall methods. The disadvantage is that this kind of longwall or "sidewall" gives a roof that is a built-in beam supported at both ends, and not a cantilever. That condition would not exist if the pillar thus removed were extremely large, because the roof would break eventually so completely that a cantilever would be formed, but as a rule the rib is not mined back so far as to permit of such a break, and the necessity for maintaining roadways at one or both ends of the face makes it necessary to support the roof at both ends of the room and, in Carl Scholz's methods, even within the room itself.

Conveyors May Work in Only One Direction

Where the coal is thin, conveyors will have to be introduced. Probably these will work wholly in one direction. The headings on which they will load will be double-tracked with a transfer track at the loading point on which cars when filled will be pushed over to the loaded track and taken away by the locomotive as soon as a trip is completed. When the entry is reached the coal will be taken out just as in the workings between entries, though some difficulties are apt to be encountered where the bottom or top in the entry has required blasting. Just before the entry was reached it could be abandoned for haulage and props or cogs erected, the coal being taken out by the entry 500 ft. beyond.

For haulage service large storage-battery locomotives so arranged that the entire accumulator readily may be lifted off and be replaced by one fully charged will be used for the entire work or else combination locomotives can be employed that on main and side entries will use the trolley and in the headings and at the faces will use the battery.

Low Voltage Seriously Reduces Starting Torque of an Induction Motor*

By C. M. Roscoe
St. Louis, Mo.

It CAN be shown that the starting torque of any induction motor varies as the square of the voltage impressed upon it. Consider an induction motor that was designed for 220-volt operation, when the voltage across the phases is 197 volts. What effect will this low voltage have on the starting torque of the motor? It is evident in this case that:

$$\frac{\text{Percent torque at applied voltage}}{\text{Percent torque at normal voltage}} = \frac{\text{Applied voltage}^2}{\text{Normal voltage}^2} \quad (1)$$

Substituting in the above we have:

$$\frac{\text{Percent torque at applied voltage}}{100} = \frac{197^2}{220^2} \quad (2)$$

Hence:

$$\text{Percent torque at applied voltage} = 100 \times \frac{197^2}{220^2} \quad (3)$$

Solving: Percent torque at applied voltage $= 0.802 =$ 80.2 per cent.

Thus, it is evident that the starting torque of the motor under the low-voltage condition specified will be about 80 per cent of its starting torque at normal voltage. Consequently, if the motor has a normal full-load starting torque of 2.5 times full-load torque, its starting torque under the conditions here assured will be about: $0.80 \times 2.5 =$ twice the full-load torque. In other words, the starting torque of the motor will be only twice the normal full-load torque.

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FREDERICK F. SHARPLESS
Newly Elected Secretary of the American Institute of Mining and Metallurgical Engineers

Problems of Operating Men

Edited by James T. Beard

Hoodwinking the Mine Inspector

Mine Inspectors More Capable Than Some Foremen Seem To Think. The Laugh Is Often on the Foreman Himself, as He Finds Later to His Sorrow

WRITING on the "Mine Inspector's Difficulties," John H. Wiley has placed both the mine inspectors and mine foremen in an unenviable light. He states, *Coal Age*, May 12, p. 865, that "seven out of every ten mine foremen watch for the inspector's coming and prepare for that event."

Few inspectors would care to be regarded as having so little determination and character as to be led about the mine by a foreman who is anxious to show him certain portions that he has beautified. The picture reminds me of a boy leading a poodle dog, both men being equally inefficient in their respective places.

As Mr. Wiley has stated, our state mine inspectors are placed under bond for the proper performance of their duties. This being true, he must have high regard for the character of inspectors who would not quickly detect that purpose.

To my mind, our inspectors, taken individually or as a whole, are much too smart to be deceived by the wiles of a foreman. The anxiety of the foreman would at once betray his real purpose and, I believe, there are few inspectors who would not quickly detect that purpose.

Wily Foreman Reprimanded by the Superintendent

Instead of the foreman congratulating himself that he has deceived the inspector and hidden from him the true condition of the mine, in certain respects, more often the laugh will be turned on the foreman when he is called to the superintendent's office and given strict orders to make no further delay in improving the condition.

In my judgment, when an inspector does not go through the entire mine, in making his visit, it is because he does not want to make a complete inspection at that time. It's not because the mine foreman has him hypnotized or is able to exert any other control over his movements. When taking his office, the inspector has declared on his oath that he will discharge his duties with impartiality and fidelity. How could he do this, if he permits himself to be led about a mine at the will of a foreman?

Being a foreman myself, I feel that Mr. Wiley has not given to men occupying that position the credit that is their due. In this district, I am glad to say we have an inspector who has no need for a foreman to take him through the mine. He can and does go where and when he likes. He is practical enough not to listen to any "hot air" from a foreman who has it to offer.

In answer to Mr. Wiley's question as to how mine accidents are to be reduced if this supposed "hoodwinking" of inspectors is to continue, let me answer: If foremen will attend to their duties thoroughly there will be no need for them to try to deceive an inspector.

Mayport, Pa. JAMES THOMPSON.

Higher Standard of Operation

Training of mine workers advocated as the best means of making the mine safe. Discipline the most important element.

WHILE it is important to do everything to improve those conditions that lead to disaster and to which James Ashworth has drawn attention in his excellent letter, *Coal Age*, April 21, p. 716, there is yet one main feature, which is the most important of all and that is discipline.

We are prone to lay great stress on dangerous practices, such as working men on the return end of pillar sections; the need of using approved safety lamps; the necessity of eliminating fire hazards and risk of explosion in dry and dusty mines.

These are all important factors and yet, taking our coal fields as a general proposition, there is an even greater need of concentrated effort to impress the rank and file of mine workers with the idea of removing those causes of individual failure to practice safety in the daily routine of work.

All agree that the safety of coal mining depends to a large extent on the quality of the workmen employed. If the men are careless, shiftless and incompetent nothing can be expected but that they will disregard instructions and employ many unsafe methods. The problem resolves itself into a question of either getting a better class of workmen or developing the material at hand so as to gain a higher standard.

But human nature is the same the world over and, for this reason, the wisest plan is to make good what we have. Nothing is to be gained by constantly complaining of the indifference of the workers in a particular mine. A visit to the other fellow's plant will show that *he* is up against the same proposition.

Allow me here to make a brief reference to one instance showing how an operator developed a number of large producing mines, in an isolated coal field where he had only a rural population from which to select and develop his workmen. It will help to prove that the training of men is a prime feature in making our mines safe.

When opening that field the question of whether it was better to import miners or develop, by training, the material at hand was finally decided in favor of the latter plan. As is customary, in such cases, it was argued that farmers cannot be trained to make competent miners; but this argument was over-ruled and the work started.

After ten years of successful operation, the plan has never been changed, as those mines employ none but native American labor. Not a foreigner or a colored man has ever been employed. At one of the mines there are fifty men on the payroll having the same family name.

Practical Effect of Training

Some one asks, "What is the result and how is the accident list affected by this course of training?" As far as the accident list is concerned, it can be said it is low and few operations putting out the coal that these mines produce can compare with their record for safety. There has not been a fatality in the mines for several years. The principal trouble suffered by the miners is injury to the eye caused by the flinty character of the coal; but these injuries are seldom serious.

Now, what has been accomplished at these operations can be done at other mines; but it will require the same intensive training. In this case, the men in charge underground devote their entire time to that work. The company insists on the frequent rigid inspection of all working places and the close supervision of the men in every detail concerned in the production of coal.

Foremen show every respect to the workers and receive in return the same consideration. The high regard for discipline in these mines was shown by the condition that existed during the war when coal was in demand and miners everywhere were inclined to do things to suit themselves.

The use of profane language, or any disrespect shown to a foreman by a

miner, was sufficient to cause the miner's dismissal. That happened once and a thirty-day strike followed, which was finally settled by the miners being obliged to return to their work without the man being reinstated.

In closing, let me say that the standard of safety attained in these mines is wholly due to the careful training of the men and the high-class supervision given to every detail of the work. This, together with the rigid enforcement of the mining law and the elimination of dangerous practices among the miners, has produced the result stated. Like efforts will do the same for other mines.

Pikeville, Ky. GEORGE EDWARDS.

Mine Workers Who Think Have Few Accidents

Most accidents occur through the failure of men to think. The miner who thinks is generally a safe miner and, if honest and trained, he is efficient.

FEW men will deny that the inability or the failure of men to think is a frequent cause of accidents. This quality in men has to be developed, however. Many workers have never exercised their thinking powers, but have been content to have some one else think for them.

The excellent letter of "Ben," *Coal Age*, Apr. 14, p. 675, entitled "Honesty, Safety, Efficiency," has suggested the idea to me that underlying all of these qualities is the power to think. The constructive thinker realizes the importance of being honest, which is the foundation on which to build character, happiness and success. Such a man is the greatest safety feature that ever entered a coal mine.

The test of a man's power to think is to ask him if he has ever thought of this or that. If he is not a thinker his reply will generally be, "I don't like to worry about it." The fact that thinking becomes a "worry" shows that another must do what *he* should do for himself, in order to be a safe man.

NATURAL CONDITIONS FAVORABLE

Regarded from the standpoint of safety, what is most to be desired in the operation of a mine is natural conditions that are favorable and the employment of thoughtful miners. The manner in which workmen perform their work is the chief quality that regulates the accident record in a mine.

Under inefficient management, the most favorable conditions in a mine will generally show a high accident record. Again, under careful management, unfavorable conditions do not prevent the mine from having a low accident record. The difference lies in the character of the miners and their power to think.

Every one realizes that the three words "honesty, safety and efficiency" combine every element of success, provided a person has the ability to think for himself and others. Without that ability, a man may be quite honest and yet an unsafe and inefficient worker.

As illustrating these three words, honesty, safety and efficiency, there are three maxims that it is well to remember. They are:

"Treat people as you would be treated."

"A stitch in time saves nine."

"Anything worth doing at all is worth doing well."

If these three lines could be made the working creed of every miner, it would not be long before our coal mines would be desirable places in which to work. Unjust treatment of workers would be eliminated; posts would be set when and where needed, and the cap balanced over each post; holes for blasting would be properly located, tamped, charged and fired. There would be no short fuses or biting off the match of a squib; no misfires and no going back to the face before the smoke and gas have been swept away, after firing a shot; on the roads there would be splicebars and bolts at all joints; the track well ballasted and drained and cars in safe condition. Happier, safer and more efficient workmen would be ours.

Pikeville, Ky. GEORGE EDWARDS.

Qualified Men Wanted

Contempt for education in coal mining often expressed by the unqualified man is fast giving place to a realization of the necessity for understanding mining principles.

MUCH interest has attached to the discussion, in *Coal Age*, regarding the "equally competent" mine foreman, whose employment has been legalized by the revised mining law in Pennsylvania. While some may regard the subject from an envious standpoint, the large majority are sincere in believing that our lawmakers made a serious mistake when they set aside the need of employing qualified mine officials.

It is common to hear disparaging remarks in reference to the examinations by which certificates of competency are granted successful candidates for the positions of mine foreman, assistant foreman and fireboss. A neighbor recently told me that his daughter had worked out all of the questions asked in the last examination. I learned from another man that a young man, the son of a city merchant, had passed the examination and gotten a certificate.

CANDIDATE QUITS EXAMINATION

One man of my acquaintance, after sitting through one session of the examination, left in disgust, stating that he did not want a certificate gotten under the conditions that prevailed. I mention these incidents as showing the attitude of a number of people toward official qualification. As a rule, the unqualified man is envious of the man whose energy and ability have made it possible for him to pass an examination and secure a certificate.

Some years ago, my daughter hunted up my old certificate and, unbeknown to me, had it framed. Today, as my eye rests on that certificate with its black frame, the thought comes to me, How appropriate that the paper should be dressed in mourning. I recall the hours of burning the midnight oil hunting for information; asking this friend or writing to another; and now those efforts are snubbed and the certificate of which I was once proud is in mourning.

The "equally competent" man has gone into the mine and worked on the other fellow's plan as long as he could and then robbed pillars and stumps in order to maintain production and keep down costs. This has gone on until many a company has found when too late that their mine is ruined. They have paid dearly for this lesson taught by experience. At present, I am glad to say there are signs of a revival of interest in securing qualified officials in coal mining.

During the past year or so, the State College has organized mine-extension classes at a number of points in the Pennsylvania coal fields. To show the extent to which these efforts are appreciated, I may say that where there were 14 applicants taking the examination before the State Examining Board a short time ago, this Spring there were 57 men who took that examination before that board.

At the close of the Winter session this year, the Morrisdale and Winborne classes had a banquet and listened to a number of enthusiastic speeches by Joseph Knapper, district mine inspector; C. B. Maxwell, superintendent Morrisdale Coal Co.; Dean E. S. Moore, State College; Professors Hubbell and H. E. Gray, Dr. W. G. Duncan, and others. All of the speakers emphasized knowing how and what to do.

Osceola Mills, Pa. S. D. HAINLEY.

Weight of Oxygen Cylinder in Rescue Apparatus

Recent improvements in design of rescue apparatus reduces the weight, but British regulations prevent use of the lighter construction, though practical test shows no weakness.

MY ATTENTION has been recently directed to a letter of John S. Boardman, which appeared in the issue of *Coal Age*, Apr. 21, p. 715. In his letter, Mr. Boardman alluded to a statement made in my previous article, describing the Briggs mine rescue apparatus, and which was published in *Coal Age*, Jan. 6, p. 3.

Mr. Boardman takes exception to my statement that, in this type of rescue apparatus, the cylinder without valve weighs only 7 lb. He informs *Coal Age* readers that he has found this to be a mistake, and that the cylinder actually weighs 10 lb., adding further that when the valve is attached to the cylinder it will bring the weight of the cylinder and valve up to about 14 pounds.

The weight given in my original article, referred to above, is strictly correct for the first two models of the Briggs apparatus. One of these models has been in use here in Edinburgh for the past two years. The fact that the cylinder in this model still stands up to its work is evidence, I should think, that the apparatus is satisfactory.

Mr. Boardman, however, is correct in his statement that the weight of the

cylinder will be increased in the future. This is not because the inventor considers that the original cylinder was too weak, but because forthcoming British regulations will prevent him from using so light a cylinder.

Perhaps, in America, regulations may be more elastic, so as to permit of these lighter and yet adequately strong cylinders being employed. In an apparatus now being made in Edinburgh for the American Government, the cylinder with valve weighs 11¾ lb. The valve has been still further improved since my article was written and it alone weighs 2¼ pounds.

JAMES COOPER,
Lecturer in Mining,
Heriot-Watt College.
Edinburgh, Scotland.

Superintendent, Foreman and Ventilation

Efficient ventilation depends largely on the practical experience of the superintendent. Otherwise, the foreman is handicapped in his efforts to ventilate the mine properly.

REFERRING to the excellent letter of Henry Bock, regarding the efficient ventilation of a mine, *Coal Age*, April 28, p. 755, I want to say this is the most important question in the operation of a coal mine, as on it depend not only the life and health of the men, but the success and economy of the entire operation.

Mr. Bock states, "The efficient ventilation of a mine requires a ventilating engineer," and I quite agree with him in that regard. My opinion is that there should be a practical ventilating engineer appointed by the head of the Department of Mines and charged with the duty of looking after the ventilating requirements and system in each mine in the state or district.

GOOD VENTILATION ESSENTIAL

Some seven years ago it was my duty to attend to the ventilation of a large mine and I know from that experience something of the trouble with which the mine foreman must contend. While it is true that many large mine owners and operators are striving for greater efficiency in the ventilation of their mines, the fact remains that many of the small operators give this subject little attention.

Good ventilation and drainage in a mine are the first steps toward production. Men cannot work in bad air and wet places. There is no efficiency possible when a foreman is compelled to run a mine under unfavorable conditions in these respects.

Just here, I am reminded of the handicap to which a mine foreman is subjected when his superintendent has no practical knowledge and experience under ground.

Every practical foreman knows that much work is required to clean up aircourses, build stoppings, repair doors and construct overcasts. But the superintendent who has little underground training fails to appreciate the need for these charges that constantly appear on the cost-sheet.

Again, if a miner works hard and makes big wages the superintendent is sure to ask the foreman to explain how it is the man can draw so much money. To do this to the superintendent's satisfaction, the foreman must take time to go into much detail with which the superintendent is wholly unacquainted.

In a mine where I was employed some time since, the superintendent thought the mine foreman could ventilate the mine without doors and overcasts. He regarded these as entirely unnecessary.

But, speaking of efficient ventilation, let me say that the coal miner is often a most abused man. In many instances, he is compelled to work in bad air and smoke; sometimes his place is making water, or the roof is bad and requires constant watching to avoid accident.

In addition to these troubles, the life of the miner is in danger from the careless or reckless acts of many of his fellow workers. It was only a few years ago (1891) that I helped to take out 107 men from a mine where their lives had been sacrificed in a gas explosion. Good ventilation will go far to improve all of these conditions.

———, Pa. MINE FOREMAN.

Inquiries Of General Interest

Pressure in Tank to Force Water

Tank Pressure Decreases as Water is Forced Out, the Decrease in Pressure Varying as the Air Space Above the Water Increases. In Other Words, the Pressure Ratio is Equal to the Inverse Volume Ratio of the Air Above the Water

WE HAVE at our mine a water tank that we want to put under pressure, for the purpose of forcing water out of the tank into a service pipe for use as desired. The tank is 36 in. in diameter and 10 ft. long. Assuming it is two-thirds full of water and put under a pressure of 150 lb. per sq.in., I want to ask, what will be the pressure in the tank when the water has been forced out until it is only one-third full. Also, what will be the final pressure in the tank when all the water has been forced out and the tank is empty. I want to ask, in what proportion does the pressure fall as the water is forced out of the tank.

Carlinville, Ill. ENGINEER.

If we understand correctly this tank is filled to two-thirds its capacity with water, and air is then forced into the tank under a pressure of 150 lb. per sq.in. The compressed air occupies one-third of the volume of the tank and the water fills the remaining two-thirds of that volume. At this point, the valve controlling the air supply to the tank is closed tightly so that no more air can enter.

Water is now drawn from the tank until the latter is but one-third full. In so doing the air in the tank has expanded to twice its original volume and now occupies two-thirds of the volume of the tank, while the water fills the remaining one-third of that volume. At this juncture, the air volume being doubled, its pressure will be one-half the original pressure, or 75 lb. per sq.in. Assuming a constant temperature, the pressure of air decreases as its volume increases. In other words, the pressure ratio is equal to the inverse volume ratio.

Again, when all the water has been drawn from the tank and air has expanded to three times its original volume and its pressure will be one-third of the initial pressure or 50 lb. per sq.in.

We have assumed, in this reply, that the tank lies in a horizontal position and that the volume of the water is first two-thirds and then one-third of the entire volume of the tank. It may be, however, that the inquirer means that the depth of the water in the tank is first two-thirds and then one-third of the diameter of the tank lying in a horizontal position, or two-thirds and one-third of the height of the tank if in a vertical position.

In the latter case, the tank being vertical, the depth of the water will vary as its volume and the solution just given applies equally to that condition. On the other hand, if the tank is horizontal and the depth of the water is first two-thirds and then one-third of the diameter of the tank, the ratio of these depths of water will not express the volume ratio of the water, which must be calculated before the reduction in pressure can be estimated.

In making that calculation, it is found that when the water has been drawn from the tank so that its depth has decreased from two-thirds of the diameter to one-third of the diameter, the original pressure has fallen to 62 lb. per sq.in. Also when all the water has been drawn from the tank, the original pressure being 150 lb. per sq.in., the final pressure of the air in the empty tank is 43.95, say 44 lb. per sq.in.

Examination Questions Answered

Pennsylvania Bituminous Mine Foremen's Examination, April 5-8, 1921

(*Concluded*)

QUESTION—*State how you would develop, arrange, equip and manage a gaseous and dusty mine to insure freedom from the accumulation of gas and dust and the dangers incident thereto, keeping in view safety and economy.*

ANSWER — A mine generating gas and dust in quantity must be developed according to a well designed plan laid out to conform to the extent of the property and the physical conditions in the seam. Provision must be made for ample ventilation, good drainage and the economical handling of the coal. For a large development, the main headings should be driven four abreast, making the two center headings the main intake and haulage roads for each respective side of the mine, and the two outer headings the main return air-courses for the same. The method of working must be decided in accordance with the character of the roof, floor and coal, thickness and inclination of the seam, depth of cover and amount of water and gas to be encountered. Regard must be had to the kind of mining machines to be employed and the daily coal tonnage required. Safe travelingways must be provided for the men going to and from their work.

The plan must be carried out in the mine by building substantial stoppings, doors, air bridges and brattices. It should provide for dividing the mine into separate ventilating districts and conducting the air around the working faces. The mine must be equipped with the most modern appliances both on the surface and underground. If safety lamps are required, they must be used exclusively by miners and daymen; but motormen and drivers should use electric cap lamps; or electric cap lamps may be employed throughout the mine. No naked lights can be allowed. Strict rules and regulations must be enforced by suitable penalties to insure safety in every branch of the work.

In blasting, only permissible powder should be used and competent shotfirers should be employed to charge and fire all shots after the men have left the mine. Careful firebosses and safety inspectors must be employed to see that no unsafe practices prevail and that all miners are given needed instructions and keep their places safe for work. Special attention must be given to see that there are no accumulations of gas or dust; the roads must be cleaned at regular frequent intervals. An effective spraying system should be installed if the coal is highly inflammable.

QUESTION—*What are the duties and qualifications of a shotfirer?*

ANSWER — A shotfirer must have a thorough knowledge of the principles of mining and several years experience in the work of mining and blasting coal in the presence of gas. In other words, he must be competent to perform his work under dangerous conditions respecting gas and dust. He must be careful and conscientious in his work and have authority to refuse to fire any shots that, in his judgment, are unsafe.

The duties of a shotfirer are to charge, tamp and fire all holes that, upon examination, are deemed safe. Before firing each shot, the shotfirer must examine the place for gas and satisfy himself that the conditions are safe. He must use permissible powder, tamping the charge with incombustible material and firing the shot with an electric battery, using every precaution to prevent a misfire and make his work safe. The shotfirer must keep a record of all shots he found unsafe and refused to fire; also, any shots that may misfire. In no case must a shotfirer allow his battery to go out of his possession.

QUESTION — *What are the lawful duties of a mine foreman and what instructions should be given the workmen on his round through the mine?*

ANSWER—A mine foreman must devote the whole of his time to his duties in the mine while it is in operation, keeping a careful watch over the ventilating apparatus and all airways, travelingways, timbering and drainage. On reaching the mine in the morning, he must receive, inspect carefully and sign the reports of the firebosses, and consult with them regarding the condition of the mine and the work necessary to be done. He must withhold the checks of workmen whose places have been found unsafe for work and not allow them to proceed into the mine.

The law requires the mine foreman to see that all working places, travelingways, roads and air-courses are safe and kept in good condition. He must see that proper breakthroughs are made in all room and entry pillars and permit no room or entry to be turned in advance of the air current. Once a week he must measure the air traveling at or near the main intake and in the last cut-through, in the last room turned on each entry, and in the last breakthrough in the entry, and record these measurements in a book kept for that purpose.

In case of accident to the ventilator or any cessation of ventilation in the mine, the foreman must withdraw the workmen at once and not permit them to return until the ventilation has been restored and the mine examined and reported safe for work. The foreman must see that every place is properly drained and timbered and the coal properly mined before it is blasted. He must see that all dangers reported to him are promptly removed and permit no men to work under unsafe conditions. He must employ a sufficient number of competent assistants to enable him to carry out the requirements of the mine law.

Each day, the foreman must enter in a book kept for that purpose a true report of the condition of the mine, stating any dangers that may exist therein. He must instruct employees in regard to safe and unsafe practices, the observance of all rules and regulations, use of proper tools in drilling holes and tamping shots, also explain the meaning of danger signals and forbid men to ride trips or to travel main haulage roads and slopes. The law requires the foreman to report all violations of the mine law to the mine inspector and to prosecute such violators of the law.

QUESTION — *In a nongaseous mine hitherto worked with open lights, marsh gas has made its appearance in considerable quantity. What lamp would you recommend to be used by the workmen?*

ANSWER—Under these conditions the workmen should be equipped with electric cap lamps, or provided with locked safety lamps of an approved type.

QUESTION — *If the volume of air proves insufficient when the fan is running at its full capacity, what would you do under such a condition to improve the ventilation?*

ANSWER—See that all air-courses are thoroughly cleaned, removing any roof falls or other obstructions to the free passage of the air. Enlarge all breakthroughs in room pillars and at the head of each pair of entries. Repair leaky stoppings, air bridges and doors throughout the mine.

Wherever it may be considered practicable, shorten the distance the air must travel and split the current where this can be done without reducing the velocity below what is required to sweep away the gas from the working faces. Sometimes, it will be possible to eliminate sharp angles or projecting timbers that partially obstruct the flow of air. If these measures do not improve the situation, it may be necessary to install a larger fan.

Injurious Effects of Irregular Operation of the Bituminous Coal Industry*

Operator, Miner, Transporter and Consumer Adversely Affected — Production Influenced by Business Depressions, Seasonal Demand and Variation in Car Supply — Although Mine Capacity Is Estimated at 16,000,000 Tons Per Week, The Maximum Ever Produced in That Time Is 13,146,000 Tons

By F. G. Tryon†

BITUMINOUS coal mines of the United States have a developed capacity and a present labor force far in excess of that required to supply the demand. In consequence the capital and labor engaged in the industry are idle a large part of the time. During the last thirty years the mines have been idle an average of ninety-three working days in every calendar year. Even in 1918, the year of maximum production, they lost fifty-nine days, or 20 per cent of the full working time. This condition apparently is not improving, for it is estimated that in 1919 the mines were idle 111 days, and the record for 1920 also will be unsatisfactory.

This condition is no fault of the operator, who is aware of its results but is powerless to prevent it. The causes are rather the seasonal nature of the demand, irregularities in the supply of cars and of labor, and, no less important, the nature of the resource and the competitive conditions surrounding the industry. Strikes in ordinary years have been only a minor cause of lost time. The loss of time is least in the fields of the Appalachians and of the Southern Rocky Mountains, and most acute in the Mississippi Valley. The regions in which the losses are greatest have shown a ten dency to become union territory.

Effects of Irregular Operation Far Reaching

The effects of irregular operation are injurious to all concerned in producing, transporting or consuming coal. To the miner it means loss of earning power; it begets in him irregular habits, and it is a contributing cause to the absenteeism and the large labor turnover complained of by the operator. To the mine owner it means high costs per ton, administrative difficulties, and mechanical trouble in the mine resulting from cessation of work. To the railroads it means a seasonal load and loss of revenue in spring and summer, when normally, as in 1919, large numbers of coal cars are idle. To the public it means high-cost coal, for the labor and capital engaged in the industry must be paid for the ninety-three days on which they are idle in each year as well as for the 215 days on which they work. It also contributes to the waste of our underground resources that results from the present régime of intense competition.

Statistical analysis discloses three distinct types of fluctuations in production: (1) Secular, (2) seasonal, and (3) daily. These will be discussed in turn.

(1) *Secular Fluctuations.*—The fluctuations that accompany business depression, of which the severest have occurred in 1893-97, 1904, 1908, 1914 and 1919, are profound while they last and are beyond remedy by the coal industry itself. Only a sixth of the time lost in the past thirty years has been due to this cause, however. If the maximum effect possible is allowed for these secular fluctuations there is still a residue of lost time—on the average seventy-eight days per year—which must be due to other factors.

(2) *Seasonal Fluctuations.*—Differences in rates of consumption in summer and winter give a distinct seasonal rhythm to the demand for coal. In a normal year, such as 1913, the rate of production is lowest in April and highest in November. If the annual average rate be taken as 100, the rate in April in a normal year is about 83 and the rate in November about 115. The productive capacity required during the month of maximum demand is thus from 35 to 40 per cent greater than in the month of minimum demand. In the "even" years, when the biennial wage agreements are negotiated, the normal April depression is accentuated by labor disturbances, in anticipation of which a peak of forced buying occurs in March.

The seasonal variation in demand was marked during the pre-war years, 1913-1916. It was obscured in 1917 and 1918 by the artificial conditions of the war period, but it recurred with heightened effect in 1919. The reason we had no slump in demand in the spring and summer of 1920 was that we inherited a deficit of 26,000,000 tons from the strike of November-December, 1919. The seasonal variation, therefore, may be expected to reappear.

These statements are based on averages for the entire country, from which the averages of individual districts depart widely. In some fields of the northern Appalachians, for example, shipments to the Northwest by way of the Lakes, which must be made during the season of navigation, flatten the curve of demand or even transform the summer slump into a gentle peak. It is in the Middle West that seasonal fluctuations are sharpest. In Illinois, for example, the production in November, even in years of no wage negotiation, is twice as great as in April.

(3) *Daily Fluctuations.*—Even within the week, in times of active demand, there is a distinct rhythm from day to day. Car supply is best on Monday and becomes less and less satisfactory as the week progresses. Production on Saturday, therefore, is likely to be 15 per cent less than on Monday. The daily fluctuations are not the least significant of the irregularities which beset coal-mine operation, for they indicate that even at times of maximum demand the mines do not work full time.

Mine Capacity Inflated Beyond Maximum Week's Output

We have thus noted not only that there are years when production is below that of the maximum year, seasons in the year when it is below that of the maximum season, and weeks in the maximum month when it is below that of the maximum week, but even that there are days within the maximum week when it is below that of the maximum day. In fact, there probably has never been a day in recent years when all the mines and all the miners were working an once, although this perfect adjustment of operation to capacity was nearly reached on the Monday of the last week before the strike of November, 1919. The best working time ever attained in a six-day week was 86.8 per cent of full time (forty-eight hours), in July, 1918.

Early in December, 1920, when production was very heavy, the mines averaged less than 75 per cent of full time. The estimated present capacity of the mines and working force is at least 16,000,000 tons a week, yet the maximum ever produced in a single week was 13,146,000 tons. In other words, our mine capacity and labor force are not only greater than the average need but they are *much greater than the maximum need.* To borrow a phrase from power engineering, our mine plant not only has a bad load factor but it is much larger than is needed to meet the *peak load.*

So great an economic waste challenges attention. Before considering, however, the measures which have been proposed to prevent it, the causes underlying the inflation of

*Published by permission of the director U. S. Geological Survey.
†In charge of coal statistics U. S. Geological Survey.

capacity beyond even maximum requirements must be understood.

The area underlain by coal in the United States is enormous (458,000 square miles), and a great part of the coal-bearing land east of the Rockies had been taken up in small tracts for farming or for other purposes before its value for coal was known. In the East it is becoming increasingly difficult to find a block of unoccupied coal land at once close to transportation facilities and big enough to support a large modern operation, but until recently there was room for all comers. To suppress competition by buying up the reserves has therefore been impossible. In fact, the wide dissemination of ownership in itself has tended to stimulate development, for each possessor of coal-bearing land wishes to realize on his holding.

The coal beds are generally thick, lie nearly flat and are but little faulted. They are readily accessible from slopes, drifts or shallow shafts. Under such conditions, although a large modern mine may involve an investment of capital running into millions, it is possible to open up a small mine at low initial expense. The capital required may often be raised locally, partly because of the "jingle fallacy," which has deceived so many investors in mining enterprises—the fallacy of thinking that 6 per cent on a mining stock is the same as 6 per cent on a mortgage and neglecting to write off the depletion. The nature of the resource has thus encouraged overdevelopment. In addition, transportation—no less important—has been guaranteed the new enterprise. The factor limiting output in a time of high prices usually has been car supply; at such a time anybody with cars to load could sell coal. No matter how overburdened the railroad serving the coal field might be, it has been obliged by law to put in a siding and supply cars for the new operation. The opening of the new mine does, indeed, dilute the car supply of the entire region, but the operator can count on his pro rata share of the cars available.

Incentive Required for New Development

The factors necessary to new development—coal lands, capital and transportation—therefore have been easy to bring together if a sufficient incentive was present. The incentive has been the periodic recurrence of high prices. Coal is a necessary of life for which substitution on a significant scale is impossible. The demand for it, therefore, is highly inelastic. Moreover, when a scarcity exists the bidding for emergency supplies is concentrated on the limited margin of "free coal"—that is, coal not under contract. No one knows just how much of the output is under contract and how much is available for spot purchase, but normally, over the country as a whole, the proportion of spot coal is perhaps 25 per cent. The moment production is interfered with, however, the margin of spot coal shrinks. At the same time the number of persons who want to buy spot coal increases, for many who thought themselves protected by contracts find their contract deliveries curtailed and have to enter the spot market.

The interaction of these two principles—the inelasticity of demand and the contraction of the spot tonnage in times of scarcity—brings it about that even a slight maladjustment between supply and requirements may produce a spectacular rise in the spot price, such, for example, as took place in the summer of 1920. These higher prices in times of active demand apparently were the prime incentive to the new development which has kept the mine capacity so far in excess of possible requirements. Although in comparison with the war years prices before 1916 seem modest indeed, the spot price would rise almost every year to attractive levels during the limited period of brisk demand, and occasionally, as after the anthracite strike of 1902, even contract prices would rise well above the cost of production.

The inflation of mine capacity in times of high prices has been strikingly demonstrated in the last five years. Since 1915, when the spot price began to rise sharply in response to the war-time demand, there has been an extraordinary increase in capacity. In 1915 the annual capacity of the soft-coal mines was about 675,000,000 tons. Today it is certainly 800,000,000 tons, and there is evidence pointing to a figure of 900,000,000 tons. The increase in five years, therefore, has been between 125,000,000 and 225,000,000 tons, or between 19 and 33 per cent. The increase has been particularly marked during the last twelve months. It is not due alone to the opening of new wagon mines or the reopening of old mines long abandoned. It means also a number of large new workings and heavy investments in new development work, new equipment, and new mining machines at properties already established. A significant change has been the increase in the number and output of steam-shovel strip pits. The aggregate effect of these influences on capacity has been great, and the bituminous industry probably was never more heavily overdeveloped than it is today.

Factors That Combine to Inflate Mine Capacity

The lure of occasional high prices was what enticed new companies to enter the field. When they were once in, other forces compelled additional development. The necessity of pushing development in order to be able to meet carrying charges on extensive investments in coal lands was pointed out years ago by Walker. Either for speculative purposes or to anticipate their competitors, many companies have acquired coal lands far in excess of the reserve they needed for their mines. The recurring interest on those investments must be paid in cash, and often the only way to raise the cash is to open more mines and sell more coal. Every new mine means dilution of the demand and of the car supply in times of shortage, and consequently a slight decrease in the working time at the mines the company is already operating. But the company knows that the new mine will be allotted its share of the available cars and that most of the dilution will be passed on to its competitors. Under these conditions the tendency to new development proceeds as inevitably as the physical process of osmosis.

These factors combine to inflate mine capacity. At this point another factor enters in which impels the owner to operate his property as near to its capacity as he can, even when the price is low. As Walker further pointed out, the individual operator cannot curtail his output without increasing his costs, and when the margin of profit is small he dare not increase his costs. The extra amount of coal produced by him has "much less effect in depressing the market price than in diminishing his own costs," and he is therefore compelled to continue to sell coal on the narrowest margin, or perhaps at a loss.

The picture is not complete without a reference to the evil results of overdevelopment and overproduction when the price is deflated. The abounding prosperity enjoyed by the coal industry during the war years and in 1920, when a combination of circumstances kept prices high, is likely to make us forget the conditions of 1914-1915. At that time the market was depressed, and competition forced prices down below the cost of production. Rather than abandon his mine, many an operator sold coal at prices barely above the immediate cost in labor and materials, and below cost when reasonably computed. Coal-mine credit was poor and many companies went into the hands of receivers. There is abundant testimony that most of the time before the war the industry was operating on a very narrow margin of profit. It is such competition as this that makes inevitable the wasteful methods of mining which in many of our fields leave half the coal behind in the ground in a manner that renders its ultimate recovery very unlikely.

Measures Proposed to Overcome Irregular Operation

To eliminate the waste involved in irregular operation is thus an economic problem of real importance. Obviously the magnitude of the loss cannot be accurately determined, but I would hazard the opinion that at present levels of wages and costs it constitutes a tax on the consumer in the neighborhood of a million dollars per working day. The bituminous operators are not unmindful of their responsibility and may take heart from the fact that the anthracite operators have successfully combatted the evil. In the nineties and the first decade of the twentieth century, working time in the anthracite region of Pennsylvania was even less satisfactory than in the bituminous fields. By offering discounts in prices, by constructing storage yards, and by

other devices the anthracite operators have done much to flatten the curve of demand and have raised their working time to a point far above that reached by the bituminous industry.

Various measures designed either to stabilize the demand for bituminous coal or to regulate competition and overdevelopment have been proposed, and will be discussed in turn. I have no new solution to offer and no concern with any of the measures advanced by others beyond a statement of their merits and defects.

The 30-Hour Week.—One of the arguments advanced by the United Mine Workers in favor of the 6-hour day and the 5-day week has been that this arrangement would limit the amount of coal that could be produced in the season of active demand, and so force greater activity in the slack season. Although this might be the immediate result, it is hard to see how the plan would in any way change the demand. Its first effect would be to cause high prices at the mines for coal for winter delivery. It would encourage new development and so would tend to make worse the very condition it is intended to improve.

More Cars.—To the operator marketing his coal in times of high prices nothing is more disappointing than the "car shortage" that is likely to prevail at such times. Dissatisfaction with existing transportation facilities takes two forms: (1) Complaints of unequal distribution of the car supply, due to the practice of assigning cars, the use of private cars, etc., and (2) complaints of general inadequacy of the transportation system, either through lack of sufficient cars, sufficient motive power, yard and track facilities, or any other cause which prevents cars from being placed and removed as fast as the mines are able to load them. With the first of these complaints we need not concern ourselves here. The disagreement over the assigned-car practice is essentially a dispute between the operators and the railroads, or between one operator who benefits by the practice and another who is penalized by it. It has no great influence on the working time of the industry as a whole, except indirectly as it may cause dissatisfaction among the workers in certain mines and thereby may breed strikes.

Peak Demand for Cars Exceeds the Supply

With regard to the second complaint it is clear that at present the peak demand for cars is far in excess of the supply. Whenever the market is active, transportation tends to become the limiting factor in coal-mine operations, which is simply another way of saying that the mines are developed to a capacity far in excess of the car and track capacity. The adequacy of the present railroad equipment available for handling coal will be discussed by Mr. Gutheim. No doubt we need more cars. The point will bear emphasis, however, that merely increasing the transportation facilities will not improve the working time at the mines over an extended period. More transportation will have no effect on the seasonal character of the demand for coal. In fact, unlimited transportation would tend to emphasize the inequality between spring and autumn demand.

Car shortage in time of active buying has been the sole influence depressing the peak of seasonal demand, the only thing that has kept us all from ordering our coal the week before we wanted to burn it. While car shortages have been of frequent occurrence, it is a curious fact that only in a few instances have they curtailed the consumption of coal. In the winter of 1917-18 consumers actually went without coal, the cause unmistakably being the failure of the railroads to provide cars for loading coal at the mines, or still more, to deliver coal already on wheels. But for the most part the effect of car shortages has been to limit the quantity of coal which could be produced in the fall and winter, thereby putting up the price and inducing many consumers to lay in a reserve supply in the spring and summer.

Furthermore, it is no less important to utilize the railroad plant steadily throughout the year than to provide regular employment for the mine plant. The investment in open-top cars alone is at least of the same order of magnitude as the investment in coal mining, and the share of the entire capital invested in the railroads of the country that is applied to hauling coal probably is greater than the entire capital invested in mining both anthracite and bituminous coal. To ask the railroads to spend money enough to give the mines a 100-per cent car supply in times of peak demand is to ask them to do the very thing the operators themselves are trying to avoid.

The statement that a great increase in the number of cars and in transportation facilities will be of no benefit to the industry applies only to the industry as a whole; it may not apply in a particular locality. New cars under private operation of the railroads will, of course, mean new cars on particular lines, not on the railroad systems considered as a whole. New cars on the Chesapeake & Ohio R.R. may largely benefit the operators along that road, making it possible for them to participate in larger degree in supplying the country's demand for coal, but what the Chesapeake & Ohio operators gain other operators on other railroads lose. Let no one suppose that by indiscriminately increasing the number of cars and the carrying capacity of the railroads, the problem of irregular operation in the coal industry will be solved.

Dovetailing Work with Other Seasonal Industries.—It is frequently urged that mine workers may find employment in other occupations during periods of idleness, and in fact there is a slight seasonal migration of men to and from the mines. The evidence submitted to the Bituminous Coal Commission on this point, however, failed to indicate that the opportunities for such transfer of labor from mine to farm or factory are extensive. The most promising field for the practice would appear to be the Middle West, where many of the mines are near farming regions. If the mines were closed during the entire summer, the miners might indeed seek other employment, but instead they continue to work two or three days a week.

W. H. GROVERMAN
Recently Resigned as Executive Secretary of the Northwest Coal Dock Operators Association

Mining on an extensive scale, at least, is of necessity a continuous operation. Unless roof and bottom are unusually stable any long interruption to operation invites disaster. Furthermore, in the Appalachian region, where the greater part of the coal is produced, most of the mining towns are far from other industries. The typical mining settlement of West Virginia is in a narrow mountain valley, where space for even gardening around the houses of the employees is scanty. The proposal is suggestive enough to deserve careful study, but it appears to offer no adequate solution for intermittency of employment at the mines.

Failure to Readjust Central Pennsylvania Wages Halts Improvements and New Work; Defers Trade Revival

AT A BANQUET held by the Patton Chamber of Commerce, Thursday evening, June 23, T. H. Watkins, president of the Pennsylvania Coal & Coke Corporation, the guest of honor, delivered an address concerning the welfare and prosperity of central Pennsylvania. The Pennsylvania Coal & Coke Corporation, which Mr. Watkins heads, employs approximately 4,500 mine workers, and his remarks therefore have particular significance on matters affecting the welfare of mining communities.

Mr. Watkins said in part:

"What the people of this country are looking for is cheaper coal. The unions are not showing them the way. They do not want to carry any more government charges in order to favor 600,000 men as against the millions of workers on the farms and in the factories.

"There is no need for the 'snowbird' operator, who appears only in time of stress to make matters worse for all.

"Is it realized what a continuation of the present condition means to this district? I believe not. What happens is this: The buyer takes his coal from the district that has faced the facts and made the readjustment. The stand-pat district shuts down. Thousands of men lie idle. Improvements and new works cease. All new work will be stopped short, all attempts to improve living and housing conditions or even to keep up ordinary repairs will be prevented by inability to make both ends meet. The hope of better markets and higher prices in the fall is gone. Instead of weeks it now looks like months and years.

"The miner is entitled to a fair and liberal wage because of the hazardous nature of his work and the intermittency of demand; the operator to a fair return on his investment. Any attempt to get cheaper coal through ignoring these facts or by government ownership or regulations means greater costs, less efficiency, loss of individual initiative, disaster and increased taxation which the public will pay.

Collective Bargaining and Joint Agreements

"The theory or principle of collective bargaining began with the development of machinery, the growth of corporations and the gradual increase of large units employing thousands of men. It became necessary for the workers to organize in order to protect their claims against injustice or oppression. Out of this condition grew a system of joint agreements made by representatives of each group covering wages and working conditions. Twenty-one years ago wages were terribly low, living conditions were bad. Operators faced bankruptcy. Those conditions must never return.

"The employer has learned that 'the laborer is worthy of his hire' and the employer more than ever before understands his responsibility to society. The prosperity and contentment of the workers are a part of his problems. The necessity for the professional labor leader is passed. Men like John Mitchell, W. B. Wilson and Patrick Gilday did good work. The Brophys and Alexander Howats would destroy the structure they built on the foundation of recognition of each other's rights in collective bargaining and the joint obligations owed to the public. The main object of the professional labor leader today is to keep the employer and the employee from conferring together.

"This district, through the dictation of the international organization with headquarters in Indianapolis, has been subordinated and its officers sustained and encouraged in refusing to meet with the operators' association of the district on matters of policy for the purpose of discussing the basis of a scale until what is known as the Central Competitive Field scale committees of operators and miners had come to an agreement, the Central Competitive Field being Ohio, Indiana, Illinois and western Pennsylvania.

"There probably always will be something to discuss, provided we continue to have conferences. I say provided because some of us think that the principle of collective bargaining has been thrown into the discard by the officers of District No. 2 in refusing a request of the Central Coal Association for a joint conference, which was asked for the purpose of discussing the grave situation existing and concerning the operators and miners, as well as the people, of this district.

"It could very well have been discussed at that meeting whether or not it was best for all interests to meet the situation by a wage readjustment and it probably would have been, but first and foremost was the idea that our interests were more or less mutual and that when any grave emergency or change in conditions occurred during a scale agreement it was advisable to get together and have a frank interchange of views. Such conferences have been previously held.

"I confess my patience is about exhausted—not about being fair, but in getting from the other side the same spirit of co-operation and understanding. I fear we have come to the parting of the ways on collective bargaining as the district officers of the United Mine Workers interpret it. I shall not ask for another (conference), or at least I will not until conditions are materially altered.

"Mr. Brophy and his associate officers, I understand, are sponsors for what is called the 'miners' program.' Mr. Brophy said in the pamphlet that after reading 'you will run short of ideas.' I still have an idea left. When that program is read by sane men and women there are millions who will have an idea left, and that is that these officers had better join Big Bill Haywood in Russia. That is where they are trying nationalization on a big scale.

"Miners' Program" Would Eliminate Operator

"This program proposes to do away with the operator. So, these officers do not choose to meet us to discuss these matters. They want the 6-hour day 5 days a week. They do not mention the Cleveland convention demand for a 60-per cent increase. It would cost them nothing to speak of, only to at once completely empty the pay envelope throughout the district dealing with the union.

It is almost impossible to take those leaders seriously, but we must. They represent an organization that in this district collects, through the check-off system and with the assistance of the operators, approximately $1,500,000 annually. Of course if they put the operators out of business there will be no more check-off from them. It may be that there will not be any more check-off in any case. Don't misunderstand me. I am in sympathy with the miners.

"What I want to make clear is that we must all understand our duty to society and do our part in getting out of the troubles the Kaiser brought on the world. We, the union operators, are paying a scale that results on full time operation in a difference of about 78c. per ton, and on short time more than $1 per ton higher labor costs than our competitors. We can buy coal from 50c. to $1 a ton less than we can mine it. Our company has lost customers we have had for years; some for twenty years. The important part is not that we have lost it for the balance of this year but that we lose that trade for another twelve months at least after April 1, next.

"It is always the union and the union operator who suffer. This is because the professional labor leader, through lack of courage, ability or intelligence, fails to lead his followers through a grave crisis such as this industry and this district faces today.

"I believe the only solution is an immediate readjustment of our present scale by mutual agreement with our miners. Otherwise I see no work in the district. Miners will have to go to other mines at the lower wage rates or seek other employment or go without employment. I do not want to see the wage scale as low as before the war and hope it will never be, but I do sincerely believe the 1917 scale is fair as compared with other rates of labor, the nature of the work and the present cost of living."

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

FOR THE most part production and trade show continued hesitation, according to the monthly survey of business conditions by the Guaranty Trust Co. of New York. "In some localities, however," the survey continues, "the volume of retail transactions, allowance being made for the lower prices, equals or exceeds that of the corresponding period last year. Appreciable improvement is found also in some lines of manufacturing. Those industries which were among the first to undergo readjustment are giving evidence of increased activity.

"Nevertheless, it has become more clearly evident that the spurt of activity in some lines of production in the Spring, was, as pointed out in the April number of the survey, merely of a seasonal character. The expectation of an early upturn in business based upon the belief that the increased production in these industries would be sustained was not well founded. It is doubtless a good omen that the scope of the necessary industrial readjustment is now better understood.

"Improvement in underlying conditions upon which a sustained revival of business must be based, however, continues. Wages are being further adjusted, price declines are less abrupt, and the bases of credit are being further strengthened through reductions in so-called frozen loans and the strengthening of bank reserves. Accumulated stocks of goods in many lines are being reduced, affording the bases for larger production in the future.

"Unemployment in general continued to increase in May, according to statistics compiled by the Department of Labor. The net decrease in the number of employees of representative firms last month, as compared with April, was approximately one-half of 1 per cent. Preliminary reports for the manufacturing industries of New York State indicate a reduction of about 2 per cent in employment in May, as compared with April. Strikes are responsible in part for the increase in unemployment."

Hosiery Mills Reported Busy

Wisconsin hosiery manufacturers are late this year in getting out their fall and winter lines. They state they will hold down to fewer lines, mostly wool and silk. The Phoenix, Milwaukee, Holeproof, Luxite and other plants in Milwaukee are operating at full capacity, with a large proportion of night work, and report themselves unable to catch up with orders.

Cambria Rail Mill Working Again

Operations in the Cambria Steel Co. plant of the Midvale Steel & Ordnance Co., at Johnstown, Pa., showed an improvement last week over the past several months. While no improvement is noticeable in the number and quantity of orders being continues to enjoy approximately received, it was stated, the company the same percentage of orders as has been the rule since the beginning of the year. The rail mill, which had been shut down for about two months, has resumed operations. One of the structural mills and the plate mills also were operating. In addition, several of the bar mills continued to operate on about the same basis as they have been doing for the last few months.

California Lumber Mills Closed

Slow market conditions are blamed for the closing down of two of the largest lumber mills in Fresno (Cal.) district. The plants are those of the Prescott Brick & Lumber Co. and the Routt Lumber Co. The owners stated it was uncertain when they will resume operations, though it was thought that it might be several months, or when a more active market permits.

Rubber Footwear Plant to Reopen

The Millville, Mass., plant of the Woonsocket Rubber Co., footwear division of the United States Rubber Co., will reopen July 11 after a shutdown of six months, it was announced last week. About 400 of the 700 employees will be re-employed.

A night shift of 300 men began work at Fisk Rubber Co. plant at Chicopee Falls, Mass., Monday, June 27. The company has increased its day force 250 or more in the last few weeks and now has more than 2,000 working.

Solvay Plant Shuts Down

Operators of the Solvay Process Co. in Detroit closed indefinitely on July 1, according to an announcement made by E. L. Pierce, president of the corporation. More than 1,600 employees are affected. The announcement is in line with the economy program of the company. Coincident with the statement on the Detroit plans is a report that a 15 per cent reduction in the force at the Syracuse, N. Y., plant will be made. This is in addition to the already announced cuts.

Goodyear Cotton Mills Resume

The plant of the Goodyear Cotton Mills, Inc., planned to reopen Tuesday, July 5, with a force of about 150 persons and a schedule of forty hours a week, according to an announcement last week. The mills closed down ten months ago, when between 600 and 700 were employed.

Lehigh Valley Frog Shop Opens

Announcement was made June 28 by the Lehigh Valley Railroad that its frog shop at Weatherly, near Hazleton, Pa., would resume operations July 5 after having been idle since April 8. The plant turns out frogs for the entire system.

String of Cotton Mills for Texas

The Liberty Cotton Mills Co., of Dallas, Texas, is planning to establish a string of cotton mills in Texas, and has chosen Cameron as the location for one of its plants.

Paper Mill Strike Ended

Paper mill employees, who have been on strike since May 1, agreed to arbitration following a conference with their employers in New York City, Wednesday, June 29. All the mills in the United States and Canada, with the exception of the International Paper Co., were closed by the strike. The mills will be operating again by July 5, according to John P. Burke, president of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers.

Luce Bill Would Require Anthracite Producers to Furnish Guarantee of Quality of Coal

REPRESENTATIVE ROBERT LUCE, of Massachusetts, introduced in the House of Representatives June 27 a bill intended to protect householders against inferior quality in purchasing anthracite coal. The bill prescribes standards of purity for the various sizes of domestic coal and requires the operator to furnish with each car of coal a certificate that the coal is within the prescribed standard.

When the evil in present conditions came to the notice of Eugene C. Hultman, Fuel Director of Massachusetts, he sketched a bill that might serve as a basis for study of the problem. This served, with the help of criticism from government experts, as the basis for Mr. Luce's bill.

"The blame for working off on the householder hard coal containing an excessive amount of slate, bone and other impurities does not fall on the half-dozen big companies that in ordinary times supply nearly all the market." according to Mr. Luce. "Trouble comes in abnormal times when for one reason or another there is occasion to resort to the supplies furnished by what are known as 'the independents,' owning a considerable number of small mines that ordinarily are not worked at full capacity, if at all. Then it is that many an unlucky householder finds his coal bin loaded up with fireless coal, producing clinkers galore and failing to heat his house. He has just as much right to be indignant as the man to whom a grocer delivers adulterated food.

"The difficulty in meeting the situation comes from the fact that the evil is only occasional. It would be a pity to apply any corrective which would entail a continuous and heavy expense running through seasons when there is little, if any, poor coal on the market. All the costs of inspection and analysis must in the end be borne by the consumer, showing up in the increased price of coal to everybody. The remedy, therefore, should be in the nature of a deterrent, operating when needed. I have found this in an inexpensive system that will hold a constant menace over the head of the coal operator.

Certificate of Quality Must Accompany Coal

"The bill sets forth standards of purity for the various sizes of domestic coal. The operator is to attach to the bill of lading that accompanies every coal car a certificate that the coal therein is within the standard of purity. Adequate penalty is provided for a false statement in this certificate. The inspectors of the Bureau of Mines may take samples from any shipment, analyze them, and report fraud to the U. S. District Attorney, who must then prosecute. A shipper will never know when his output is to be examined, and it is believed he will not often take the chance of trouble.

"If the operator prefers, he may file with the Bureau of Mines a statement of the standard of quality he is prepared to maintain, and then the certificate shall vouch that the coal is within this standard. One purpose of this is to let an inferior mine operate at times when the excess of demand over supply is such that the public may prefer to have poor coal rather than none at all, yet ought to be able to know what it is buying.

"Also, the bill permits a consumer to make a special contract, regardless of quality, save that the quality must be specified in the contract. The practical result contemplated in this is to let low grades of coal be used near the mines, under special conditions, or even at a distance if the state of the market should warrant.

"For the most part it [the bill] can affect the coal dealer only as it requires him to keep for a year the certificate that came with the coal and to show it to the buyer on request."

Mr. Luce, who is a consistent opponent of government interference with business, points out that this is in no way an attempt to obstruct the operation of economic laws, but goes no farther than punishment of the man who deceives, the man who takes money under false pretenses. He is of the belief that on the whole the standards of business morality are as high in the coal trade as in any other, and his purpose is not only to protect the pockets of the public but also to protect the reputation of the many honorable men in the trade.

He also is of the opinion that in such matters control should be exercised as far as possible by the states rather than by the nation.

I. C. C. Urges Large Coal Consumers to Build Up Reserves During Summer

THE Interstate Commerce Commission issued an appeal June 27 to railroads, public utilities and other large consumers of coal to build fuel reserves during the summer in order that the railroads may be utilized in coal transportation when shipping activities are lessened and rail facilities are less congested.

While "it is not practicable to store a full winter's supply," the commission said, "if a reasonable reserve is now accumulated it will help out greatly when and if a period of so-called car shortage occurs later which is in any respect comparable with that experienced last year."

Secretary of Commerce Hoover gave full support to the recommendation of the commission. Present bituminous coal prices at the mines, he said, are not unreasonably high and the large coal users of the country should contract fuel stocks during the summer in anticipation of winter needs.

In its statement, addressed to T. De Witt Cuyler, chairman of the Association of Railway Executives, the commission declared:

"As you doubtless know, the production and transportation of bituminous coal has been disappointingly small this summer and is now at a disappointingly low stage. The commission requests that I write suggesting the importance, in the interest of the conditions which may exist during the late summer and fall, of having the railroads and other large users of coal acquire now, while conditions are easy, a reasonably liberal reserve supply.

"We suggest that this matter be brought to the attention of the members of your association, together with a recommendation that in so far as it is practicable they act thereon.

"We realize, of course, that it is not practicable to store a full winter's supply, but if a reasonable reserve is now accumulated it will help out greatly when and if a period of so-called car shortage occurs later which is in any respects comparable with that which we experienced last year.

"We are taking this matter up with associations of public utilities, etc., that use large quantities of coal and that need a dependable supply."

Will Not Strike but Negotiate for Service

MINERS in Indiana believe the strike the universal panacea. The time is coming when they will strike if the farmer does not deliver the milk or if the rain does not fall to moisten the ground. However, much against the good will of many of the Indiana miners, it has been decided that at present no strike will be called to compel the Southeastern Railroad to provide enough coaches in the morning for their accommodation. After a meeting at which the fourteen or more mines in the field were represented three men were chosen who were instructed to meet jointly with the train committee and take up consideration of the train service with the Indiana Public Utilities Commission. Then if the commission does not do what it is told, the mine workers will strike.

Sixty-four Bids Submitted on 273,776 Tons of Coal for Brooklyn Army Depot: Quotations Vary Widely

OPENING of bids recently for more than a quarter of a million tons of coal and coke by the Quartermaster's Department of the U. S. Army at the South Brooklyn supply base depot aroused considerable interest in the industry because of prices submitted. The amounts upon which bids was asked were 145,346 tons of anthracite, 126,555 tons of bituminous and 1,875 tons of coke. Three separate days were set apart for opening the bids, the major portion being received and opened on June 1. Other openings took place on June 6 and 7.

There were 495 proposals sent out and sixty-four bids were received from as many operators and dealers. The points of delivery extended from Virginia to Maine and as far inland as Pittsburgh. Deliveries are to be made, subject to the call of the commanding officer, over the period July 1, 1921, to June 30, 1922. It is the intention, however, to call for as much of the coal as possible during July and August. All contracts are to carry a clause in regard to increases or decreases of railroad rates or miners' wages, the prices to be adjusted in accordance with any increases or decreases after the contract is awarded.

The largest individual tonnage asked for called for 27,000 tons of bituminous Pool 9 coal for the Quartermaster's depot at South Brooklyn. The bids received were: Majestic Coal Co., $3.72; Emmons Coal Mining Co., $3.63, Pool 9; $3.53, $3.43, $3.18 and $2.98 other mines; W. B. W. Haff, $7.35 and $6.56 f.o.b. destination; Haddock Fuel Co., $7.53 f.o.b. destination.

Bidder Makes Price Subject to 10c. Increase July 1

The bids received for anthracite coal, considerable of which is to be delivered at destination, ranged from $8.02 to $8.95 f.o.b. mine for broken and egg; $7.60 to $9.15 for stove; $7.70 to $8.84 for chestnut and from $6.01 to $6.75 for pea coal. One of the bidders submitted two prices, the lower one subject to 10c. per ton increase after July 1.

For delivering 1,991 tons of buckwheat No. 1 to the laundry, port of embarkation, Hoboken, N. J., Burns Bros. bid $8.85 per ton and Jagel & Bellis, $7.80.

Other bids received included the following:

Air Service Depot, Long Island City; 3,000 tons bituminous—Ainesworth Coal & Iron Co., $3.91 f.o.b. mine; W. R. Blight, $2.71; Commercial Coal Co., $3.25; Dexter, Carpenter, Inc., $4, Pool 9, $3.75, Pool 10; Emmons Coal Mining Co., $2.98 and $3.13, individual mine; Garfield & Proctor, $3.85; Hall Bros. & Co., $3.35; Iron Trade Products Co., $2.75; Frank B. Jones, $3.98; Monongah Fuel Co., $2.65; Morgantown Coal Co., $2.78; Peerless Coal Co., $2.90; Norris Phelps, $3.60; Stern Coal Co., $2.75; Weston Dodson & Co., $3.75, Pool 10; and N. B. Wittman & Co., $3.45, $2.95 and $2.90, separate mines.

Pittsburgh Quartermaster Intermediate Depot, Pittsburgh, Pa.; 268 tons chestnut and 484 tons bituminous.—Bituminous—W. M. Hollenback, $2.25 f.o.b. mine; Iron Trade Products Co., $3; Moore & Co., $3.50 and $2.75; Morgantown Coal Co., $2.78, and Pittsburgh & Clarion Coal Co., $3.60. Anthracite—Weston Dodson & Co., $11.81 at destination, or $8.46 f.o.b. mine.

Fort Monroe, Va.; 1,000 tons each of broken and egg.—Smokeless Fuel Co. offered 1,000 tons of broken briquets at $5.60; Weston Dodson & Co., broken, $13.61 at destination, or $8.46 at mine; egg, $13.71 at destination, or $8.02 at mine.

Camp Eustis, Va.; 2,500 tons bituminous and 300 tons 72-hr. coke.—Bituminous—H. P. Brydon & Bro., $2.75; Emmons Coal Mining Co., $3.25; W. M. Hollenback, $2.95; Lake & Export Coal Corporation, $2.85; Moore & Co., $3.50 and $2.75. Coke—Cauley Mountain Coal Co., $8.50, and Smokeless Fuel Co., $5.60 for briquets.

Aberdeen Proving Grounds, Aberdeen, Md.; 2,500 tons egg.—Weston Dodson & Co., $11.37 at destination, $8.02 f.o.b. mine. 12,420 tons bituminous—Ainesworth Coal & Iron Co., $3.91; H. P. Brydon & Bro., $2.50; Canadian Coal Supply Co., $3.85 and $3; Davis Coal & Coke Co., $3.75; Emmons Coal Mining Co., $2.98 and $3.13; Hollenback, $2.73; Iron Trade Products Co., $2.10 and $3; F. B. Jones, $3.98; Lynch & Read, $3.15; Morgantown Coal Co., $2.78; Moore & Co., $3.50; Peerless Coal Co., $2.75; Valley Camp Coal Co., $2.75; George E. Warren, $3.15; Wittman & Co., $2.95 and $3.45; Dexter & Carpenter, $4.25 and $3.75.

Middletown Air Intermediate Depot, Middletown, Pa.; 470 tons bituminous.—Ainesworth Coal & Iron Co., $3.91; H. P. Brydon & Bro., $2.75; Commercial Coal Mining Co., $3.25; Emmons Coal Mining Co., $3.08; Hall Bros. & Co., $3.35; George D. Harris & Co., $2.95; Henry T. Hidden, $2.75 and $3; Hollenback, $2.10; F. B. Jones, $3.98; Moore & Co., $3.50 and $2.75; Morgantown Coal Co., $2.78; Peerless Coal Co., $2.90; Pittsburgh & Clarion Coal Co., $3.60; Weston Dodson & Co., $6.59 destination, or $4.05 mine; N. B. Wittman & Co., $3.45 and $2.95.

Medical Field Service School, Carlisle Barracks, Pa.; 5,500 tons bituminous.—Ainesworth Coal & Iron Co., $3.91; H. P. Brydon & Bro., $2.75; Commercial Coal Mining Co., $3.25; Victor Cushman & Sons, $6.96 f.o.b. destination, or $4.25 mine; Dexter & Carpenter, $3.75 and $4; Emmons Coal Mining Co., $2.98 or $3.13; Harris & Co., $3.05; Henry T. Hidden, $2.85; Iron Trade Products Co., $2.10 or $3; Lynch & Read, $3.15; Moore & Co., $2.50 or $2.75; Morgantown Coal Co., $2.78; Peerless Coal Co., $2.90; Weston Dodson & Co., $6.74 or $5.95; Wittman & Co., $3.45 or $2.90.

Curtis Bay Ordnance Reserve Depot, Curtis Bay, Md.: 2,250 tons bituminous.—Ainesworth Coal & Iron Co., $3.91 or $2.50; Dexter & Carpenter, $3.10 and $2.85; Emmons Coal Mining Co., $2.98 and $3; Crescent Fuel Co., $2.60; Davis Coal & Coke Co., $3.75; Hall Bros. & Co., $3.30; Harris & Co., $2.35; Iron Trade Products Co., $2.10 or $2; Jenkins & McCall Coal Co., $3.35; F. B. Jones, $3.98; Monongah Fuel Co., $2.78; Peerless Coal Co., $2.40 and $2.75; Wittman & Co., $2.90.

Penniman Ordnance Reserve Depot, Penniman, Va.; 1,100 tons bituminous.—Ainesworth Coal & Iron Co., $2.50; Canadian Supply Co., $2.90 and $3.75; Emmons Coal Mining Co., $3.25.

Watervliet Arsenal, N. Y.; 1,700 tons bituminous run-of-mine.—Dexter & Carpenter, $3, Pool 9; $2.85, Pool 10; W. H. Bradford, $2.90, Pool 10; Lincoln Gas Coal Co., $3.48; Peerless Coal Co., $2.75, Pool 11; W. M. Hollenback, $2.75, Pool 10; F. B. Jones, $3.74, Pool 4; Emmons Coal Mining Co., $3.13, Pool 10, and $3.20, Pool 9; Wright Gibson, $3.25, Pool 9; Morgantown Coal Co., $2.73; Canadian Supply Co., $3.60; Cherry Trading Co., $3; N. B. Wittman & Co., $3.45, Pool 10; $2.95, Pool 11; H. P. Brydon & Bro., $2.75; W. H. Blight, $2.87.

Picatinny Arsenal, N. J.; 10,600 tons bituminous run-of-mine.—Dexter & Carpenter, $4, Pool 9; $3.75, Pool 10; Majestic Coal Co., $2.97, Pool 15; $3.10, Pool 10; W. H. Bradford, $3.65, Pool 9; Davis Coal & Coke Co., $3.75, Pool 9; Lincoln Gas Coal Co., $3.75; Peerless Coal Co., $3.30; W. M. Hollenback, $3.21; F. B. Jones, $3.74; Emmons Coal Mining Co., $3.13, $3.53, $3.63, choice of mine; Wright Gibson, $3.40; Morgantown Coal Co., $2.73; Jenkins & McCall Coal Co., $3.65; Alden Coal Mining Co., $3.48; Garfield & Proctor, $3.85; Canadian Supply Co., $4; N. B. Wittman & Co., $2.90, $3.45 and $2.95, choice of mine; H. P. Brydon & Bro., $2.75; W. H. Blight, $2.87; Commercial Coal Mining Co., $3.75, and Crescent Fuel Co., $2.60.

Frankford Arsenal, Pa.: 3,750 tons bituminous.—Dexter & Carpenter, $3.15, Pool 9; $3, Pool 10; W. H. Bradford, $2.90; Peerless Coal Co., $2.80; W. M. Hollenback, $2.97; Frank B. Jones, $3.74; A. K. Althouse & Co., $3.24; Emmons Coal Mining Co., $3.38 and $3.43; Wright Gibson, $3.25; Jenkins & McCall Coal Co., $3.65; Canadian Coal Supply Co., $3.75; Wittman & Co., $3.45 and $2.95; H. P. Brydon & Bro., $2.75; Commercial Coal Mining Co., $3.75.

Camp Dix, N. J.	Stove 900 Tons	Chestnut 1,500 Tons	Bituminous Smithing 200 Tons	Bituminous 2½ Lump 24,000 Tons
Haddock Fuel Co.	. .	$8 48	$3 50	
Weston Dodson & Co.	$8 46	8 46	5 00	$4 50
W. M. Hollenback	. .		3 35	3 65
Hall Bros. & Co.	. .		3 50	. . . .
Dexter & Carpenter, Inc.	. .		4 00	
Emmons Coal Mining Co.	. .	. .	. .	3 43 3 43 3 08
Valley Camp Coal Co.	. .	.	.	2 95 3 60
N. B. Wittman & Co.	.	.	3 80	3 35 2 85

DR. GEORGE OTIS SMITH, director of the U. S. Geological Survey, will sail July 9 for London to attend a special meeting on July 20 of the organization committee of the International Geological Congress. The other delegate from this hemisphere is R. W. Brock, of the University of British Columbia. Prof. Brock is the chairman of the organization committee. The last session of the Geological Congress was held in Canada in 1913. It is thought probable that the next meeting will be in Belgium in 1922.

Recommittal Presages Death of Coal Bills; Frelinghuysen Says He Has Just Begun to Fight

By Paul Wooton
Washington Correspondent

THE Frelinghuysen coal bills are dead. This seems to be the opinion of practically everyone except Senator Frelinghuysen. The New Jersey Senator told the correspondent of *Coal Age*, after the Senate had voted to recommit his seasonal rate bill, that he has just begun to fight. "The coal bills have been delayed, not defeated," said Senator Frelinghuysen. "By misrepresenting things generally and particularly by claiming that the bills are regulatory, when they are not, the coal lobby scored a temporary advantage. As a matter of fact, the coal men have maneuvered themselves into an indefensible position. When the consumers of coal awake to a full realization of what has happened, it will be a serious thing for the interests responsible for the delay to this legislation. I hope it will not take another coal famine to overcome the indifference with which Congress is treating this legislation. The coal stabilization bill still is on the calendar. I shall call it up at the first favorable opportunity."

Discussion of the seasonal rate bill was brought to an abrupt termination by a motion by Senator Borah, of Idaho, that the bill be recommitted. This method frequently is used to kill legislation, particularly when no instructions are given as to amendments. The vote on the motion to recommit was 38 to 26. Most of the members of the Committee on Interstate Commerce voted against the motion to recommit in deference to the committee's action in reporting out the bill. The vote developed a number of surprises. The first surprise was that Senator Borah—usually rampant in his attitude against the so-called vested interests—made such a motion. Senator Lodge and Senator Ladd voted together in favor of the motion to recommit. Senator Capper, of Kansas, who was thought to be one of the strong supporters of the measure, voted for the motion. The Senators who voted with Senator Frelinghuysen, and who therefore may be judged as being particularly in favor of some federal supervision over coal, were Cummins, Iowa; Dillingham, Vermont; Hale, Maine; Hitchcock, Nebraska; Kellogg, Minnesota; Kenyon, Iowa; King, Utah; La Follette, Wisconsin; McCumber, North Dakota; McKinley, Illinois; McNary, Oregon; Myers, Montana; Nelson, Minnesota; Nicholson, Colorado; Norris, Nebraska; Oddie, Nevada; Phipps, Colorado; Robinson, Arkansas; Shields, Tennessee; Shortridge, California; Stanley, Kentucky; Townsend, Michigan; Trammell, Florida; Walsh, Massachusetts, and Walsh, Montana.

Stabilization Bill Would Meet Like Fate Now

It is evident that if Senator Frelinghuysen were to call up the stabilization bill at this time, it would be recommitted in similar fashion without delay.

The National Coal Association takes exception to Senator Frelinghuysen's statement that it assisted in the defeat of the seasonal rate bill. J. D. A. Morrow, in charge of the association's Washington office, declared that the association is absolutely neutral with regard to seasonal rates. Some of its members are strongly in favor of such legislation.

Mr. Morrow expressed the opinion that the defeat of the seasonal rate bill should remove the uncertainty that evidently has been influencing many consumers to delay their purchases of coal. Now that it is known definitely that no such reductions are to be made in freight rates buying of coal should be begun so that the mines can operate on a scale necessary to meet the winter's requirements. Mr. Morrow called attention to the recent warning issued by the Interstate Commerce Commission, which he interprets as being their notice to consumers that there will be no priority orders covering fuel transportation next winter. If New England and the Northwest do not buy coal now, when empty coal cars are available by the mile and mine workers are suffering from lack of employment, they should not expect special favors later on to make it possible for them to secure their fuel requirements.

In opening the debate, Tuesday, June 28, on the seasonal coal freight bill Senator Frelinghuysen advocated pitiless publicity so that the coal-buying and coal-consuming public would know exactly to what length coal operators may go in maintaining present high prices. While previously feeling that the real profiteers were the middlemen and perhaps retailers, rather than operators, Senator Frelinghuysen said that in view of opposition of operators to this legislation, he was persuaded they did not desire government co-operation and did not want to be interfered with, no matter if coal prices should further advance.

Attacking the National Coal Association for opposing the legislation, the Senator said that it did not speak for the entire bituminous industry. He charged that the spasmodic concern of the association for the welfare of the general industry in times of pending legislation has been conspicuous by its absence in times of coal profiteering.

George H. Cushing Gets a Broadside

Attacking George H. Cushing, of the Wholesale Coal Association, he said, "Mr. Cushing was violently absurd and so absurdly violent and his language was so rampant and rabid as to be deserving of only meager attention."

Senator McKellar of Tennessee said it was outrageous for the coal industry to have a lobby in Washington and produced correspondence between himself and Mr. Cushing in which he refused to receive registered letters of protest against the coal bill.

During the debate Wednesday afternoon Senator Frelinghuysen said the propaganda against all coal legislation was conducted by a remarkably well organized lobby of coal operators and was so powerful that the bill would be defeated. He charged that the Stanley amendment forbidding increased rates in winter had mutilated the bill, making it ineffective and useless. He then proceeded to deliver his "swan song" on the coal bill.

The people would not stand for some of the things that have been going on in the coal business, Senator Kenyon said, and they would not stand for seven or eight corporations in Pennsylvania controlling anthracite and fixing the price. He predicted that anthracite would be regulated for the benefit of the people. He charged that coal operators had done as much as anything else to make bolshevists. He did not think the Frelinghuysen bill would give relief, though something stronger might.

Senator Stanley resented the inference of Mr. Frelinghuysen that as a representative of a coal state, he had mutilated the coal bill. He said Mr. Frelinghuysen's charge would be offensive if it was not amusing. Mr. Stanley said he had sympathized and co-operated with Mr. Frelinghuysen in the hope of reducing the price of fuel to the consumer and stabilizing the industry, but he opposed legislation which was a skillful manipulation of freight rates for the benefit of the railroads.

A Reverberation of the Coal Men's "Literary Fusillade"?

LIGHTNING struck a barn yesterday on Senator Joseph S. Frelinghuysen's farm near Somerville, N. J., where President Harding will spend the Fourth. Three men and sixty cows were knocked down by the shock, but no one was hurt and the damage was slight. — *News item, New York Herald, June 26, 1921.*

British Miners, Accepting Mine Owners' Terms, Return to Work

PREMIER LLOYD GEORGE rightly adjudged the vote of the British mine workers for a continuance of their strike to be a bluff made in the expectation that the government would modify its terms if it found the mine workers were in utter opposition to them. He called their bluff by refusing to give them the £10,000,000 subsidy and it brought them speedily to a point where they were willing to make terms at the figure once offered. The mine leaders acquiesced in the settlement providing the offer of a subsidy was restored; Lloyd George made the concession requested; a vote was taken in the several districts which was overwhelmingly for a return, and the mine workers are now back at their places.

The terms are as follows: Government aid shall be extended to the miners for a temporary period of three months. The permanent arrangement (or new wage scale) shall be put into effect on Oct. 1, 1921, and shall last till December, 1922. Three months' notice shall be given of any proposed change in the arrangements. The guaranteed wage shall be 20 per cent above the 1914 standard. The proportion of labor profits to capital profits after fixed charges have been deducted—the profit-sharing, in short—shall be about 5 to 1 (83 per cent to 17 per cent). The reduction in wages will not exceed 2s. (48.6c.) per shift in July, a half crown (60.75c.) per shift in August and 3s. (72.9c.) per shift in September. A national wage board will be created, consisting of equal numbers of representatives of the employers and workmen.

Slacking by the miners has been deplorably evident. In 1920 there were 1,248,224 men employed, yet they produced only 257,043,450 short tons, or 206 short tons per man. The tonnage per man in the bituminous mines of the United States in 1918 reached 942 short tons and in the anthracite mines 672 short tons. "Less coal was raised [in Great Britain] in 1920," says the *Daily Telegraph*, "than in any other year except 1918, and in that year 239,000 fewer persons were employed." The wages of the British workingmen would be greatly increased if they could be induced to work steadily and energetically.

Work was resumed on a small scale on the Fourth of July. Unfortunately, many of the mines are in bad condition and that will keep thousands of men idle for some time. They will not be able to dig coal till the mines are put in working order. Some may be closed down permanently. Normal service is being restored on the railroads and all restrictions on the exportation of coal and coke have been removed by the Board of Trade. It is estimated that only about 60 per cent of the men will be able to work during the present month.

Next Winter's Coal

(Editorial, New York Times, June 30, 1921)

SECRETARY HOOVER and Interstate Commissioner Clark warn consumers of coal to stock up while they can, or carry their own risks of shortage and higher costs. That is cold comfort for hot days, but it is the situation as it stands, and long has been evident. Coal could have been bought cheaper a month ago, and will probably cost a little more in succeeding months. There is a chance that it may cost a great deal more if the official advice is rejected, and there should be a buyers' panic during a winter storm and interruption of supplies. The coal companies cannot mine coal for storage. It ties up wage money too fast, and the storage problem which is small for individual consumers is unmanageable on a great scale.

It is a curious situation. Anthracite has been produced more abundantly than last year, and some small operators are selling above the official price of the large producers. Bituminous has been underproduced compared with recent years, and buyers are indifferent. They see that there are plenty of cars and plenty of coal, in fact too much coal for profit by high-cost producers, who are idle. They fail to consider that, nevertheless, a season's supply cannot be mined and carried in a month or two, and that belated buyers will have to pay what the market asks and this year will get no sympathy. They are gambling on the chance that if they make enough trouble Government intervention in some way will lower costs and prices. Experience has shown that Government intervention is of doubtful benefit, and if beneficial is too slow to cheapen this year's supply.

Pennsylvania Coal Co. Strike Ends

AFTER a week's strike, having no clearly defined cause other than, possibly, that it was time to strike again, the mine workers of the Pennsylvania Coal Co. on June 27 returned to work. The real discontent appears to be with the variation in pay between colliery and colliery.

The officials of District No. 1 ended the strike by a threat to revoke the charters of the locals if the suspension did not come to an immediate end. The matter should, under the contract, come before the Anthracite Wage Commission. The strike really lasted only a short time as Pittston strikes go, showing that the Pennsylvania Coal Co. employees are fast coming closer into line. It was expected that the order of Vice-President Morris forbidding Alex. Campbell, the check weighman of No. 6 colliery, from entering on the property of the company might make much trouble. This order, made on June 25, however, did not prevent a return to work on June 27. Apparently Campbell and Rinaldo Capallini are not as obediently followed as they once were.

Jersey Central Seeks Bids on More Than Half Million Tons of Anthracite

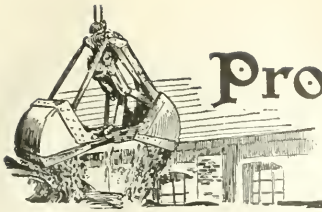
BIDS will be received by the Ceneral Railroad of New Jersey until noon on July 11 for the following quantities of anthracite coal for locomotive fuel: 60,000 gross tons broken, 420,000 gross tons buckwheat No. 1, 45,000 gross tons buckwheat No. 2, and 46,000 gross tons pea coal. The deliveries are to be made up to and including March 31, 1922, at Ashley, Mauch Chunk, Phillipsburg or Jersey City.

Twin Cities Ask Suspension of Increased Freight Rates on Coal

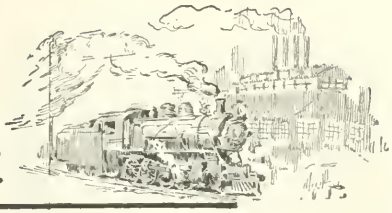
A PETITION has been presented to the Interstate Commerce Commission upon behalf of the cities of St. Paul and Minneapolis, the Minneapolis Traffic Association and the St. Paul Association, asking a suspension of the increase of rates from $1.89 to $2.02½ on soft coal from the docks to the Twin Cities, ordered for July 6. Several reasons are given for this suspension, including a statement that with the order reducing rates on coal to various points, there was no change ordered in the Twin Cities rate; that the present rate is already more than is warranted under present conditions, and any increase is wholly unjustified; that no inquiry was made into traffic conditions to the Twin Cities which would give any information upon which to base an increase. The request is for a suspension of increases only, pending a further investigation. This would permit the reductions to go into effect and allow the moving of coal tonnage which has been held back waiting for the lower rates.

Northwest Dock Association to Continue: Will Choose Successor to Groverman

THE Northwest Coal Dock Operators' Association will not die out, as was feared lately, but will continue its activities, according to information received. Operators who still belong to the association will meet at Chicago this month, the date to be announced later, and will choose a man to take the place of W. H. Groverman, who recently resigned as manager. One operator said, following the announcement of Mr. Groverman's resignation, that there was more need of the association now than ever before, and he felt confident that all former members would soon return to the organization.



Production and the Market



Weekly Review

PRODUCTION of soft coal gained slightly in the week ended June 25, mounting to 7,669,000 net tons from 7,556,000 tons the next previous week. Production on June 27 and 28 was heavier than on the first two days of the previous week and this was further evidence of a slight pre-holiday spurt at the mines. In view of the slackness of general demand, of the falling off in loadings for up Lake movement and for shipment to Tidewater for export, production of bituminous coal in the next few weeks will be light. Some observers predict occasional drops this summer to 6,000,000 tons and many anticipate an average in July and August well under 8,000,000 tons, possibly little above 7,000,000 tons per week.

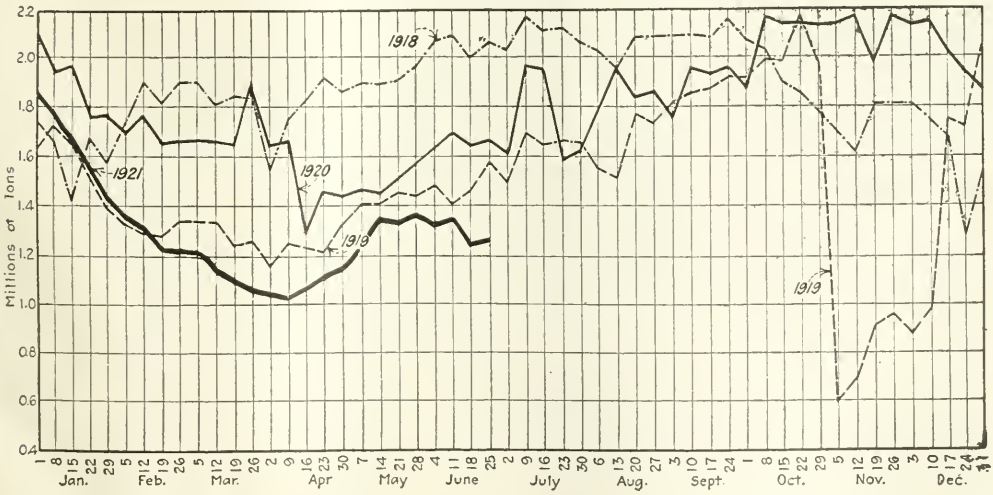
The rate of production in the Middle West in the first quarter of this year has been exceeded only by the war years of 1917 and 1918, and by 1920. Illinois and Indiana are ahead of 1916 and previous years. Pennsylvania, on the other hand, has been going at a rate equivalent to 1903 and 1904, and West Virginia is hitting a pace no better than in 1910.

Prices continue to soften, *Coal Age* Index of bituminous coal spot prices recording a drop of two points to 89 on July 5 from 91 on June 28. This is the eighth consecutive week of decline in these prices. Pocahontas, Alabama and Clearfield were the three coals suffering notable declines in price, the market on smokeless going to pieces in the Middle West with heavy offerings, Alabama relapsing with summer heat and Clearfield suffering from oversaturation in the New England market. Slight gains of 5c. and 10c. per ton were recorded by Standard (Illinois) and western Kentucky coals in the West and Pittsburgh No. 8 in the East. The gain in Ohio is attributed to the slowing up of loading for Lake business, for with less coal being screened for Lake cargoes, slack, which has been in oversupply, becomes more active. In the main all other coals held firm at the low levels quoted last week. As matters are now progressing, prices are expected to shake down to a new low level, beyond which slight variations up and down may be experienced during the summer.

Best Outlets for Coal Are Now Closed

The two outlets for soft coal that are given credit for maintaining production around the 8,000,000 ton mark in May and early June—the Lake and foreign export—have now been closed, for the time being at least. Accumulations of coal loads at Lower Lake ports waiting dumping for movement to the Northwest and Canada are being drawn on for the continuation of record boat loadings, and until the surplus at dumping ports is very much reduced—it was down to 17,000 cars last week

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

from a maximum of 30,000 cars—loading at the mines will be discouraged.

Although the Tidewater piers at Hampton Roads were operated at record speed last week and many boats are yet awaiting their turn at the piers, buying of coal for export has again receded to the slow and uninteresting condition preceding the spurt in May and June.

Anthracite is slowly losing ground. Production, estimated at 1,847,000 net tons in the week ended June 25, was 90,000 tons below the weekly output obtaining for several weeks. A better index of what is happening, however, is found in prices. With clocklike precision, the "companies" added the customary 10c. on July 1 and an additional 15c. to cover the new Pennsylvania State tax. Independents made no changes in prices, thus decreasing their lead over company coal.

BITUMINOUS

Production and prices of soft coal are both moving downward. Demand everywhere lacks life, and mine operations are slowing up to keep pace with the poorer market.

The decreases in operating time now center in the Northern and Middle Appalachians, and reflect a slowing up of the Lake and Tidewater movements. Coal has been delivered at the Lake Erie ports faster than it could be unloaded, and in consequence diminished activity is reported from the mines in western Pennsylvania and the Panhandle of West Virginia. The same factor is important in decreasing running time in the high-volatile fields of southern West Virginia. Decline in the tonnage moving to Tide was reflected in lessened activity in the Cumberland-Piedmont-Somerset region and in the New River field. Among the Western districts, Indiana and western Kentucky also report a slump in demand. In northern Ohio, Fairmont, Pocahontas and northeastern Kentucky, as well as in certain of the trans-Mississippi States, a slight improvement has occurred.

The all-rail movement to New England changed but little during the week ended June 25. Reports to the American Railway Association show that 3,301 cars of anthracite and 3,578 cars of bituminous coal were forwarded eastbound over the Hudson.

CARS OF COAL FORWARDED OVER THE HUDSON TO EASTERN NEW YORK AND NEW ENGLAND*

	1921		1920	
	Anthracite	Bituminous	Anthracite	Bituminous
June 11	3,030	3,143	3,432	2,817
June 18	3,571	3,478	3,255	3,874
June 25	3,301	3,578	2,164	4,112

*Figures furnished through the courtesy of the American Railway Association

The only factor limiting production in a significant degree, according to the Geological Survey, is lack of demand.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	May 31, 1921	June 21, 1921	June 28, 1921	July 5, 1921†
Pocahontas lump	Columbus	$5 75	$5 50	$5 65	**$5 50@$6 00**
Pocahontas mine run	Columbus	3 50	3 40	3 55	*3 00@ 3 50*
Pocahontas screenings	Columbus	2 70	2 40	2 40	*2 25@ 2 40*
Pocahontas lump	Chicago	5 25	5 65	5 65	5 50@ 5 75
Pocahontas mine run	Chicago	3 75	3 15	3 15	*1 75@ 3 25*
*Smokeless mine run	Boston	6 50	6 15	6 00	*5 75@ 6 00*
Clearfield mine run	Boston	2 35	2 25	2 20	*1 80@ 2 40*
Cambria mine run	Boston	2 95	2 85	2 85	*2 50@ 3 10*
Somerset mine run	Boston	2 95	2 10	1 95	*1 70@ 2 10*
Pool 1 (Navy Standard)	New York	3 45	3 45	3 20	*3 00@ 3 25*
Pool 1 (Navy Standard)	Philadelphia	3 35	3 25	3 00	*2 75@ 2 85*
Pool 1 (Navy Standard)	Baltimore	3 30	2 95	2 90	*2 75*
Pool 9 (Super. Low Vol.)	New York	2 75	2 85	2 75	*2 35@ 2 75*
Pool 9 (Super. Low Vol.)	Philadelphia	2 95	2 85	2 70	*2 30@ 2 50*
Pool 9 (Super. Low Vol.)	Baltimore	3 00	2 70	2 65	*2 40@ 2 70*
Pool 10 (H. Gr. Low Vol.)	New York	2 60	2 50	2 45	*2 10@ 2 40*
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2 60	2 45	2 40	*2 00@ 2 35*
Pool 10 (H. Gr. Low Vol.)	Baltimore	2 45	2 35	2 30	*2 20@ 2 30*
Pool 11 (Low Vol.)	New York	2 15	2 35	2 15	*1 90@ 2 00*
Pool 11 (Low Vol.)	Philadelphia	2 35	2 10	1 90	*1 75@ 2 00*
Pool 11 (Low Vol.)	Baltimore	2 25	2 10	2 10	*2 00@ 2 15*
High-Volatile, Eastern					
Pool 54-64 (Gas and Steam)	New York	2 00	2 00	1 95	**1 90@ 2 10**
Pool 54-64 (Gas and Steam)	Philadelphia	2 10	1 85	1 85	*1 75*
Pool 54-64 (Gas and Steam)	Baltimore	1 90	1 75	1 70	1 70@ 1 95
Pittsburgh sc'd. gas	Pittsburgh	2 65	2 50	2 50	2 40@ 2 60
Pittsburgh mine run(steam)	Pittsburgh	1 95	1 85	1 85	1 75@ 1 90
Pittsburgh slack (gas)	Pittsburgh		1 60	1 60	1 55@ 1 65
Kanawha lump	Columbus	3 50	3 45	3 45	*3 25@ 3 50*
Kanawha mine run	Columbus	2 25	2 15	2 20	*2 00@ 2 25*
Kanawha screenings	Columbus	1 45	1 20	1 20	*1 10@ 1 20*
Hocking lump	Columbus	3 40	3 15	3 15	3 00@ 3 30
Hocking mine run	Columbus	2 25	2 15	2 10	2 00@ 2 25
Hocking screenings	Columbus	1 30	1 20	1 20	*1 00@ 1 20*
Pitts. No. 8 lump	Cleveland	3 25	3 25	3 25	3 00@ 3 50
Pitts. No. 8 mine run	Cleveland	$2 25	$2 10	$2 10	**$2 10@$2 25**
Pitts. No. 8 screenings	Cleveland	1 65	1 25	1 15	1 10@ 1 25
Midwest					
Franklin, Ill. lump	Chicago	3 65	3 65	3 55	**3 50@ 4 05**
Franklin, Ill., mine run	Chicago	3 00	2 90	2 90	*2 25@ 3 50*
Franklin, Ill. screenings	Chicago	2 30	1 95	1 90	1 25@ 2 50
Central, Ill. lump	Chicago	3 00	2 65	2 65	2 25@ 3 00
Central Ill. mine run	Chicago	2 40	2 40	2 40	2 00@ 2 75
Central Ill. screenings	Chicago	1 70	1 65	1 65	1 00@ 2 25
Ind. 4th Vein lump	Chicago	3 15	2 90	2 90	2 50@ 3 25
Ind. 4th Vein mine run	Chicago	2 90	2 50	2 50	2 25@ 2 75
Ind. 4th Vein screenings	Chicago	1 85	1 70	1 65	**1 25@ 2 15**
Ind. 5th Vein lump	Chicago	2 75	2 75	2 75	2 25@ 3 25
Ind. 5th Vein mine run	Chicago	2 50	2 40	2 40	2 00@ 2 75
Ind. 5th Vein screenings	Chicago	1 85	1 70	1 65	**1 25@ 2 10**
Standard lump	St. Louis	2 40	2 15	2 15	**2 25**
Standard mine run	St. Louis	1 75	1 75	1 75	1 75
Standard screenings	St. Louis	1 40	90	85	85
West Ky. lump	Louisville	2 55	2 55	2 65	**2 50@ 3 00**
West Ky. mine run	Louisville	2 10	2 00	2 00	**1 75@ 2 40**
West Ky. screenings	Louisville	1 65	1 45	1 55	*1 25@ 1 60*
South and Southwest					
Big Seam lump	Birmingham	3 65	3 65	3 65	*3 25@ 3 75*
Big Seam mine run	Birmingham	2 95	2 50	2 50	*2 00@ 2 50*
S. E. Ky. lump	Louisville	3 80	3 65	3 70	*3 40@ 3 50*
S. E. Ky. mine run	Louisville	2 40	2 25	2 25	2 00@ 2 50
S. E. Ky. screenings	Louisville	1 75	1 45	1 40	*80@ 1 65*
Kansas lump	Kansas City	5 00	5 25	5 40	5 25@ 5 50
Kansas mine run	Kansas City	4 25	4 40	4 25	4 25
Kansas screenings	Kansas City	3 75	3 15	3 25	3 25

* Gross tons, f. o. b. vessel, Hampton Roads.
† Advance over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	June 21, 1921 — Independent	June 21, 1921 — Company	June 28, 1921 — Independent	June 28, 1921 — Company	July 5, 1921† — Independent	July 5, 1921† — Company
Broken	New York	$2 61	$7 85@$8 15	$7 30@$7 75	$7 85@$8 15	$7 30@$7 75	$7 85@$8 15	**$7 40@$7 75**
Broken	Philadelphia	2 66	7 90@ 8 20	7 45@ 7 85	7 90@ 8 20	7 45@ 7 85	**8 00@ 8 20**	**7 55@ 7 85**
*Broken	Chicago	5 62	12 75	12 50	12 75	12 50	12 75	**12 70**
Egg	New York	2 61	7 85@ 8 50	7 30@ 7 75	7 85@ 8 50	7 30@ 7 75	7 85@ 8 50	**7 40@ 7 75**
Egg	Philadelphia	2 66	7 90@ 8 20	7 45@ 7 85	7 90@ 8 20	7 45@ 7 85	**8 00@ 8 20**	**7 55@ 7 85**
*Egg	Chicago	5 62	12 60	12 45	12 60	12 45	12 60	**12 70**
Stove	New York	2 61	8 15@ 8 60	7 60@ 8 10	8 15@ 8 60	7 60@ 8 10	8 15@ 8 60	**7 70@ 8 10**
Stove	Philadelphia	2 66	8 15@ 8 60	7 80@ 8 20	8 15@ 8 60	7 80@ 8 20	**8 25@ 8 70**	**7 90@ 8 25**
*Stove	Chicago	5 62	13 20	12 80	13 20	12 80	13 20	**12 95**
Chestnut	New York	2 61	8 15@ 8 50	7 60@ 8 10	8 15@ 8 50	7 60@ 8 10	8 00@ 8 60	**7 70@ 8 10**
Chestnut	Philadelphia	2 66	8 15@ 8 50	7 75@ 8 20	8 15@ 8 50	7 75@ 8 20	**8 25@ 8 60**	**7 80@ 8 25**
*Chestnut	Chicago	5 62	12 95	12 70	12 95	12 70	12 95	**12 95**
Pea	New York	2 47	5 50@ 6 00	5 85@ 6 20	5 50@ 6 00	5 85@ 6 20	*5 75@ 6 00*	**5 95@ 6 45**
Pea	Philadelphia	2 38	5 50@ 6 00	6 10	5 50@ 5 75	6 10	**5 50@ 6 25**	6 00@ 6 20
*Pea	Chicago	5 62	10 90	10 80	10 90	10 80	10 90	**11 20**
Buckwheat No 1	New York	2 47	2 75@ 3 00	3 50	2 75@ 3 00	3 50	**2 75@ 3 25**	3 50
Buckwheat No. 1	Philadelphia	2 38	2 75@ 3 00	3 50	2 50@ 3 00	3 50	.....	.....
Rice	New York	2 47	1 70@ 2 25	2 50	2 00	2 50	1 75@ 2 25	2 50
Rice	Philadelphia	2 38	1 75@ 2 25	2 50	1 75@ 2 25	2 50	.....	.....
Barley	New York	2 47	75@ 1 25	1 50	1 00	1 50	**75@ 1 50**	1 50
Barley	Philadelphia	2 38	1 00@ 1 25	1 50	1 00@ 1 25	1 50	.....	.....
Birdseye	New York	2 47	.....	2 50	.....	2 50	.....	2 50

* Prices and freight rates net tons; quotations f.o.b. cars, Chicago.
† Advances over previous week shown in **heavy type**, declines in *italics*.

The average loss of time ascribed to no market in the last week of June was 51.7 per cent. All other factors were of minor importance by comparison.

Conditions point to the conclusion that banking and financial, rather than price considerations have been paramount in causing the slowness in the coal market. Both the public and retailers feel that this is not the time to have more money tied up in coal.

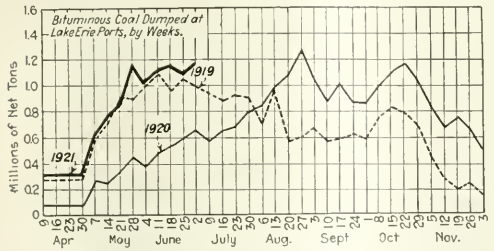
Final returns compiled by the statistician of the Massachusetts Fuel Administration show that April receipts of anthracite in New England were heavy, but that receipts of bituminous were much below normal. Cumulative receipts of anthracite for the calendar year to April 30 were 4,181,000 net tons, increases of 48 per cent and 36 per cent over the corresponding period of 1919 and 1920, respectively. Cumulative receipts of bituminous were 5,477,000 net tons, as against 5,119,000 tons in 1919, and 5,973,000 in 1920.

RECEIPTS OF ANTHRACITE AND BITUMINOUS COAL IN NEW ENGLAND *

	By Tide	By Rail	Total
Anthracite			
April, 1921	306,000	599,000	905,000
April, 1920	224,000	573,000	797,000
April, 1919	210,000	572,000	782,000
Bituminous			
April, 1921	604,000	586,000	1,190,000
April, 1920	710,000	684,000	1,394,000
April, 1919	718,000	729,000	1,447,000

*Compiled by Massachusetts Fuel Administration.

The tonnage of soft coal dumped at lower Lake Erie ports during the week ended July 4 was 1,145,517 net tons.



Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

(NET TONS)

BITUMINOUS COAL

Tntal Bituminous, Including Coal Coked

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date(a)
June 11b	8,010,000	175,470,000	10,355,000	227,245,000
Daily average	1,335,000	1,280,000	1,726,000	1,651,000
June 18b	7,556,000	183,026,000	10,095,000	237,340,000
Daily average	1,259,000	1,279,000	1,683,000	1,653,000
June 25c	7,669,000	190,695,000	10,556,000	247,896,000
Daily average	1,278,000	1,279,000	1,759,000	1,657,000

(a) Less one day's production during New Year's week to equalize number of days covered for the last two years. (b) Revised from last report. (c) Subject to revision.

ANTHRACITE

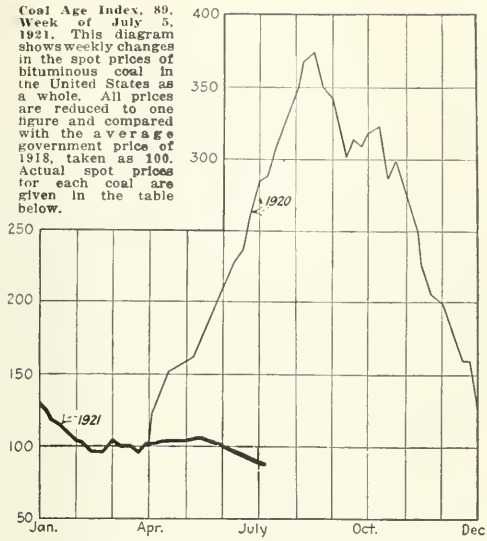
	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date(a)
June 11	1,963,000	41,109,000	1,960,000	39,107,000
June 18b	1,941,000	43,050,000	1,853,000	40,960,000
June 25	1,847,000	44,897,000	1,870,000	42,830,000

(a) Less one day's production during New Year's week to equalize number of days covered for the last two years. (b) Revised from last report.

BEEHIVE COKE

Week Ended June 25 1921(c)	Week Ended June 18 1921(b)	Week Ended June 26 1920	1921 to Date	1920(a) to Date
50,000	53,000	406,000	3,353,000	10,532,000

(a) Less one day's production during New Year's week to equalize number of days covered for the last two years. (b) Revised from last report. (c) Subject to revision.



Coal Age Index, 89. Week of July 5, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table below.

against 1,096,035 tons in the week preceding. Of the total dumpings, 1,112,476 tons were cargo coal and 33,041 tons vessel fuel. The total movement for the season has been 10,261,285 net tons, an increase over 1920 of more than six million tons.

The export movement from Hampton Roads up to the end of June continues at practically the same rate as during May. During the week ended June 25, 298,569 net tons were dumped for foreign cargo and 71,981 tons for bunker, an increase in cargo coal over the week preceding of 9,681 tons, and a decrease in bunker fuel of 24,999 tons.

EXPORT AND FOREIGN BUNKER COAL DUMPED OVER PIERS AT HAMPTON ROADS

(In Net Tons)

	Export	Foreign Bunker	Total Foreign
Weekly average:			
September, 1920	271,321	49,756	321,077
March, 1921	87,732	38,744	126,476
April, 1921	137,632	67,960	205,592
May, 1921	278,502	97,062	375,564
Week ended—			
June 4	342,373	78,538	420,911
June 11	359,585	123,332	482,917
June 18	288,888	96,980	385,868
June 25	298,569	71,981	370,550

ANTHRACITE

Hard-coal production continues steady in comparison with bituminous, although the week ended June 25 saw a slight decline, when the total output, according to the Geological Survey, was 1,847,000 net tons, as compared with 1,941,000 tons in the week preceding. Cumulative production for the calendar year is now 44,897,000 net tons.

The market for steam coal is as dull as ever; prices quoted are purely nominal, as concessions are being made to move these sizes by both classes of shippers. With domestic demand on the down grade and steam sizes in such oversupply, maintenance of operations is becoming difficult for independents.

COKE

Beehive coke production was 50,000 net tons for the week ended June 25, a decrease of 3,000 tons as compared with the preceding week. Cumulative production for the year to date is now 3,353,000 net tons, as compared with 10,532,000 tons during the corresponding period of 1920.

Connellsville spot quotations are $3 for furnace and $4.25 @$4.50 for foundry. The outlook of blast furnaces that normally consume coke has not improved, and if prospects are to be judged by the rate at which pig iron is absorbed from furnace stocks the worst is yet to come.

Foreign Market And Export News

French Imports and Exports

By Cable to *Coal Age*

Imports of coal into France in April were 1,156,000 metric tons, a drop from 1,348,132 tons in March, and were the lowest for many months. Receipts from Great Britain were 388,000 tons, a slight gain over both February and March, despite the fact that the British mines had no production in April. Receipts from the United States in April were 55,000 tons, compared with 82,855 tons in March and 394,316 tons in January.

Imports of coal to France during the first quarter of 1921 were well under the monthly average for 1920 of 2,021,800 tons, with the exception of January, when 2,116,527 tons were received. Imports of coke and briquets show a decline from the 1920 monthly figures of 358,224 tons and 169,346 tons respectively.

FRENCH IMPORTS AND EXPORTS OF COAL
FIRST QUARTER, 1921
(In Metric Tons)

COAL

Imports from	January	February	March
Sarre	378,093	278,889	189,067
United Kingdom	705,377	377,261	383,418
Belgium	64,434	46,665	86,085
United States	394,316	160,086	82,855
Germany	542,934	485,950	583,850
Other countries	31,373	34,493	22,857
Total	2,116,527	1,383,344	1,348,132

COKE

Sarre	942	890	1,028
United Kingdom	12,568	2,939	600
Belgium	1,084	62	2,319
Germany	559,192	304,656	77,714
Other countries	4,812	1,991	300
Total	578,598	310,538	81,970

BRIQUETS

Sarre	3,065	3,843	4,266
United Kingdom	42,702	20,594	11,032
Belgium	5,481	815	3,872
Germany	119,628	49,810	19,148
Other countries	2	2,000	5
Total	170,878	77,062	38,323

COAL

Exports to	January	February	March
Belgium	836	620	2,200
Switzerland	4,650	2,338	782
Spain	76	97	76
Germany	686	1,065	3,479
Italy	3,359	1,003	2,275
Luxemburg	1,448	10,779	12,018
Other countries	32,271	11,665	19,605
Bunkers			
French ships	15,695	19,275	16,608
Foreign ships	2,143	7,835	2,347
Total	61,164	54,677	59,890

COKE

Switzerland	996	659	242
Italy	1,265	4,568	5,885
Luxemburg	40	40	
Other countries	137	944	5,281
Total	2,438	6,211	11,408

BRIQUETS

Italy		161	156
Switzerland	390	56	
Luxemburg	3,527	1,933	1,183
Other countries	1,870	854	1,967
Bunkers			
French ships	804	1,585	605
Foreign ships	304	951	65
Total	6,895	5,540	3,976

Hampton Roads

Activity at the piers was marked as June came to a close. Tonnage waiting for cargo was heavy, as a result of the temporary flurry of the week previous. Ending of the British strike had not yet curtailed dumpings, the June figure exceeding any month since July, 1920.

C.i.f. prices were reported as follows: United Kingdom, including Queenstown, Falmouth, and Scotland ports, $12.15; Gibraltar, and West Italy, $12.40; Havre, Marseilles, and French Atlantic, $11.90; Scandinavian ports, $13.40 and Havana, $8.90.

The announcement that the British miners have decided to return to work has not had any effect here as yet, except that charters of a few vessels which were to load have been canceled.

Clearances last week were as follows: (Ports given when of record.)

	Tons
For Argentina:	
Br. SS Trebartha	6,463
For Brazil:	
Nor. SS Songelv, for Rio de Janeiro	504
For Algiers:	
Br. SS Volga	5,633
For Arabia:	
Br. SS Sandon Hall	2,505
For Italy:	
Ital. SS Montecristo, for Torre Annunziata	5,385
For Denmark:	
Dan. SS Gudrun Maersk, for Copenhagen	6,555
For Australia:	
Am. SS Sunewco, for Birkenhead	4,379
Am. SS Sutorpco, for Birkenhead	4,400
For United Kingdom:	
Grk. SS Kalypso Vergottl, for Barry	7,390
Am. SS Winding Gulf, for Queenstown	7,053
Am. SS Bellemina, for Queenstown	7,657
Am. SS Yapalaga, for Queenstown	6,731
Grk. SS Anna, for Queenstown	7,420
Am. SS Hartford, for Queenstown	7,473
Am. SS Edgewood, for Queenstown	8,021
Br. SS Niceto de Larrinaga, for Queenstown	9,050
Br. SS Cape Ortegal, for Queenstown	6,992
Am. SS Innoko, for Falmouth	7,998
Jap. SS Kaikyu Maru, for Falmouth	10,611
Am. SS Eastern Traden, for Falmouth	10,498
Am. SS Nacatam, for Falmouth	7,022
Am. SS Coronado, for Liverpool	7,685
Nor. SS Alfred Noble, for Glasgow	7,313
Am. SS Minnesotan, for Immingham	8,337
For Germany:	
Am. SS Fishkill, for Hamburg	6,983
For West Indies:	
Br. SS King City, for Tenneriffe	4,404
Br. SS Rothbym, for St. Vincent	5,586
For Portugal	
Dan. SS Eleanor Maersk, for Lisbon	2,432
Br. SS Lord Broughton, for Azores	2,772
For Uruguay:	
Du. SS Costdijk, for Montevideo	3,991
Br. SS River Orontes, for Levant Ports	3,172
Ital. SS Cerea, for Gibraltar	3,075
Am. SS Agwistar, for Fort de France	6,460
Am. SS Peter H. Crowell, for Funchal	4,000
Am. SS Stephen R. Jones, for Las Palmas	5,640

WITH THE EXCEPTION OF gas coke, all kinds of fuel may now be imported to Switzerland from France, the Government embargo having just been lifted.

London Coal Market Active

Termination of the British coal strike and the anticipated resumption of production this week, according to cable advices to *Coal Age* on Monday, July 4, revived the London coal market in an exceptional degree. Prices are expected to remain comparatively high until the market is restocked. Demand for the earliest possible delivery of British coal, after resumption of work at the mines, is reported. Prices are off, however, from those in March, preceding the strike. Best Admiralty large coal, f.o.b. Cardiff, on July 2, was quoted at 45s. per ton, against 57@58s. for March, immediately preceding the strike. On the same date Best Blyths were quoted on Newcastle-on-Tyne 40@42s. 6d. against 42s. 6d.@45s. in March and Best Durham was quoted 35s.@37s. 6d., unchanged from March.

The Secretary of Mines stated in the House of Commons on July 2, that the total imports of American, French and Belgian coal into the United Kingdom in the three months, April 1 to June 30 totaled 1,410,000 net tons, of which 375,000 net tons were from the United States, 481,000 from France, and 554,000 from Belgium. Imports in May were 504,000 net tons at an average declared value of 60s. 8d. per ton of 2,000 lb. (68s. 2d. per gross ton). The government bought this coal abroad and sold it for public utility consumption.

Coal Unloaded in French Ports

(In Metric Tons)

	Week Ended May 26	Week Ended June 2
CHANNEL PORTS		
Dunkirk		600
Boulogne	3,180	2,617
Dieppe	3,713	
Le Havre	11,950	9,765
Rouen	10,200	6,700
Caen	900	4,951
Cherbourg		2,354
Saint-Malo	850	1,700
Le Légué Saint Brieuc		250
Honfleur	1,070	
Trouville	1,799	
Morlaix	426	
ATLANTIC PORTS		
Brest	3,536	5,619
Saint-Nazaire	4,351	5,716
Nantes	900	4,302
La Rochelle		3,014
Bordeaux	706	10,613
Bayonne	2,302	1,775
Marseille*	5,600	9,202
Lorient	1,000	1,323
La Rochelle Ville		1,604
Tonnay-Charente		284
Nice*		3,110
Total	52,483	75,499

*Mediterranean port.

BUNKER COAL AT ANTWERP for delivery in the first half of July is now quoted at 120 francs per ton. At Bombay, Indian coal is quoted for July delivery at 40 rupees per ton, a decrease of 4 rupees from the June quotations.

REPORT NO. 365 OF THE U. S. SHIPPING BOARD has just been received. The subject of the report, which is dated June 8, 1921, is "Shipping lines (showing nationality of companies) running out of U. S. ports for foreign countries, June 1921." Names of shippers are listed under each port in which they do business, further sub-divided as to foreign destinations.

Reports From the Market Centers

New England

BOSTON

Market Unchanged — Central Pennsylvania Mines Hard Up for Orders — Hampton Roads Situation Quiet — Anthracite Domestic Sizes Shipped in Slightly Less Volume.

Bituminous—There is no preceptible change in the situation. Settlement of the English strike has removed about the last argument of selling agencies here and for the next sixty days there is only slight prospect of anything more than light current demand. Mill buyers are keeping aloof from the trade, for they themselves see almost no sign or reaction in general business.

Now and then there is occasional inquiry for small tonnages on the part of manufacturers who are accustomed to keeping reserves for three or four months ahead. Aside from such scattered requests, however, there is almost nothing doing.

In some instances, if operators could see their way clear to drop their price level another 25c. or so it is possible now that a certain amount of restricted buying would follow. Certain operators would do this if they could be assured of tonnage enough to run them full time six days a week, but on anything like present production the overhead expense is, of course, high. It will be interesting to see developments in this respect during the next fortnight.

The fact is that today the central Pennsylvania district, in particular, is hard pressed for orders. Output in most cases is on a 35 to 40 per cent basis. Strenuous efforts are made to place spot coal, but so far as this territory is concerned, most of them are unavailing at the present range of prices.

At Hampton Roads the situation on Pocahontas and New River continues quiet. A week ago dumping was on a more favorable basis because of deliveries being made on purchases of a month ago, but offshore business is now almost as scarce as coastwise. Rehandling factors here are able to send only light tonnages into the interior and for that reason are not making room for additional cargoes. Prices on cars at Boston, Providence, and Portland, range $8@$8.25 per gross ton.

Receipts both all-rail and by water continue relatively light. The railroads here are shutting off many of their sources of supply and there is small chance of increased receipts during July and August.

Anthracite—While it was expected shipments of domestic sizes would continue in large volume throughout June, the last week in the month showed a noticeable diminution in shipments to New England.

Certain of the companies have advanced prices, effective July 1, but 10c., although others have marked up prepared sizes 25c., the 15c. extra presumably covering anticipated payment of the new Pennsylvania State tax.

Tidewater—East

BUFFALO

Nobody Wants Bituminous—Going by Lake to Get Rid of It—Anthracite a Slow Seller.

Bituminous—The situation continues as dull as formerly. Local shippers are doing all sorts of things to fill in the time, none of them seeing any improvement likely right away. If it arrives this fall they will be pleasantly surprised.

Not finding a ready sale for coal this side of the Lakes, the shippers have sent it forward by water at the rate of about 1,000,000 tons a week, which means much congestion before long. This heavy movement is the reason for so much slack on the market here. Shippers are reporting offers of good slack as low as 90c. and are holding off for a further decline.

Coal, like all other freight, moves by rail at a rapid pace and that adds to the decline in prices. Let the cars run a little short and prices would stiffen up at once. The worst of it is that the coal consumer does not see any early demand for his goods and so he is running, if at all, one half time or less.

Quotations remain at $3 for Youghiogheny gas lump, $2.75 for Pittsburgh and No. 8 steam lump, $2.25 for Allegheny Valley mine run and $1.35 down for slack; to which add $2.36 for Allegheny Valley and $2.51 for other coals to cover freight to Buffalo.

Anthracite—Demand continues light in spite of advancing prices and the assurance on the part of shipping agents that there is no prospect of a decline. Some mines are shutting down for lack of storage room. Some people have no money to buy, but there are plenty of others who can buy but are afraid they will be beaten out of a few dollars if they do so now.

Independent operators manage to get considerable coal moved, though they say they should have more premium than they are getting. The outlook is not easily told and it is no easier to say that some coal sells at a premium when the ordinary output is hard to move.

Lake — Shipments continue good, though it is reported that coal is piling up on the receiving docks on the Upper Lakes, for if consumers will not buy here they are not going to there. Loadings for the week ended June 25 were 109,100 tons.

Freight rates continue dull at $1 to the Sault; 65@70c. to Chicago, 65c. to Waukegan, 60c. to Milwaukee, 55c. to Sheboygan and Green Bay, 50c. to Duluth, Fort William and Marquette.

Coke—Furnaces are running quite as slow as ever. Nobody feels like venturing on a policy for the future, so nothing can be done but lay in stock as it is needed. Prices remain at $4.50 for 72-hour foundry, $3.75 for 48-hour furnace and stock, with a little in domestic sizes moving at $5@$5.25, to all of which add $3.64 to cover freight.

BALTIMORE

Unusually Flat Bituminous Market—Prices Low—Competition Keen—Grand Jury Asked to Act Against Hard Coal Men.

Bituminous—The soft coal market has been smashing the low demand and low price conditions for the period at least since before the start of the world-war. As to prices, while the best steam coals have been making a valiant effort to retain a basis of $2.60 and better, there is an increasing tendency to drop to $2.40@$2.50. Low grade steam coals are $1.70@$2. The gas coal range is about the same, the best Pennsylvania lump offering around $2.50@$2.60, mine run demanding about $2.30, and West Virginia lump running around $2.30 and mine run down to $1.70. The demand is extremely light in the home field.

Export business, however, continues good, and the prospects look even better, at least for the immediate future. The end of the English strike has left that trade in such condition that shippers are figuring that American coals will be needed in the United Kingdom for many months to come. It is now figured that the official announcement will show a total export loading at Baltimore during June of about 240,000 cargo and 30,000 tons bunker. The numbers of charters for loading here at early date are large.

Anthracite—Requested legal action has come to further delay the operations of the hard-coal trade. State's Attorney Leach of Baltimore has requested the Grand Jury to take up the question of an alleged illegal combination to fix prices by members of the Baltimore Coal Exchange. During the war the members of the Exchange, under the direction of the Fuel Administration at Washington worked out an average cost at wholesale on hard coal delivered to dealers in this city, and after adding freight rates were allowed to add an additional $3 gross margin of profit.

Since the war the dealers here have been following individually this plan of

operation and the exchange has been issuing a schedule of such prices, which is, of course, not binding upon its members as shown by the fact that some of them have sold at other rates at times, and without penalty from the Exchange. The states' attorney, however, holds that any attempt at price fixing is illegal.

The coal trade has not raised prices at retail since April. How it will be possible to operate in the future on an equitable basis should the Grand Jury refuse to recognize the right of dealers, some of whom receive company coal, some of whom receive independent coal and some of whom receive combinations of both, to confer on prices, will be a decided problem. In the meantime the Grand Jury agitation is likely to further hold up deliveries to cellars in this city and to cause additional congestion in the fall.

PHILADELPHIA

Anthracite Mine Prices Advanced — Tax Not Included—Shipments Become Freer—Steam Coals Inactive—Bituminous at Standstill — Further Price Recessions.

Anthracite—On July 1, prices were further advanced, although so far as the independents are concerned it is not as yet general. The highest individual advance was 20c. on the family sizes. With the exception of the one company, which did not make a reduction on April 1, the schedules of the big concerns went up 10c. on all sizes, except steam.

Retailers had felt that a considerable increase would become effective in order to cover taxes imposed by the state. It is just possible that the companies are confident that the tax acts will be declared unconstitutional and are taking a chance accordingly. However, there is still a feeling that before bills are rendered for July shipments, the tax may be added as a separate item.

Prior to the increase in mine prices the retailers in most instances had added 25c. to their quotations, except pea. This made the cost to the consumer per gross ton delivered at the curb, $14 for egg, $14.25 for stove and nut, and $11 for pea. However, there is hardly a dealer who allows an order to get away, should the consumer claim to be able to get coal elsewhere for from 25 to 50c. a ton less.

The only intimation of any independent price cutting has been confined to pea coal and the lowest quotation heard so far has been $5.50. The larger companies are now storing an increased tonnage of this size.

Retailers are finding it increasingly difficult to interest the consumer in buying and one important retailer has given it as his opinion that only 40 per cent of those who put by their coal in former years have ordered to date. The steam sizes are loggy, including buckwheat and even cut prices by the independents are losing their power to move them. The companies are piling up these sizes in storage, although it is rumored at times that even they are willing to consider lower prices on good sized blocks.

Bituminous—Nothing new developed this week, and if anything, the ability of the market to absorb coal has been slightly more curtailed, due to the holiday, as many plants took advantage of the occasion to take vacations from a couple of days to an entire week. As indicative of present conditions it is interesting to note that a salesman whose territory covers plants with 150 blast furnaces has found during the past two weeks only four furnaces in operation.

There has been a tendency to a further shading off in prices of the staple grades of coal in this district, the changes being shown in the Weekly Review. In addition Pool 71 has reached the lowest level of the present movement, with an average of $2.60 and an occasional sale at $2.50. The various gas coals sold here have also shaded off, the range being as follows: Slack $1.25@$1.60; mine run $1.60@$2.40, and screened $2.50@$2.75.

NEW YORK

Domestic Price Advance — Demand Easier — Dealers Have Difficulty to Move Supplies — Independents Make Concessions—Bituminous Demand Slow —Movement Off and Quotations Low.

Anthracite—The usual monthly advance of 10c. per ton on the domestic coals was put into effect on July 1 by the majority of the large producers. One company increased its mine prices 25c., while one of the largest independent producing companies added 20c. Nothing was said about the Pennsylvania State Tax which became effective on July 1 and it was taken for granted that the producers intend to absorb this additional expense, at least for the present.

It is not expected that any definite announcement will be made by the operators regarding the new tax until fall, when it may be known what action the courts will take as to the constitutionality of the law, which is likely to be tested.

Demand is at low ebb and cancellations of company coals are frequently reported. Buying has taken a tumble and reports are that many of the smaller operations are about to be closed down for the time being.

Wholesale dealers are able to keep stove and egg moving. However, it is no easy task. The companies are sending most of their output westward while the independents are forcing theirs on the market by making concessions. The schedules of the independent companies are being maintained in hardly an instance.

Pea is a drug on the market. Here there is almost no call for it and in order to prevent it accumulating, heavy concessions are necessary. The steam coals continue to pile up. The barley lying in bottoms in this harbor a few weeks ago has been nearly cleaned up. Extremely low prices were heard for some of this coal, one boat load being let go for $2.65 alongside according to report. Retail dealers, as a rule advanced their prices on July 1 by 10c. to cover the increase of the operators.

Bituminous—Buying is practically at a standstill. Wholesale dealers are not optimistic of the immediate future. In some years Independence Day has been termed the turning point but this is not thought possible this year. Consumers are in most instances well stocked up and with many factories and other industries closing down for a large part of the month it is more than likely demand will take a further slump.

One ray of hope may be seen in the suggestion of the I.C.C. that the railroads lay in a liberal supply of coal against a possible shortage in the coming winter. The ending of the British strike had no bad effect upon export demand. There were reports of increased demand from abroad and it was said that there had been some placements.

Steamers compelled to take on coal in European ports are complaining of the poor quality and in some instances are anywhere from 24 to 48 hours late in making this port. Whenever possible steamers sailing from New York take on sufficient coal to enable them to make the return trip.

There is comparatively little coal in the local pools but a much heavier tonnage outside of the pools, some of which is classed as distress coal. Low quotations for stray cargoes were heard, one boat loaded with Pool 10 being quoted $5.60 alongside. Tidewater quotations f.o.b. piers ranged about as follows: Pool, 1, $6.25@$6.50; Pool 9, $5.85@$6; Pool 10, $5.40@$5.75; and Pool 71, $6@$6.10. Quotations for Ligonier range $1.90@$2.15, f.o.b. mine and for Shawmut and Punxsutawney, $2.20@$2.40.

HAMPTON ROADS

Record Dumpings for June — U. K. Business Still Active—Prices Soften.

Dumpings for June at the piers broke all records for the year, and established a figure which has not been approached since the peak of overseas coal shipments in July, 1920. A total of approximately 2,300,000 gross tons passed over the piers in June, as against 1,830,000 in May, the highest month of the year up to that time.

Business fluctuated during the month, but during the last week in June the market took on strength, and while accumulations at Tide increased, the vessel tonnage waiting was also increased.

It is believed that much of the business between this port and the United Kingdom will continue. Cargoes have gone forward this week in large numbers to the U. K., as well as to Arabia, Algiers, and some to Petrograd, Russia.

Prices fell off somewhat, Pools 1 and 2 dropping to $6@$6.25, and other pools approximately $1 less. The demand for high-volatile has been great during the

week, while other pools have also been active.

A comparison of the situation at the piers is as follows:

	Week ended June 23	Week ended June 30
N. & W. piers, Lamberts Point—		
Cars on hand	4,181	4,035
Tons on hand	210,902	197,470
Tons dumped	146,294	175,680
Tonnage waiting	16,850	113,800
Virginian Ry. piers, Sewalls Point—		
Cars on hand	1,896	1,818
Tons on hand	108,000	90,900
Tons dumped	85,998	144,196
Tonnage waiting	6,013	28,453
C. & O. piers, Newport News—		
Cars on hand	2,300	2,042
Tons on hand	114,660	102,100
Tons dumped	168,837	230,418
Tonnage waiting	87,250	224,055

Canada

TORONTO

Trade Quiet and Featureless — Consumers Only Ordering for Present Requirements — Coal Coming Forward Freely.

Owing to hot weather and industrial depression, present requirements are small and orders for fall and winter supply are coming in very slowly. Only a small percentage of consumers have so far laid in stocks or placed orders and dealers anticipate a later rush of business.

Coal is coming forward freely and yards are well stocked. Prices are unchanged, but an increase in hard coal in the near future is expected.

Quotations are as follows:

Retail

Anthracite egg, stove, nut and grate	$15.50
Pea	14.00
Bituminous steam	11.00@11.50
Domestic lump	12.25
Cannel	16.00
Wholesale f.o.b. cars at destination	
¾-in. lump	8.00@ 8.50
Slack	6.00@ 6.75

Northwest

MINNEAPOLIS

Heavy Lake Shipments Continue—Dock Business Stagnant—Buyers Will Not Take Hold—Anthracite in Light Receipt.

The Northwest is still without action as regards the coal trade. Although there has been a good bituminous tonnage moved to the docks, it has only been because it pleased the producers to ship it. The tonnage which moved from the docks during May was but a fraction of what it should be. June has shown no material improvement.

There is very little hard coal moving up. All the docks handling hard coal have some and are moving practically none. The anthracite tonnage for May off the docks would not average 4,000 tons each, or perhaps three or four days' work.

The good total received thus far of soft coal rather eases the situation for the coming winter, although it is far from sufficient. The proposition would be much simpler if there were a better outgoing tonnage. But that the arguments for early buying were made in good faith does not appeal to buyers at all.

And while there is room for apprehension that if buying is held back until the end of the season, there will be serious and even disastrous results, yet it cannot be insisted upon as a certainty. Conditions for the coming fall and winter may not require as much coal as the prophets of evil are counting upon in their lugubrious predictions. If the industrial situation remains as dull as it has been there will be a much reduced consumption of soft coal. It is all very well to anticipate a glowing future business development, big requirements, heavy consumption of manufactured wares and all the rest of the press-agent lines of circus announcement stuff. In the Northwest it is firmly hoped that there will be a bumper crop of all grains, which will be marketed at prices sufficient to give farmers enough money to pay their bills and have a surplus. If this is done, it will make a notable difference. But he would be a reckless prognosticator who would assure this to be the case. Yet the demands for heavy buying of coal are practically based upon such an assurance, and they were made before the crop was in and before there was a chance in the world to assume that there would be a good crop.

DULUTH

Market Stagnation Continues — Full Docks at Early Date — Adjustments Increase Freights to Some Points — Dock Prices Off.

Conditions developing throughout the week point to the conclusion that banking and financial, rather than price considerations, have been paramount in causing the slowness in the coal market. Both the public and retailers feel that this is not the time to have money tied up in coal and consequently the dock man has to carry the load of ever-increasing supplies.

Despite the laying up of many ships, little decrease in the influx of Lake coal is noticeable. In the last week of June fifty-four cargoes came in, of which five were anthracite. The dock situation grows more serious every day, although early predictions of full docks by the middle of this month will not be borne out. However, at the present rate of receipts, several docks will be full to capacity in two weeks and the harbor will be tied up by the first of August.

Just where the stagnant financial situation will bring the coal market is a matter of much conjecture. Many cases of selling activity have been sighted but these have universally proven to be mirages when the time came for them to mature.

Banks will not back the efforts of retailers to relieve the dock men of some of their supply and the consumer is sitting back and waiting for someone else to make the first move.

New freight rates went into effect from Duluth to points in the Northwest July 6, which reduce the rates on anthracite and increase them on bituminous. The rate between Duluth and St. Paul-Minneapolis on hard coal will be reduced from $2.29 to $2.23 and on soft coal the rate will increase from $1.89 to $2.02.

Prices on bituminous are again on the downward path and have dropped 25c. Youghiogheny, Hocking and Splint lump are now selling at $6.25 with run of pile at $5.75 and screenings $4. Even at these prices there are no takers of importance.

MILWAUKEE

Buying Continues Slow — Yards Are Filling Up — Anthracite Gets Usual Monthly Increase — Other Prices Unchanged.

Aside from the fact that anthracite was not advanced on July 1, there is little worthy of note in connection with the coal business here. Receipts by Lake continue heavy, but the outward movement from the yards is very slow, in spite of every effort on the part of dock companies to stimulate buying at the present time.

Local consumers are not ordering to any extent, and the slim demand from the interior reflects a similar condition. Unless the situation changes soon, the yards are bound to become gorged, to the detriment of the winter supply.

Receipts of coal by Lake thus far this season aggregate 1,475,924 tons, of which 391,029 tons are anthracite, and 1,084,915 tons soft coal. Last year's record during the same period was 250,071 tons of anthracite, and 352,135 tons of soft coal, or 602,206 tons in all.

Inland West

CHICAGO

Bargains in Eastern Coals Go Begging —Better Steam Market Seen—Domestic Trading Hit by Persistent Belief That Prices Will Drop.

The steam market is a little more hopeful than it has been during the last few weeks. Beginning July 1, it is reported that some of the railroads which have been holding back purchasing coal or contracting for it, are going to take coal a little more freely than heretofore in the belief that the moving of crops will give them and their motive power more to do. In addition, some of these roads are going to stock up considerable coal as they believe that fuel is going to be far from plentiful during the winter months.

The current market for fine coal is weak although it is expected that there will be some improvement during the next ten days. Screenings are today a drug on the market, but as the demand for prepared coal is slumping very seriously, the tonnage of screenings offered from now on will be small compared to past records.

One or two of the packers have placed contracts, but have not signed up for anywhere near the amount normally purchased by this method. Screenings and steam coals today are

lower than they have been since the first of the year, and the wise purchasing agent will do well to contract now if he is planning on contracting at all.

The domestic market, so far as Chicago is concerned, is practically dead. Unemployment is so universal and money so tight that there is very little stocking on the part of the small householder.

Lately Pocahontas and smokeless coals, as well as some splint from West Virginia and block from Kentucky, have been sold in Chicago at bargain counter prices, but the situation has now reached such a point that it is almost impossible to sell coal at any reasonable figure. The public is simply not interested.

CLEVELAND

Lake Movement Slowing Down—Anthracite Price Up—Small Increase in Domestic Inquiries—Better R.R. Outlook.

Bituminous — Prospects of better financial conditions for the railroads as a result of improving traffic, the wage cut, and the administration's plan to fund the amounts due the Government from the roads while paying cash to them to meet the Government's current obligations to the roads, are attracting attention in the coal trade here. It is felt that the roads not only will be in a position to proceed with their coal purchases, but that the possibility of steel and equipment buying by the roads will stimulate the steel industry in this district.

This describes the single ray of sunshine seen by the coal trade. For the moment the situation remains practically unchanged, save for smaller buying by retailers, whose yards are as full as prudence will permit. Although some plants are using less than a few weeks ago, others are requiring more, so that the volume of coal moving remains about the same as it has for the past month. Prices of mine run, and other grades of No. 8 coal have undergone no revision. Slack continues weak, ranging $1.05@$1.25.

Pocahontas and Anthracite—Inquiries for domestic fuel have increased about 10 per cent in the last few weeks. This is due to the intensive selling and advertising campaigns being conducted, to the advance of the season, and to the fear that prices may go higher. Sales have not increased in the same proportion as inquiries. Dealers say that unemployment and the lack of purchasing power is reacting forcefully upon the retail coal trade and they fear some suffering next winter unless conditions change. Beginning with July 1 the price of anthracite to the dealers advanced 20c. and this increase is expected to be reflected in the retail price by the middle of the month. Pocahontas prices are not expected to change soon.

Receipts of bituminous coal for the week ended June 25 amounted to 933 cars; divided: 711 industrial and 222 retail; as compared with 1,138 cars the preceding week, a decrease of 205 cars.

Lake—The next sixty days is expected to see a material tonnage shrinkage, due to the congestion of the ports in the Northwest and failure of fuel to move into consumptive channels. No shortage of coal is foreseen for the Northwest this season. In fact requirements are expected to be less than in 1920. The movement of Northwest coal into the interior is not expected to begin on a large scale until the grain movement starts to the Northwest ports around Sept. 1.

DETROIT

Steam and Domestic Bituminous Are in Very Light Demand—Buyers Manifest Little Interest in Offerings—Prices Soft—Lower Rate of Manufacturing.

There is seemingly no improvement in market activity. As some of the manufacturing establishments are reported running on a lower production basis, consumption of steam coal probably has been somewhat diminished at these plants. Jobbers comment on the fact that a very small number of buyers seem to have decided that with coal selling at present prices it is advisable to place orders now.

The proportion of such buyers, however, is apparently very small, while a larger number, owing to the uncertain business conditions, are delaying buying until they feel they have obtained a more definite knowledge of how their affairs will shape themselves in the later months of the year.

West Virginia lump is quoted $3.25@$3.50, mine rune $2.25@$2.50, nut and slack $1.90@$2.25. Ohio lump is $3@$3.25, mine run $2.15@$2.25, nut and slack $1.15@$1.25. Smokeless lump and egg is $5.25@$5.50, mine run $3.25@$3.50 and nut and slack $2@$2.25.

There is a moderate supply of anthracite in retailers' yards and with demand dull, distribution is far behind normal at this time of the year.

CINCINNATI

Mine Closings Reported—Duller Markets as Tidewater Releases Additional Tonnage—Retail Prices Steady.

Additional elements of depression were injected into an already sick market this week through the reflection of the Tidewater situation, shut-downs both in Kentucky and West Virginia, and rejections of coal from many quarters. Further cutting of prices has failed to move any greater volume, but has helped to aid the panicky condition which the wholesalers are facing.

The first of the week southeastern Kentucky 4-in. lump was quoted at $3.25. This was a cut of 25c. Slack evidently has hit bottom for no sales below 75c. a ton were reported. Mine run has been slipping again, the mines quoting as low as $1.75@$1.80, while a few odd lots in distress have been sold around $1.50.

West Virginia bituminous mines were asking $1 a ton for slack, $1.85 for mine run and $3.50 for lump. Fewer cars are coming through this gateway on consignment and this has almost done away with the heavy offerings of coal on demurrage.

While the larger smokeless companies profess to be sold up and give $5.50 as their price for lump, $5.25 for egg, and $4.75@$5 for nut, $3.50 for mine run and $3 for slack, there are smaller concerns and "near-smokeless" coals being offered at much lower figures. Some of the concerns have offered mine run as low as $2.70 and slack at $1.75, while some of the New River operations have even cut on the price of the prepared.

The first of the new month did not see any material reductions in retail prices. Quotations on domestic were: Smokeless mine run, $7.50; lump, $10.25; bituminous lump, $7.25; steam bituminous mine run, $6; slack, $5.50; smokeless mine run, $7.25, and little or no smokeless slack offered.

COLUMBUS

Little Change in the Market — Steam Grades Dull and Little Demand for Domestic—Prices Are Weaker.

With marked dullness in the coal trade, every one is playing a waiting game. Lake trade is still the backbone of the market. This is causing a number of mines to produce where otherwise they would be idle. Only a few new Lake contracts have been made as the greater part of the tonnage is going to the larger concerns with their own dock connections.

During the week ended June 25 the Hocking Valley docks at Toledo loaded 189,077 tons as compared with 189,299 the previous week, making a total of 1,552,639 tons for the season. During the same week the T. & O. C. docks loaded 55,811 tons as compared with 46,990 the previous week, making a total of 387,874 tons.

Domestic trade is slow in every locality. There is a widespread feeling around that freight rates will be decreased and householders are therefore slow in putting in their supply for the winter. While it is thought this belief is an error still the effect is the same and dealers are not moving much tonnage. Retail stocks are fairly large. Prices are steady at former levels. Hocking lump sells at $6.50 delivered while re-screened varieties are about 25c. higher. West Virginia splints are $7.75 and Pocahontas lump $10. Anthracite is coming in fairly well and sells around $15.

Little strength has developed in the steam trade. Large users are still using their reserves or are buying sparingly. Public utilities are about the best customers at this time. The consumption of railroads is rather small.

ST. LOUIS

Little Activity in Anything — Steam Prospects Poor—Domestic Users Not Storing.

The market continues quiet and uncertain. Steam and domestic are slow, both locally and in the country. As a matter of fact, steam is even harder to move now than it has been and the domestic is at a standstill. There is

nothing to indicate steam will show any improvement, although there may be some movement early this month on domestic sizes. This refers practically to Standard.

A little Mt. Olive domestic is moving through to the West and Northwest, but nothing in steam. Domestic buying in St. Louis has stopped on everything and the dealers' yards are pretty well congested.

Country business picked up a little a week or two ago, but it has fallen off. There is a feeling that after the Fourth the domestic buying will show improvement. Prices remain unchanged.

Southwest

KANSAS CITY

Howat's Trial the Occasion for Mine Idleness—General Trade Conditions Bad—Prices Unchanged.

Mines were idle all week, miners taking what they term a vacation to attend Howat's trial for violation of the Industrial Court Act. Of 12,000 miners, only about 400 attended the trial, notwithstanding that brass bands were out in full force and barbecues were promised.

On account of mines being down no shipments of domestic coal have been made but enough steam coal was accumulated at the mines to supply everyone with requirements. General conditions continue bad and this is one year that it seems impossible to forecast the situation with any degree of accuracy.

Arkansas lump is $6.50@$7, depending on the grade, mine run $4.50, slack $2@$2.25; north Missouri lump is $4.50, washed nut $4.50@$5, washed slack $3.85, mine run $3.85 and raw slack $3 @$3.15.

South

LOUISVILLE

General Demand Very Quiet—Heavy Cuts on Screenings—Domestic Movement Is Slowing.

General demand is quiet for all grades, and prices are weak. The lightest market on screenings of many months is recorded this week, with some of the Hazard operators offering this size at 80c. in quantities of from one to fifty cars, their Lake orders resulting in overproduction which cannot be disposed of except at low prices.

Domestic movement is quiet, some retailers reporting orders for about one-third of normal stocking. Shortage of cash and hard times is held responsible rather than a belief that prices will be lower.

It is reported that some of the steel companies and big private producing companies are now offering large tonnages on the open markets from their own mines, having stocked their own light requirements. Industrial movement appears lighter, with a prospect of its going still lower due to the big breaks in crude oil. A 30c. cut per barrel on June 28 brought prices in Kentucky down to $1 a barrel for the best grade, whereas the best grade sold up to $4.50 plus premium offered by independents last fall.

BIRMINGHAM

Market Very Quiet — Quotations Unstable — Domestic Contract Deliveries Being Restricted.

The local market continues very dull with scarcely any commercial demand. The trade is following the same tactics which have been in vogue for several months past—buying only for immediate needs. Consumers are refraining from contract offerings for the reason that they cannot figure their needs far in the future and are also apparently anticipating further price reductions. Mine run quotations are shaded in many instances: Cahaba and Black Creek, $3@$3.75; Pratt, $2.85@$3; Carbon Hill, $2.75@$3; Corona, $2.50 @$3.

Domestic dealers report the retail market very weak. Householders are not placing orders for winter coal to any extent and the yards are heavily stocked. Dealers are cutting down on mine deliveries on this account.

Mining operations have been somewhat further curtailed during the past week by some of the furnace companies, the iron market showing no signs warranting the blowing in of stacks which have been idle for several months, the stock-piles of coal and coke having reached large proportions.

News From the Coal Fields

Northern Appalachian

ANTHRACITE

Steam Sizes Weaken — Independents Operate at Lower Premiums.

All mines are operating. Steam sizes are slow in moving, however, and prices for the independent grades are weaker. The strike at the mines of the Pennsylvania Coal Co. has been settled and the men have returned to work.

Chestnut is moving slowly and the companies are making their customers take a certain proportion of this grade with stove and egg shipments.

EASTERN OHIO

Production Increases — R.R. Fuel Heavier—Lake Congestion Continues—Surplus Slack Disappearing.

Aggregate production increased to 400,000 tons in the week ended June 25. The output was about 63 per cent of total rated capacity and the daily average loading was a little under 67,000 tons, as compared with 63,485 tons the preceding week. Production for the year to date has been 8,092,000 tons, or 53 per cent of the rated mine capacity of the field for the period. Association mines worked 57 per cent of possible worktime, as compared with 55 per cent the previous week.

Railroad fuel production has been slightly increased, and at least 30 per cent of the total output is going to this trade. Operators are optimistic by reason of the recent urgent suggestion to the carriers from the Interstate Commerce Commission, that a liberal fuel reserve be laid by in view of low production and in anticipation of possible conditions which may exist this late summer and fall.

The volume of Lake coal, while showing some signs of slowing down, is still moving at a pretty good clip and is the bulwark which prevents a further closing down of the mines. Dumpings have been heavier than receipts at lower ports, and the railroads have about 17,000 cars at the docks, and some 4,000 cars in transit. Upper Lake docks are fast becoming filled up and movement from the latter continues very slow. Some operators feel that an improvement is due at the other end very soon and this will assist somewhat in maintaining a good volume of lake shipping.

Industry continues laggard and consequently there is little, if any, change in the general coal trade, both industrial and domestic demand remaining at a minimum and contract and spot inquiries as quiet as ever. The recently reported surplus of slack has disappeared and as a result there has been some stiffening in the price.

PITTSBURGH

Rumors of Further Price Declines Not Credited—Consumption Prospects Uncertain—No Disposition to Stock.

While there are rumors that $1.50 has been done in Pittsburgh steam mine run, these rumors are entirely discredited, unless they refer to forced sales. In the regular market $1.75 continues to be regarded as a very low price. It is strenuously argued that at regular wage rates $1.75 means a loss to the operator, even without counting overhead. Steam slack remains $1.40@$1.50.

Operations have decreased slightly, chiefly on account of lower line demand. Shipments in the Lake trade have experienced no further recession, as there was a sufficient decrease recently to cut off the accumulating of coal that was so conspicuous for awhile. The steel industry is down to an operating rate of about 20 per cent. The call for gas coal, outside the steel in-

dustry, continues of fair proportions.

In no quarter is there any disposition to stock against next winter's requirements. Industries are in such condition that they have no opinion as to whether they will need coal next winter and the utilities do not see that in such circumstances there is likely to be railroad congestion that would interrupt their supplies.

CONNELLSVILLE

Prices Steadier Despite Continued Lack of Demand—Production Continues to Decline—Outlook Poor.

While the coke market has not been aided by any increase in demand, prices for spot or prompt shipment of furnace coke show less yielding tendency than a week ago. This is probably due to the abandonment by two or three operators of the hope that by cutting prices they could force sales. For three or four months the market has been made by a very few operators, the great majority holding aloof entirely, so that a change of attitude on the part of only two or three operators may make a decided difference in the price situation. There is, however, enough loaded coke awaiting a market to prevent any definite advance.

The outlook of blast furnaces that normally consume coke have not improved and if prospects are to be judged by the rate at which pig iron is absorbed from furnace stocks they have grown even worse.

In foundry coke, one of the favorite brands in the market has been reduced from $4.50 to $4.25 net to dealers. Some standard grade is obtainable at $4.25, but prices below that would hardly cover standard selection. Demand is extremely light.

The *Courier* reports production in the week ended June 25 at 11,800 tons by the furnace ovens and 16,380 tons by the merchant ovens, making a total of 28,180 tons, a decrease of 1,640 tons.

UPPER POTOMAC

Dullness More Pronounced—Production at Minimum—Buyers' Prices.

Orders were more scarce and dullness more pronounced than ever during the week ended June 25. Only a handful of mines in the Upper Potomac and a few producers in the Georges Creek region were in operation. Demand was so dull that buyers could almost set their own price; Big Vein Coal sold $3@$3.50, Pools 9 and 10 around $2.75 and $2.50 respectively.

CENTRAL PENNSYLVANIA

Operators Curtail — Producers Await Possible Conference with U. M. W.

The mining situation remains unchanged although operators have not given up hope that there will be a break in the lines of the United Mine Workers in the near future, allowing negotiations which will permit operators in the organized districts to compete with other fields.

The executive committee of the Central Coal Association is working on plans for the future and a meeting will be called early in July to lay the plans before the association. Leading operators declare to have finished with the officials of the United Mine Workers, but just what action will be taken will be decided when the association meets in Altoona.

In the meantime, operations are greatly curtailed, as the market will not absorb coal at prices which many producers feel that present costs dictate.

UNIONTOWN

Further Reduction of Coke Output—Settlement of British Strike Closes Export Outlet — Steam and Domestic Orders Lag.

Further reduction of output to meet a slackening demand marked the last week of June in the Connellsville coke region. The Rainey interest, practically the only independent operator having any substantial number of ovens in blast, curtailed their output sharply.

Settlement of the British strike has ended a budding demand for export tonnage. During the past few weeks there have been inquiries out for hard structure gas coal classified as Pool 64 and sales have been closed for export at $1.70.

The domestic situation, either for coal or coke, has shown no change. Under normal conditions it is about this time of the year that negotiations are commenced for fall deliveries but to date there is not the slightest indication of any fall demand.

Although some coal orders have been secured at $1.70, the highest price asked is $2, very few sales, however, being closed at that figure. Furnace coke has a nominal quotation of $4.50 with some operators asking $5.

FAIRMONT AND PANHANDLE

Virtually No New Business—Production Rate Is Lower—Lake Outlet Closing—Prices Soft.

Fairmont

Aside from a spurt in production in northern West Virginia, during the latter part of the week ended June 25, general dullness prevailed with fully 200 mines in idleness from day to day. There was virtually no spot business and in that respect the situation was really worse than during the preceding weeks. Export shipments from some of the larger plants, however, tended to hold up the production figures.

Lake movement declined toward the end of the week. Prices were low, slack ranging $1@$1.50, mine run $1.75 @$2 and prepared sizes $2.75@$3. Much of the output of some of the fields was being consigned to foreign railroads.

Northern Panhandle

There was no improvement in conditions as June came to a close. Northern and Western markets continued to take a small amount of coal but Lake shipments dwindled. Spot sales were few and no new contracts were being made. Slack was in least demand of all the sizes.

Middle Western

MIDWEST REVIEW

Improved R.R. Situation Encourages Coal Trade — Domestic Demand Due Soon — Steam Coals Hard Hit Until Industry Resumes.

The general tone of the market is better, although demand has not improved. The feeling of confidence which now appears is caused by recent developments in the railroad situation. From present indications, there is going to be practically no trouble in the way of strikes, lockouts or resignations caused by the new railroad wage scale. Another factor is the proposition of the Government to pay the railroads $200,000,000—which is now held in the treasury — in settlement of various claims, etc., which grew out of Government control. With labor reduced to some extent and with some ready money on hand, the railroads should be in position to make more purchases and undertake badly needed improvements.

A careful investigation reveals the fact that the railroads are so certain there will be no strike trouble that they have made no preparation toward protecting themselves. This confidence is probably justified in view of the developments which took place earlier in the year when there was a strike on the rails of the Atlanta, Birmingham & Atlantic. During this strike labor was so plentiful that the railroad authorities had no difficulty whatsoever in replacing their striking employees. Since that time unemployment has grown by leaps and bounds, and it is believed it would not be an extremely difficult matter to get men to operate the railroads should the unions insist on their men striking.

Dealers in Michigan, Indiana, and Illinois appear to be in a healthier frame of mind than dealers further west in Minnesota, Iowa and the two Dakotas. The situation appears to be particularly acute in South Dakota. After a good start, the crops in South Dakota met with reverses, and wholesalers and operators in Chicago report numerous cancellations, based solely on the ground of crop failure.

Nevertheless, the situation is very much better on domestic coals than it is on steam coals. This usual tonnage has not moved as yet and every week which goes by brings us nearer to the date when this coal will have to start on its way to the consumer. The steam market, however, has no such prospects. Factories are very uncertain as to their activities both present and future, and, consequently, are buying in very meager quantities.

Those engaged in producing building material are, perhaps, in better shape than any of the other industries, but, at the same time, it must be noted that a number of brick and tile plants which ordinarily would have been in operation since early spring, are still closed.

Public utilities are well supplied with coal, as they have been picking bargains during the past six months. Railroads are taking their minimum, or less, on contract, and packing plants are only buying in small quantities and on a day-to-day basis.

INDIANA

All Demands Continue Low—Railroads Preparing for Heavier Transportation —Coke Stocks Pile Up.

There has been virtually no change in the bituminous market. Demand for steam coal shows no particular improvement and domestic grades are having no call. The domestic consumer, just like the industrial buyer, seems determined to wait and take a chance for lower prices.

That the railroads figure there is a possibility of a resumption in the coal business may be deduced from the fact that repair yards in the big trunk lines are fairly busy getting bad-order cars in shape for transportation.

Production remains at about the same low figure that has been experienced since the first of the year. Gas companies report that their stocks of coke are continuing to pile up and it is likely that never before in the history of the state were there such large stocks of coke without a market. Officials say that offers of considerable reductions bring no demand.

WESTERN KENTUCKY

Production Not Heavy — Prices Are Maintained—Trade Optimistic Concerning Fall Business.

Summer dullness has been more pronounced this year than for some years past, due in part to the fact that western Kentucky has always made a drive for prepared sizes, and the domestic consumers this year are failing to stock up.

However, the operators have not made the mistake of trying to overproduce on a weak market, so have not been giving their coal away. With the poor domestic demand there has been no heavy tonnage of screenings that had to be sold at a big loss, and which would carry down the price of mine run.

Some operators are planning to advance prices to $3.25 on lump coal, which have been selling at around $3. Spot prices are shown in the Review.

SOUTHERN ILLINOIS

No July Increase on Domestic—Market Conditions Even Worse—Heavy Over-Production of Screenings.

Indications are that there will be no increase in the price of southern Illinois coal for July. A few operators announce an increase to $4.25 on domestic sizes and others have kept their price at $4.05.

Steam sizes are next to impossible to move. Instead of a better showing in the demand, it seems to be falling off and there is nothing to indicate that steam will show any improvement for some time to come.

At several points screenings are being put on the ground and hundreds of cars are tied up at various places to the extent that some mines are unable to work on account of the congestion of loads. Railroad tonnage has been light and in a general way the situation is a little bit worse than at any time this year.

Independent operators are selling domestic sizes $3@$3.25, and screenings down to $1.25, with mine run at $2.75. Most of the association operators are holding to their domestic prices, but have cut to steam users on all sizes.

In the Duquoin field the tonnage is light and conditions may be rated as worse than at any time this season. The prices run about the same as the independents in Carterville field. Steam sizes are heavy.

The Mt. Olive situation is about the same as it has been for several weeks, one to two days a week, most of the coal moving North and West and the steam sizes on contracts. The St. Louis price is unchanged at $3.25 and country price is $3.50 on domestic. Railroad tonnage is fairly good.

The Standard field shows up somewhat worse than for several weeks past both as to tonnage and prices. Steam and domestic are equally hard to move. Railroad tonnage continues light.

Middle Appalachian

HIGH-VOLATILE FIELDS

Market Apathetic—Production Unimproved—Lake Movement Declines.

KANAWHA

Although there was an increase in production during the week ended June 25, market apathy was just as pronounced as it has been recently. Production of prepared sizes was being held back because of the inability to move resultant coals, and prices were unimproved.

LOGAN AND THACKER

Logan production was maintained during the week with a daily output of about 45,000 tons. "No market" losses were as heavy as ever but large companies continued to store much of the coal produced. Steam demand was particularly lifeless.

Thacker producers were busily engaged in getting ready for the senatorial investigation and there was a lull in the trouble, which for the last year has upset the entire region. A considerable tonnage went to Western markets, much of it on contract.

NORTHEASTERN KENTUCKY

Congestion at Lake piers has closed the best outlook for the mines in this section and production as a result, has slumped. The output was not in excess of 30 per cent, two days being the limit at many mines.

VIRGINIA

Conditions remained unchanged. Some of the larger mines were working on a part-time basis, producing a small tonnage of contract coal, but the spot market was lifeless. Not over 50 per cent of capacity was produced during the week.

LOW-VOLATILE FIELDS

Production Declines as Demand Eases —New Business Is Scarce and Prices Soften.

NEW RIVER AND THE GULF

New River production diminishing during the week ended June 25 as a result of the dwindling demand not averaging more than 25,000 tons daily. The best markets were in the East and at Tidewater. Lake movement was curtailed because of the accumulation of cars at the lower ports. During the last half of June dullness was more pronounced than at any time since the first of the year.

In the Winding Gulf field similar conditions prevailed. There was little or no spot demand and production dropped to less than 50 per cent of potential capacity.

POCAHONTAS AND TUG RIVER

Although Pocahontas production was holding its own at about 300,000 tons or more, yet the demand was slipping. Much of the output went to Tidewater terminals with a heavy tonnage being exported on a contract basis. There was little or no spot buying and but few new contracts were made. Prepared sizes held firm but mine run prices were softer and slack was in good demand.

Production in the Tug River field was being well maintained with the movement about evenly divided between Tidewater and the Lake. The general demand, however, was not as strong as during the earlier part of the month. A fairly large tonnage was being exported. But few new contracts were made during the latter part of the month. Slack was weak in price, in some instances selling down to $2.

West

UTAH

No Improvement in Buying—Production Slumps—Heavy Demand Anticipated.

The coal situation does not improve; buyers seem as determined as ever not to buy for storage at present prices. Production for May was the lightest for many months. The output was 259,433 tons, compared with 400,938 for May last year, a reduction of 141,505 tons.

Many operators are confident that consumers will see the necessity of storing coal by the middle of July, but others think there will be no real activity before August, if not later. The D. & R. G. officials have orders to rush repairs on all coal cars in order that they be in readiness for the heavy work that is expected.

MINE And COMPANY NEWS

ALABAMA

The Smith-Gambill Coal Co. has been incorporated in Birmingham with a capital stock of $5,000. J. W. Smith is president, L. B. Gambill, secretary and treasurer.

ILLINOIS

The mine of the **Kanawha Fuel Co.**, at Du Quoin, is now operating after being idle for several weeks during the off period of the year in the coal market.

The large plant of the **Illinois Ice & Fuel Co.**, at Peoria, was recently completely destroyed by fire at a loss of $50,000. The plant was only partly covered by insurance.

The Pittsburg Mining Co., Belleville, has filed notice of dissolution under state laws.

INDIANA

Evidence of a renewed activity in coal production circles is seen here in an announcement that the **Knox Mine**, one of the largest in the western Indiana field, will resume work after a three months' shutdown. During the period of idleness, some new machinery has been installed and the mine will start with 250 men employed. The **American Coal and Mining Co.** is sinking a new shaft two miles south of Bicknell and in the near future will open Mine No. 3 at this point.

Senators Watson and New, of Indiana, have received many protests against the Frelinghuysen bill. Objection is made that the proposed law would tend to promote legislation empowering the government to control and regulate private business. The Indiana Retail Coal Merchants' Association, which has headquarters at Indianapolis, sent a vigorous protest, as did the Commercial Credit, Audit and Correct Weights Bureau, of Indianapolis. Other remonstrators included A. M. Ogle, of Indianapolis, and W. J. Freeman, of Terre Haute.

KENTUCKY

The Peacock Coal Mining Co., Louisville, capital $35,000, has been chartered by C. H. Bostwick, John L. Gruber, R. F. Laffey and others. The debt limit is the same amount as the capital.

Coal in the Harlan field will be mined on a large scale by the **Slater Fork Coal Co.** chartered by John E. Brown and associates, with $500,000 capital.

The Cob Mountain Coal Co., an Ohio corporation with headquarters at Pikeville, was given permission to operate in the state.

MICHIGAN

Awards by Detroit's purchasing department covering about 50,000 tons of bituminous coal for use of the water-works and public lighting plant during the coming fiscal year, were cancelled by the city's common council, following receipt of complaints from James P. Cummiskey, head of the **Ohio & Michigan Coal Co.**, who alleged that unfair treatment had been accorded unsuccessful bidders by the purchasing department. The council's procedure is in line with a recommendation from the purchasing department which suggested that the city might benefit from declining prices while readvertising for bids. The first award was to the **P. Koenig Coal Co.**, Detroit. **The Ohio & Michigan Coal Co.** received the contract a year ago

NEW YORK

Cass J. Vieau Coal Co., of Brooklyn has been incorporated, with a capital of $20,000. The incorporators are given as C. J. and K. J. Vieau and H. Johnson.

The A. E. Birdsall Coal & Coke Co. has been organized in Buffalo, with Mr. Birdsall president; Frank X. Schwab, first vice-president; H. L. Snyder, second vice-president and general manager, and Joseph G. Zeigler, secretary-treasurer, to do a general coal business. Mr. Snyder was formerly the manager of the Premier Coal Corporation.

E. L. Moon, publisher of a periodical of Columbus, Ohio, has been elected president of the **Salamanca Coal Co.**, which was recently incorporated under the laws of New York with headquarters at Salamanca. The capitalization is $100,000.

OHIO

It is rumored that the Municipal Light Plant, City of Cleveland, has just contracted for some 80,000 tons of Middle District Ohio coal covering their requirements for the next ten months. Grades were mine run and nut and slack and prices were said to average around $3.10.

The mining village of Lathrop in Berne township, Athens County, was almost completely wiped out recenty by a cloudburst. The village is on the property of the **Black Diamond Co.**, of Columbus of which J. H. Earnshaw is president and Henry Charleton, general manager. The village of Sharpsburg, a short distance away in the same valley was also badly damaged.

The Middle States Coal Co., has been chartered with a capital of $50,000 to mine and sell coal. Incorporators are R. B. Hurst, A. R. Jones, R. McMurray, E. Hauck and H. H. Orr. The incorporators are officials and employes of the **Central West Coal & Lumber Co.** and the operation will be in Ohio.

The Raven Coal Co., has been chartered with a capital of $500,000 to operate in the eastern Ohio field. Among the incorporators are M. P. Bell and William Schafer.

The Silver Fox Coal Co., has been chartered with a capital of $25,000 to mine coal in the Hocking field. Among the incorporators are J. M. Bennett and W. H. Bennett.

Coal Production in Southern Ohio of 383 mines reporting for the first five months of the year ending May 28 was 2,917,038 tons, as compared with a full time capacity of 12,675,038 tons. The shortage of 9,768,170 tons was due largely to no market which contributed 8,549,117 tons to the shortage Lack of cars and railroad disability caused a loss of 261,493 tons; labor shortage, 340,945 tons; strikes, 73,259 tons; mine disabilities, 240,771 tons, and other causes 291,878 tons.

The Allied Power Industries is the name of a new concern, organized in the form of a trust to provide power in all forms. Headquarters are in Columbus with L. W. Winchester at the head, Braman H. Loveless, secretary and treasurer and Robert S. Fletcher, general manager and chairman of the board of directors. The plan is to erect a huge power house at the mouth of the mines of the **Gnaden-Goshen Coal Co.**, near Uhrichsville in Tuscarawas County. The mines have been developed for the past few years with this idea in view and the proposition is to transport the electrical current to cities, towns and commercial users within a radius of 250 miles. The concern is a $10,000,000 trust estate and was recently formed by a merger of the **Gnaden-Goshen Coal Co.**; the **Atomized Fuel Industries** and the **Ohio Gas & Power Co.**

The authorized capital of the **Berth & Rennie Coal Co.**, has been increased from $50,000 to $75,000 by papers filed with the secretary of state.

PENNSYLVANIA

A sinking fund of $1,500,000 a year will be established by the **Glen Alden Coal Co.** for the purpose of retiring the $60,000,000 4 per cent bonds to be issued by the company in payment to the Delaware, Lackawanna & Western R.R. in return for its coal properties. The sinking fund will be established five years after the change in title.

The East Cameron Coal Co., of Shamokin, has been chartered with a capital stock of $25,000. Louis Jacobson, 299 Broadway, New York City, is treasurer, and the incorporators are Homer B. Helm, J. F. Vandevender and Charles Moran, all of Shamokin. The purposes of the company have not been defined, but it is apparently a washery project. Cameron township, from which it apparently takes its name, lies south of Shamokin, and for the most part is outside the coal measures, but it is traversed by Mahanoy Creek, along which a number of dredging plants have been installed.

Fire recently completely destroyed the big plant of the **Cherry Tree Machine Co.**, manufacturer of mining equipment at Stiffiertown. The loss is estimated between $50,000 and $60,000. The entire loss is covered by insurance. A temporary building has been constructed to carry on the work and the company is again building mine cars and parts, being in position to continue shipments, etc.

UTAH

C. N. Strevel, former president and general manager of the Independent Coal and Coke Co., Salt Lake City, has been granted a lease on forty acres of coal land up Gordon Creek.

Figures compiled from reports made to the state officials show that coal shipments in Utah during the first five months of this year decreased 36 per cent, as compared with the figures for a like period in 1920. The total number of cars which were loaded from the Carbon County coal fields during the first five months of 1920, as compared with the first five months of 1921, shows the following: first five months of 1920, 42,377; same period in 1921, 26,744; decrease in present year, 15,633.

The Utah Fuel & Iron Co. has an engineer laying out plans for the opening of a coal mine in Horse Canyon near Sunnyside, Carbon County.

VIRGINIA

The Raven Red Ash Coal Co., of Richlands, has awarded a contract to the Scottdale Foundry & Machine Co., Scottdale, Pa., for the erection of a new tipple at its properties, with daily capacity of about 1,000 tons. The company is also planning for the installation of considerable machinery at its plant, including the construction of a new aerial railway line.

The Norfolk office of **Coale & Co.** has been closed and **W. H. Marr**, the former general manager, has gone into business there for himself, as coal broker.

The Eminence Coal Mining Co. has closed its Norfolk office. **R. M. Foster**, the representative there, having gone to Percy Heilner & Sons.

WEST VIRGINIA

There is being rapidly developed in Greenbrier County a new smokeless field. Tributary to this section is 175,000 acres of coal belonging to the Gauley Land Co., this land being under the control and management of J. G. Bradley, who was recently elected president of the National Coal Association. Railroad connections at the present time are made via the C. & O. at Meadow Creek and thence by the Sewell Valley R.R. to Rainelle. At this point the Greenbrier & Eastern has built a ten-mile extension into the heart of this field, and there are five companies rapidly developing and getting ready to ship coal, as follows: **Greenbrier Smokeless Coal Co.**, of Bellwood, of which H. H. Blackburn is general manager; **Meadow Creek Smokeless Coal Co.**, of Willcrichton, of which W. G. Crichton is general manager; **Imperial Smokeless Coal Co.**, of which J. Wade Bell is general manager; **Francis Coal Co.** and **Marguerite Coal Co.**, identified with the W. E. Deegans interests of Huntington, of which S. E. Scholl is general manager; **Nelson Fuel Co.** of McClungs, of which H. S. Nelson is general manager. Production will be limited until such time as the Greenbrier & Eastern completes its line to Alderson, a distance of about 25 miles.

The sum of $50,000 figured in a coal deal involving the purchase of about 435 acres of coal land in Clay and Cass districts of Monongalia County, by Henry A. Phillips of Pittsburgh. Negotiations had been in progress for some time. In some quarters it is stated that the coal tracts were purchased for the Mellon and other interests in Pittsburgh.

Ebensburg and Nanty-Glo, Pa., men who purchased the holdings of the **Foy Splint Coal Co.** at Dorfee, W. Va., have named the new concern the **Kanawha White Ash Colliery Co.** The mine has been placed in operation and is capable of putting out 600 tons of coal a day. The officers of the new company are: President, E. M. Burns, Ebensburg; vice-president, James Dunn, Nanty-Glo; secretary, T. P. Burns, Nanty-Glo; treasurer, William B. Smith, Ebensburg; superintendent, Matthew Facemyer, Nanty-Glo. The property includes twenty-five dwelling houses, a good club house and twenty-five houses under construction.

The Davis Coal & Coke Co., is arranging for the construction of a new steel tipple at its coal properties at Thomas. A number of plant improvements will be made and new equipment installed. A fund of close to $175,000 is being arranged to carry out the work. A. W. Galloway is president.

About 500 acres in the No. 3 Pocahontas seam will be developed by the **Micajah-Pocahontas Coal Co.**, headed by L. R. Taylor, superintendent of the Virginian Ry. Associated with him, in part, in the new company, which has a capitalization of $300,000, are H. E. DeJarnette, of Princeton; W. W. Boxley, L. J. Boxley and J. B. Bray of Roanoke, Va. The general office of the company will be at Princeton, the property being west of Clark's Gap on the Virginian Ry.

Work is being pushed on the plant of the **Woods Coal Co.**, between Rivesville and Grant Town on the Paw Paw branch of the B. & O., construction work having been initiated last summer. At the present time the company is engaged in completing the construction of an incline and tipple. Preparation is also being made for the installation of a side track. The incline under construction is to be over 600 ft. in length. The new mine is to be well equipped.

Clarksburg capitalists have organized the **Jones-Koblegard Coal Co.**, with a capital stock of $100,000 for the purpose of operating in Harrison County. Active in effecting a preliminary organization of the company were: Robert M. Jones, John Koblegard, Jr., E. H. Koblegard, Howard L. Robinson and E. A. Davis, of Clarksburg.

Several concerns have recently surrendered their charters. They are: **Standard Gas Coal Co.**, of which W. S. Wood, of Charleston, is president; the **Laurel Creek Coal Co.**, of which W. H. Brydon, of Grafton, is president; the **Ritchie-Pocahontas Coal Land Co.**, of which George E. Price, of Charleston, is president; the **St. Paul Coal Co.**, of which Karl F. Overstreet, of Pittsburgh, is president, and the **Kingwood Coal Co.**, of Philadelphia.

About 800 acres of Sewickley coal land were involved in a trade to which the **Fairmont and Monongahela Coal Co.**, controlled by Edward Hines, of Chicago, and Thomas W. Whyel, of the **Whyel Coal Co.**, were parties. The tracts exchanged are located at various points in Paw Paw district of Marion County and in Grant district of Monongahela County.

In connection with the sale of between 3,000 and 4,000 acres of coal land on the west bank of Simpson Creek, in Pleasant district of Barbour County, the building of a railroad during the present summer will make this land accessible for development. Arrangements have been perfected, in fact, to have the Cole Brothers Construction Co., of Morgantown, build about two miles of railroad, which will make it possible to transport coal to the Simpson Creek branch of the B. & O., the short piece of road to be a spur of the branch mentioned. About $3,500,000 was the sum paid for the acreage acquired. Although about 2,400 acres were acquired by the **Cambria Coal Co.** at the same time B. P. Porter, of Cleveland, secured about 1,000 acres. The **Morgantown Coal Co.** secured about 200 acres and **Cole Brothers** something over 100 acres. It is estimated that fully $1,000,000 will be expended in opening mines in the Bear Mountain territory within the next year. The Morgantown company will expend about $75,000.

Following the business sessions of the twelfth annual meeting of the **Mine Inspectors' Institute of America**, to be held in Charleston at the Kanawha Hotel, July 12-14, the members will be treated with an automobile ride to points of interest about the city and an inspection of the Government's Armor Plate Plant at South Charleston. Announcement of the program of the Institute sessions has already been made.

BRITISH COLUMBIA

Coal production in British Columbia for the month of May shows a decline in comparison with that of April of 17,599 tons, the totals being: April, 209,152; May, 191,553. It is likely that the Crow's Nest Pass will be put under a serious handicap during the next few months if the recent 10 per cent seasonal reduction in freight rates, made by the Railway Board to the prairie provinces, is not extended to include them.

OUTPUT OF COAL FOR MAY, 1921.

Vancouver Island District

Mine	Tons
Canadian Western Fuel Co.	37,388
Canadian Collieries (D) Ltd.,	
Comox	41,210
South Wellington	7,812
Extension	17,138
Nanoose Wellington Collieries	2,852
Granby Consolidated M. S. & P. Co.	24,361
Old Wellington (King & Foster)	435
Total	131,196

Nicola-Princeton District

Middlesboro Collieries	5,554
Fleming Coal Co.	3,072
Coalmont Collieries	1,485
Total	10,111

Crow's Nest Pass District

Crow's Nest Pass Co.,	
Coal Creek	27,690
Michel	17,074
Corbin Coal & Coke Co.	5,482
Total	50,246
Grand Total	191,553

Traffic News

The I. C. C. has ordered an investigation of the failure of the Ohio railroad commission to put into effect on state business the increased interstate rates on bituminous coal in that state, and will conduct a hearing in the case at an early date.

An I. C. C. examiner recommends that reparation be awarded the **Excelsior Knitting Mills** upon shipments of bituminous coal from Appalachia and Dante districts in Virginia to Union, S. C., on which charges were paid prior to Dec. 31, 1915, at rates found unreasonable in a previous report. It is recommended that the **Gault Manufacturing Co.**, did not furnish proof to entitle it to reparation.

In the complaint of the Southern Ohio Coal Exchange the Harlan County Coal Operators' Association, the Hazard Coal Operators' Exchange and the Southern Appalachian Coal Operators' Association have been authorized to intervene. The case involves rates on bituminous coal from Ohio groups to Central Freight Association territory as compared with rates from Crescent groups.

Justice Hoehling of the District of Columbia Supreme Court, in the case of the **Pittsburgh & West Virginia Ry.** against the I. C. C., in the railways plea for an injunction in the **Wayne Coal Co.** suit, dismissed the railways bill on motion of the commission, upholding the constitutionality of section 206 of the transportation act. The act provides that the period of Federal control shall not be computed as a part of the periods of limitation in actions against the carriers for causes arising prior to the taking over of the roads by the government.

In the complaint of the **Slogo Coal Corporation** and the **Perry County Coal Corporation** the Illinois Coal Traffic Bureau has been allowed to intervene by the I. C. C. The case involves rates on bituminous coal from complainants' mines at Johnson City and O'Fallon City, Ill., to destinations in Illinois and other states.

In the complaint of the **Tallulah Cotton Oil Co.**, the commission decides that the rate on bituminous coal from southern Illinois mines to Tallulah, La., are not unreasonable.

The latest reference to the I. C. C. decision revising interstate rates on coal to various points in and out of Minnesota, effective July 6, is that it results in an increase to the Twin Cities of 13c. This will undoubtedly be added to the cost of coal, if it is maintained by the Commission. This will reduce the saving under the Lake and rail reduction of 28c. to 15c. net.

Work will soon be started on the extension of the **Murphysboro & Southern Illinois** electric road and when completed will reach from Murphysboro in Jackson County to Herrin in Williamson County, touching Carbondale, Cambria, Bush and other mining centers. The two counties are full of coal mines and the extension of the line will more than double the number of mines which are now served by the service. The improvement will be made on the road at an approximate cost of $500,000.

Haulage rates charged the **Southern Ohio Power Co.**, by the H. V. Ry., for transporting coal from the mines of the **New York Coal Co.**, to Fleetwood have been ordered reduced by the Ohio Utilities Commission. The reduction is from 42 to 28c. per ton.

On rehearing of the complaint of the **United Verde Extension Mining Co.**, an I. C. C. examiner recommends that the commission affirms its former decision that the rate on coal from Dawson, N. M., to Clarkdale and Jerome, Ariz., is not unreasonable.

In the complaint of the **National Fireproofing Co.**, the Commission decides that the rates on coal from points in the Mercer-Butler and Pittsburgh districts of Pennsylvania to Perth Amboy, Natco and Port Murray, N. J., are not unreasonable.

In the complaint of the **Du Pont Co.**, the Commission decides that the rate on bituminous coal from Midland, Ind., to Grayling, Mich., is not unreasonable.

The Boston and Maine R.R., at a recent meeting of the board, deferred the matter of declaring a dividend on the first preferred stock, due July 1. The same conditions which made it necessary to defer action on the dividends due Jan. 1 last have continued and the deficit for the first six months of 1921 is estimated at more than $7,000,000.

The Chicago & Northwestern R.R. has declared the regular semi-annual dividend of 2½ per cent on common stock and 3½ per cent on the preferred, both payable July 15 to stock of record June 23.

In the complaint of the **Charles Boldt Paper Mills Co.** an I. C. C. examiner recommends that the rate on shipments of coal from Harveyton, Ky., to Red Bank, Ohio, be held to be unreasonable.

The Commission has vacated its investigation of coal rates from Cumberland railroad to Florida points, the carriers having withdrawn the schedules suspended.

In the complaint of the **Reeves Coal & Dock Co.**, an I. C. C. examiner recommends that rates on lump coal from Hillsboro, Ill., to Elroy, Wis., reconsigned to Wausau, Wis., were not unreasonable.

In the complaint of the **Dewey Portland Cement Co.**, an examiner recommends that rates on slack coal moving intrastate during Federal control on and after March 25, 1918, from Broken Arrow, Dawson, Henryetta and Dewar to Dewey, Okla., were unreasonable but that the rate from Dawson to Dewey prior to March 25, 1918, was not unreasonable.

Personals

C. S. Snyder has been appointed American agent for The Modern Transport Co., Ltd., of London, to purchase American coals for export and bunker.

Paul Schoff, of the Maple Ridge Coal Co., spent a few days at the New York offices of W. A. Marshall & Co. the middle of the month.

J. W. Bischoff, of Elkins, general manager of the West Virginia Coal & Coke Co., and president of the West Virginia Mining Institute, attended the semi-annual session of the institute at Fairmont during the second week of June.

Phillip E. Thomas, treasurer of the Imperial Coal Corporation, spent a few days recently in the New York office of the company.

Several changes have occured in Twin City companies lately. **W. T. Hopkins**, who left the Minnesota Coal Co., St. Paul, to go with the Pursglove Co., is succeeded by **George Adams**, formerly with the Northern Coal & Dock Co. **Mr. Bassford**, city salesman for the Minnesota has gone with the Carnegie Dock & Fuel Co. as city sales agent and is replaced by **Mr. Mueller** who comes from Montgomery, Ward & Co.

James McCarthy has been appointed field secretary of the National Retail Coal Merchants' Association. From July 6, 1918, to March 1, 1920, Mr. McCarthy was employed as inspector of the Property Protection & Police Section, Division of Law, U. S. Railroad Administration. Since April, 1920, he has been engaged in attending to matters for clients before the several Government departments at Washington.

JAMES S. McCARTHY
Newly appointed field secretary National Retail Coal Merchants' Association

Cyrus E. Woods, formerly counsel of the Pittsburgh Coal Co., has been appointed by the President as Ambassador to Spain.

W. W. Boyer and **E. M. Spieker** of the Geological Survey have undertaken investigation of coal beds in the Wasatch Plateau, Utah.

Charles F. Rand, former president of the A. I. M. E. has been made an honorary member of the Iron and Steel Institute of England, of which there were up to the time of this appointment only four honorary members: the King of England, the King of Belgium and two distinguished engineers.

John T. Davis, president of the Davis Colliery Co., with headquarters at Elkins, spent a few days in the New York market recently.

W. H. Greene, of Elkins, president of the Greene Coal Co., attended the semi-annual meeting of the West Virginia Mining Institute in Fairmont.

A. L. Brunk, formerly identified with the Elkhorn Collieries Co., on the left Fork of Beaver Creek in Kentucky will hereafter be connected with the sales department of the Sheridan Coal Co. at Dayton, Ohio.

A visitor in the Huntington market in June was **J. L. Phillips**, general manager of the Georges Creek Coal Co., with headquarters at Hetzel, W. Va.

E. S. Simpson, of Richmond, Va., president of the West Virginia Coal Co., was a business visitor in the Huntington, W. Va., market during the second week of June.

John M. Wright, of Cincinnati, president of the Raleigh Coal & Coke Co., is spending the summer at his cottage at Watch Hill, R. I.

L. J. Flanagan of the Pocahontas Fuel Co. has returned from a business trip to Chicago.

Rex L. Tomb, who represents the Raleigh Smokeless Fuel Co. at Detroit, was in the Kanawha field recently visiting friends and former associates.

A recent visitor in the Cincinnati market was **W. W. Mason**, purchasing agent of the Winifrede Coal Co. with headquarters at Winifrede, W. Va., in the Kanawha field.

George S. Wallace, a prominent attorney of Huntington, W. Va., who is interested in a large lease on Pidgeon Creek in Mingo County, spent a day or so in Cincinnati on business recently.

C. S. Paisley, identified with the Kelley's Creek Colliery Co. at Charleston, W. Va., spent a few days at Cincinnati recently.

R. M. Lambie, chief of the West Virginia Department of Mines, was at Clarksburg for a meeting with inspectors in the northern part of the state.

Brooks Fleming, Jr., of Fairmont, assistant to the president of the Consolidation Coal Co., has returned from a trip to the Kentucky properties of the company.

H. O. Hofman, professor of metallurgy, Massachusetts Institute of Technology, has been made an honorary member of the American Institute of Mining and Metallurgical Engineers.

George Sneddon of the Peabody Coal Co., Springfield, Ill., has accepted the position as general superintendent of the Kathleen mine at Dowell, owned by the Union Colliery Co., of St. Louis. Mr. Sneddon is a man of many years' experience in the mining game and succeeds **M. H. Detweiler**, as superintendent of the Union Colliery mine.

Announcement has been made that **Robert Medill** will be re-appointed by Governor Small of Illinois, to his present occupation as Director of Mines and Minerals for the state.

The Dominion Coal Co., Ltd., announces the appointment of **A. S. McNeill**, as general superintendent. This position is similar to that recently held by Mr. McNeil at Sydney Mines, with the Nova Scotia Steel and Coal Co., with which he has been for the past few years. The appointment is another important move toward consolidating the operations of the recently merged companies and it is along the lines of economies in management as announced at the time the merger was being effected.

M. D. Rowe, New York, manager of the offices of the Buffalo Coal & Export Corporation, has just returned from a trip through the South and the mines of the Buffalo-Thacker Coal Co., the parent organization and mining company of the Buffalo Coal & Export Corporation.

Association Activities

National Coal Association

The executive committee of the association, appointed June 1, 1921, is composed of the following:

Bradley, J. G. (Chairman), Elk River Coal & Lumber Co., Dundon, W. Va.

Bockus, C. E., president, Clinchfield Coal Corp., 24 Broad St., New York City.

Brewster, T. T., vice-president and general manager, Mt. Olive & Staunton Coal Co., St. Louis, Mo.

Gallagher, Michael, general manager, M. A. Hanna & Co., Cleveland, Ohio.

Guthrie, T. W., president, Hillman Coal & Coke Co., Pittsburgh, Pa.

Maloney, A. J., sales manager, Chicago, Wilmington & Franklin Coal Co., McCormick Bldg., Chicago.

Reed, G. W., vice-president, Peabody Coal Co., McCormick Bldg., Chicago.

Taylor, H. N., vice-president, Central Coal & Coke Co., Kansas City, Mo.

Walsh, J. P., vice-president, Pittsburgh Coal Co., Pittsburgh, Pa.

Watkins, T. H., president, Pennsylvania Coal & Coke Corp., 910 Whitehall Bldg., New York City.

Wentz, D. B., president, Stonega Coke & Coal Co., Philadelphia.

On the finance committee of the association, appointed June 1, 1921, are:

Tierney, A. J. (Chairman), vice-president and general sales manager, Crozer Pocahontas Co., Philadelphia.

Douglas, E. L., vice-president, First Creek Mining Co., 621 Dixie Terminal Bldg., Cincinnati, Ohio.

Morrow, J. D. A., vice-president, National Coal Association, Washington, D. C.

Morton, Quin, president, Wood-Morton Fuel Co., Charleston, W. Va.

Reed, G. W., vice-president, Peabody Coal Co., Chicago.

Walsh, J. P., vice-president, Pittsburgh Coal Co., Pittsburgh, Pa.

Watkins, T. H. Pennsylvania Coal & Coke Corp., New York City.

A long conference of the railroad relations committee of the National Coal Association was held at the Deshler Hotel, Columbus, June 23, with a large part of the committee present. Operators from all Ohio and many West Virginia mining districts were present to give their views on the question of assigned cars which was the principal topic under consideration. Chairman E. C. Mahan of Knoxville, Tenn., presided.

J. G. Bradley strongly attacked the Frelinghuysen "stabilization bill now in congress" as but a search and seizure measure which allows the auditors to go into the books of any consumer of 100 tons of coal annually.

W. D. McKinney, secretary of the Southern Ohio Coal Exchange told of the attitude of his organization on the bill which was contained in a telegram to Senator Frelinghuysen in which the organization offered to co-operate in securing legislation. It has always stood willing to furnish information as to mining, distribution, transportation and sale of coal.

The object of the committee meeting was to secure data to present to the I. C. C. to secure amendments of the assigned car orders. Cases in which the unreasonableness and the injustice of the policy were cited and these will be collected and marshaled for the committee hearing. A questionnaire was distributed for various operators to enumerate their difficulties under the assigned car orders.

Northern West Virginia Coal Operators' Association

The stand taken by members of the association against the practice of assigning cars and the agitation for legislation to prevent the restoration of such a practice even in case of emergency, has resulted in the introduction by Senator Sutherland of West Virginia of a bill prohibiting the Interstate Commerce Commission from assigning cars under any conditions.

A copy of the bill has been received by the association at Fairmont. The Sutherland bill would require all coal cars to be distributed proportionately. This bill is in the form of an amendment to the Transportation Act and would deprive the I. C. C. of any authority to resort to the use of assigned cars in emergency. The proposed legislation is designed to correct the use of assigned cars in what coal men characterize as so-called "emergencies," it being the opinion of northern West Virginia operators that the emergency clause has not been correctly interpreted.

The text of the bill is as follows: "Be it enacted by the Senate and House of Representatives assembled that sub-division 15 of Section 1 of the Act known as an act to regulate commerce, approved Feb. 4, as amended and as further amended by the act known as the Transportation Act of 1920, approved Feb. 28, 1920, be and the same is hereby amended by adding to the end of said sub-division the following:

"Provided, that nothing contained in the foregoing sub-division shall authorize the commission at any time to suspend, modify, cancel, alter or amend the provisions of sub-division 12 of this section which requires proportionate distribution of cars to coal mines."

Coming Meetings

The Huntington Coal and Industrial Exposition will be held in the Chamber of Commerce Building, Huntington, W. Va., Sept. 19 to 24 incl. Chairman of committee, Thomas A. Palmer, Huntington Chamber of Commerce, Huntington.

American Institute of Mining and Metallurgical Engineers will meet at Wilkesland, Ohio, Sept. 14, 15 and 16. Secretary, Bradley Stoughton, 29 West 39th St., New York City.

National Association of Cost Accountants will hold its annual convention at Cleveland, Ohio, Sept. 14, 15 and 16. Secretary, S. C. McLeod, 130 West 42d St., New York.

Mine Inspectors' Institute of America will hold its twelfth annual meeting at Charleston, W. Va., July 12 to 15. Secretary J. W. Paul, Bureau of Mines, Pittsburgh, Pa.

Illinois and Wisconsin Coal Dealers' Association will meet at Chicago, Ill., July 13, and 14.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The twenty-fourth annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

The West Virginia-Kentucky Association of Mine Mechanical and Electrical Engineers will hold its annual meeting at Huntington, W. Va., on Sept. 20 to 23. Secretary-treasurer, Herbert Smith, Huntington, W. Va.

The following first-aid meets will be held during August: The Davis Coal & Coke Co., first-aid and mine rescue meet at Thomas, W. Va. on the 3rd. The State of Iowa will hold its annual first-aid and mine-rescue meet on the 6th at Albia. At Birmingham, Ala., state first-aid and mine-rescue meet on the 6th. On the 20th a state first-aid and mine-rescue meet will be held at Charleston, W. Va. Under the auspices of the Colorado Fuel & Iron Co. a local first-aid and mine-rescue meet will be held at Pueblo, Col., on the 20th.

COAL AGE

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C. E. LESHER AND R. DAWSON HALL, *Editors*.

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Though Legislation Is Shelved, Causes Remain

BECAUSE when driven to the wall in a losing fight on his coal bills Senator Frelinghuysen used intemperate language in his denunciation of the associations in the coal trade it must not be concluded that he wears horns and seeks only destruction. His record since he began the first hearing on the high prices of coal early in 1919 shows that of all those who have interested themselves in the subject he is the most reasonable, moderate and considerate of the interests of the industry. Hostile at first, believing that quite possibly the coal men had formed a combination to fix prices, he patiently inquired into the facts and gave everyone an opportunity to tell his story. He came to be recognized as the friend of the coal industry in Congress, as one who had become sufficiently familiar with the facts about coal to understand the problems of the producer, distributor and retailer and as one who would help them out of trouble. When the Senate Committee on Reconstruction ducked behind coal last summer the hope was expressed that Senator Frelinghuysen would come to the rescue, and when the Calder bill was referred to the La Follette committee instead of, as expected, to that of Frelinghuysen, regret was general. Defeat of the Calder bill by default at the close of the last session gave rise to the expressed hope that in this session Senator Frelinghuysen would assume the initiative in coal legislation and that nothing radical, therefore, would come before the Senate.

The scandal in coal prices of 1920 was no dream; it was real. All through the summer the coal industry was working to avoid the reinstatement of Federal control of prices and last October the operators were told in Cleveland by the president of their association that the danger was then still imminent and that when Congress assembled the coal question would be in the forefront. At any time during the period of consideration of the Calder bill the coal men would have welcomed a chance to back the much milder measure of the Senator from New Jersey. It has been stated on competent authority that it was by the narrowest of margins that the Calder bill was prevented from coming to a vote in the closing days of the last session and that had it reached that point it might have passed. We recite these facts only to illustrate the truth of the declarations of many that just as surely as the sun rises another flare-up in coal prices will bring on another attempt to introduce Federal regulation—an attempt that because of the history of the past year will have even greater chances of adoption. If, however, the unexpected happens and coal prices become unduly prominent this year the industry will have to turn elsewhere than to New Jersey for a champion in the Senate.

We can but give the Senator credit for having, in his own words, sought to find legislation "that would not unduly embarass the coal trade and at the same time would protect the interests of the government and of the great body of consumers." But because his intentions are of the best is no reason for concluding that his solution is of the best. He sought to find a middle ground that would not provide regulation yet that would make coal cheaper to the consumer. He did not succeed because, in the words of Senator Stanley, "the Coal Industry Stabilization Act is not a bill to regulate the coal business; it is a bill to irritate the coal business. It is a forerunner of government regulation." According to the *New York Times* "The Frelinghuysen bill was rejected because it regulated a private industry as though it were public, and because it regulated sellers without assuming control over buyers." Regulation by any other name is still regulation, and it is on this rock that the stabilization act is stranded. Willingness to co-operate with the government in fostering better conditions in the coal trade did not mean willingness to accept even the mildest form of regulation, and as soon as the possibilities along this line in pending bills were scented by the coal men who have gone on record in favor of some provision for more publicity to the facts about coal, the bill was opposed.

Because the future may hold threats of more serious portent is plainly no argument for accepting in advance even a small dose of regulation. The Frelinghuysen bill with every suggestion of compulsion and regulation left out would have been fully as effective in promoting collection and promulgation of facts about coal, and with these provisions in, it would be absolutely ineffective in preventing high prices. Despite all that has been said in the past month we are convinced that the substantial element in the coal trade believes in stable rather than speculative business and in the value of educating the consumer as a means of reaching that goal. We agree wholly with Senator Frelinghuysen that "the fundamental economic laws, such as those of supply and demand," cannot "be successfully abrogated by statute." It is for this reason that we opposed his stabilization bill.

We are convinced that the function of government in our "coal problem" should be only that of agent in assembling and interpreting in an impartial manner the facts. We should not expect the government to become the apologist for the coal or any other industry. The misconceptions of the consumer about coal should be corrected by the industry through direct appeal to public opinion. In building such an effort there is nothing so potent as data for which the government stands sponsor by reason of having collected and disseminated it. We would not have the government, however, reading conclusions into these facts, either for or against the interest of the consumer or the producer. Good will is a valuable asset but it is one that is not yet vouchsafed to coal and cannot be had without conscious costly effort.

The same energy that was expended in advocating

and opposing coal bills in the past eight months, if directed toward obtaining appropriations for extension of statistical work on coal by already existing Federal agencies under statutes now on the books, would have put us well along the way on the task of improving the public relations of coal, a task at best that will require years to accomplish.

Stabilization at a High Price

LET the railroads stabilize the bituminous coal industry, is the scheme proposed by Edwin Ludlow before the Committee on Interstate Commerce of the Senate in the hearing on the railroad situation. The plan is to have all coal-consuming roads grouped under four super-purchasing agents who would so select the coals to be used and direct the purchase, storage and consumption that great economies would result. Among the advantages expected are the allocation to each road and division of a road of a uniform grade of coal, the avoidance of cross hauls and unnecessarily long hauls, placing the purchase on a scientific basis with inspectors to see that the operators furnish what is on contract, promotion of close co-operation between the producer of the coal and the railroad, stabilization of the soft-coal industry by reason of taking greater portions of the year's requirements in the summer months, when others do not want the coal, and finally the great advantage to the public of having the railroads the only forehanded purchasers and storers of coal and thus clearing the rails in the winter for the coal needed by all the other consumers.

The scheme sounds so good that we wonder if it can be true that the solution of all our coal troubles is so easily achieved. In looking over the plan we perceive that there are really two factors in the fueling of the railroads, or any other consumer for that matter. One, and the first, is the selection of the coal best suited to the needs of the user, arrived at, of course, in a scientific manner by the mechanical engineers through boiler tests and calculations involving pounds of water evaporated per pound of coal used and the relative cost. There is nothing to prevent the fuel department of each and every railroad making these determinations on its own account. Many now do it without the overseeing eye of a super-purchasing agent. Mechanical departments know what coal they prefer, and although their choice may at times be predicated on fancy rather than on facts, more often there is reason back of their preference. Choosing the best coal is a matter of engineering plus road experience.

The other factor is buying the coal and getting deliveries of what has been purchased. It is here that policy enters so largely. On the best managed road it is often the policy of the purchasing department with respect to price and form of contract that predetermines the coal supplied the mechanical department. The purchaser of coal for railroad fuel is first of all interested in keeping down costs. If he can see lower costs and perhaps better coal by co-operating with the coal industry in a stabilization program, he will join—otherwise not. Nor can we blame him if, the rules permitting, he solves his problems by going to the other extreme with assigned cars. Purchasing agents for the railroads are quite generally in position to take full advantage of the size of their orders when in the market, and it is nothing new for them to demand lower price of the operator as compensation for better running time afforded the mines. It is useless to advocate a plan that calls on the coal consumer to help the producing industry, unless he gets *quid pro quo*.

Mr. Ludlow's plan contemplates no advantages to the railroads that are not already within reach. We cannot perceive why grouping one-fourth of the roads under one head would increase the urge to use uniform grades of coal, eliminate cross hauls, promote co-operation or seek any of the other advantages claimed. Mr. Ludlow has assembled a splendid line of arguments for stabilization of the coal industry, long-time coal contracts, storage, "co-ordination and co-operation," but he has in no wise shown us why these ideas will be helped along by concentrating the purchase of railroad coal in four men rather than in some 200 as now.

Centralization of railroad coal purchases under the Railroad Administration was an unhappy experience for coal producers until the assigned car was abolished. It would be a sad day for the coal industry that again saw such centralization of buying power, even though it be in four men instead of one. Such indeed would be a high price to pay for stabilization.

Flushing by Water or by Air?

SO FAR coal mines when flushed have used water as the transporting medium, and not air. This involves expense for the damming of the flushed material, for draining off the water and for pumping out the sumps into which the water flows. As four times as much water must be used as broken rock the pumping problem is considerable.

The use of air would save building batteries of any strength and it might well be possible to dispense with them altogether. The deposits made would not have to be drained, and the air would find its own way out of the mine. The spread of the dust through the workings also would serve to immunize them against explosions and the gob possibly against mine fires. The filling used in bituminous mines should either be placed when the mine or the part being filled is idle or should be of non-siliceous material that would do no harm to the men who are exposed to it.

In longwall retreating work pneumatic stowage would be of great assistance, as it would distribute the material and need no barrier to hold it in place, though if the coal were broken down in quantity it might so sprinkle it with dust as to render it less salable. To meet this the filling could be done when the mine was not working or when so little loose coal was lying exposed as to make the dust unobjectionable.

Air will carry extremely heavy objects through pipes. In the experiments of the United States Coal and Coke Co. at Gary, W. Va., into the possibility of removing coal from the mine by a pneumatic system it was found that not only coal but monkey wrenches and railroad spikes would travel readily by the pneumatic route.

For some time the Champion Copper Co., in the Michigan copper region, back-filled extensively with waste from the concentrator, using air as the propulsive medium. The object of the back filling was to raise the working surface of the stopes so as to make it possible for the workmen to reach the ore above. The practice was quite successful, but when the Interstate Commerce Commission decided that the transport of waste material should be charged at a higher rate the cost at the shaft became too high and the company was obliged, much against its will, to change its plans.

Elements of Design for Foundation Bolts of Machines*—I

Little Data Published Concerning the Design of Machinery Foundations and the Holding-Down Bolts Necessary—This and a Succeeding Article Summarize Available Information on This Subject

By Terrell Croft
St. Louis, Mo.

ANCHOR bolts in machine foundations perform two functions: They hold the machine down firmly on the foundation or mass of masonry on which it rests or by which it is supported and they prevent the machine from sliding laterally. It is apparent, then, that every anchor bolt is, theoretically at least, subjected to a tensile stress due to its clamping action upon the machine and also to a shearing stress originated by the tendency, if any is present, of the machine to slide sidewise or endwise along the top of the foundation. When a foundation is properly installed, however, the anchor bolt does not assume any considerable shearing stress, for the reason that if the machine bed plate is grouted to its foundation, the grout bears all lateral stresses.

The real duty of anchor bolts is, then, to bind the machine, to which the bolts are applied, firmly to the foundation upon which it rests, so that the machine and its support will for all practical purposes form a single mass. Where bolts are properly designed and placed, the machine cannot move from its position on the foundation unless this also moves or unless something breaks or fails.

Many types of anchor bolts are in use. In Fig. 1 A, B and C show ordinary machine bolts adapted to this purpose, and D, E, F and G threaded rods and deformed bolts. Each type of bolt depicted in Fig. 1 will be treated hereinafter in detail, as will certain other relatively unimportant types, by which is meant those which, though not ordinarily used, are nevertheless highly desirable for certain specific applications or where special results are desired.

Who Should Supply the Anchor Bolts?

Who shall furnish the anchor bolts for a given machine or prime mover, is a question that admits of no general answer. If the machine is an old one, these bolts must be furnished by the owner. Where it is purchased new, the anchor bolts may be furnished by either the buyer, seller or manufacturer. Machine builders usually try to persuade the purchaser to furnish his own foundation bolts. Where the manufacturer supplies them, particularly if the machine or prime mover is an expensive one, the bolts usually are included without extra cost.

There are several good reasons, however, why it is desirable for the purchaser to furnish his own anchor bolts. The first is that they can in nearly all cases be obtained locally and with little delay, whereas if they come from the manufacturer, even though they may be shipped well in advance of the machine, they are seldom delivered promptly. Furthermore, the length of an anchor bolt for a given application is determined to a large extent by local conditions. Hence such bolts for a certain machine will vary in length, depending upon the location in which the machine is to be installed. It is for this reason that no machine manufacturer endeavors to keep in stock a line of anchor bolts.

Immediately upon receipt of an order for a machine the manufacturer usually is able to furnish a drawing showing the foundation bolts necessary, as well as their locations. Upon receipt of this drawing the buyer can, without delay, obtain these bolts locally and build the foundation.

Dimensions of the necessary anchor bolts are always obtained from the manufacturer when a new machine is being purchased. The builder will always specify the diameters of the bolts required and usually their approximate lengths.

Correct Clearance Allowable for Anchor Bolts

Some clearance should always be left between a bolt and the hole for its accommodation in a bedplate, because if such clearance is not provided it may be impossible to get the bolts which are built into a foundation through the holes. Such difficulties may arise from the bolts being slightly bent or from small inaccuracies in measurement in the placing of the holes in the bedplate or of the bolts in the foundation.

Even if the clearance between the bolt and the side of the hole in which it rests is appreciable, no harm, as a rule, is done. Every machine should, generally speaking, be grouted onto its foundation. This grout prevents lateral movement, even if no bolts are used.

The clearance desirable between an anchor bolt and the hole for its accommodation in a machine bedplate cannot be determined by any set rules. A good practice where such holes are machined is to allow $\frac{1}{4}$ in. diametral clearance for bolts up to $\frac{3}{4}$ in. in diameter, $\frac{1}{2}$ in. for bolts from 1 in. to $2\frac{1}{2}$ in. in diameter, and $\frac{3}{4}$ in. for bolts $2\frac{3}{4}$ in. in diameter and larger. Where the holes for the bolts are cored in the bedplate, clearances $\frac{1}{8}$ in. to $\frac{1}{4}$ in. greater than those just specified should be adopted.

The tensile strength that an anchor bolt should possess is a quantity incapable of determination by mathematical analysis. Inasmuch as such bolts are ordinarily subjected to tensile stresses only, shearing stresses being eliminated by the use of grout, as indicated above, the diameter of an anchor bolt, as determined from a machine manufacturer's standpoint, must be sufficiently great to safely sustain such tensile stresses as may be imposed upon it. But, as suggested above, it is difficult, if not impossible, to determine even with approximate accuracy what these stresses will be.

The total stress on any bolt is made up of two chief components. It includes the initial stress arising from screwing down the nut on the bedplates, plus the stress that may be imposed if the machine tends to lift off its foundation. In practice, anchor-bolt diameters are proportioned in accordance with "rule-of-thumb" methods based on the experience of the designer.

When a designer is "working in the dark," as he is in most cases, he must provide that the diameter of the

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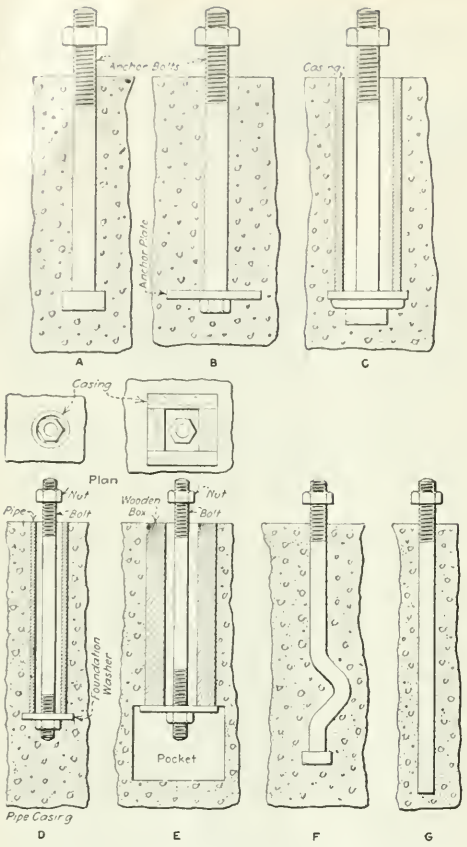


FIG. 1. SEVEN TYPES OF FOUNDATION ANCHOR BOLTS

A, ordinary machine bolt, preferable for light work; *B*, machine bolt with anchor plate; *C*, same type of bolt with anchor plate and wood casing, so arranged that the bolt will have play in case slight errors are made in foundation-bolt setting or bedplate coring; *D*, rod bolt with nut and washer at lower end and a pipe casing; *E*, same but with wood casing and a pocket which may be open or closed; *F*, distorted machine bolt; *G*, straight-rod bolt without a head on the end.

bolt he specifies for a given condition be ample. For this reason the diameters of the anchor bolts in foundations probably are in many cases excessively large.

For general work the minimum diameter of any anchor bolt should be $\frac{5}{8}$ in. An able-bodied man with an ordinary monkey wrench can twist asunder a bolt of a diameter smaller than $\frac{5}{8}$ in. Hence this size is used in many cases where the conditions are such that a smaller bolt might safely sustain the tensile stresses imposed by the machine itself.

The tension that safely may be placed upon ordinary wrought iron or mild steel such as that used for foundation bolts, is about 7,000 lb. per square inch. Sometimes material possessing a safe tensile strength of only 6,000 lb. per square inch is used. These values give a factor of safety somewhere around 8 to 12, the exact factor being determined in any case by the composition of the metal. In figuring the tensile strength of an anchor bolt it is, of course, necessary to consider the effective diameter as that existing at the root of the threaded portion.

In determining the diameter of a foundation bolt, the manufacturer must consider the stress that the bolt probably will have to support, and then, using his judgment as a guide and the diameters of anchor bolts in successful existing installations as precedents, select a size that assuredly will be safe.

When the user determines the diameters of the foundation bolts for a machine where the sizes required have not been specified by the manufacturer it is only necessary for him to measure the diameter of the hole in the bedplate and then select a bolt of such diameter that the clearance between it and the hole will be about that named in one of the paragraphs preceding.

Bolt Must Break Rather Than Pull Out

The proper length for an anchor bolt usually depends upon only one factor. This is that the bolt should extend down far enough into the foundation so that it will break rather than pull out. Where a bolt is cast solidly into a foundation, as shown in Fig. 1 at *A* and *B*, enough masonry must be provided above its head in case *A* or above the anchor plate in *B* to prevent the bolt being pulled out. If the masonry does not set compactly around the shaft in either of these instances, any tension imposed on the upper threaded end will be transferred to the bolt and to the anchor plate. This will exert a shearing action on the foundation material.

Enough masonry must, therefore, exist between the top of the foundation and the embedded head of the bolt so that neither the bolt head nor the anchor plate can shear out the masonry above and thus permit failure, in case the bolt is stressed excessively. If the masonry sets up to the shaft of the bolt, some adhesive action will exist between the two, which provides a certain amount of resistance to withdrawal.

Anchor bolts that are built solidly into a concrete foundation—that is, with the concrete poured and tamped directly around them—will be considered in detail later. As a rule the lengths of anchor bolts are made such that they may extend almost to the bottom of the foundation. Thus there will be every assurance that the mass of masonry above the heads of the bolts will be ample to prevent their withdrawal. One "practical" rule for the average masonry foundation is that an anchor bolt should be embedded at least 40 diameters.

Where short bolts are used in a foundation which is green or otherwise weak, there is a tendency to crack off an upper stratum. This is eliminated where the bolts are carried almost to the bottom of the foundation.

In Concrete Must Be Thirty Diameters Long

When an anchor bolt is cast solidly into a concrete foundation, the adhesion of the concrete will equal the tensile strength of the bolt if its submergence in the concrete equals twenty-five times its diameter. However to provide a margin of safety such bolts should be set in at least thirty diameters. This matter will be discussed in detail later.

Anchor bolts placed in casings should be long enough to permit of deflection. Where a bolt is thus installed as shown at *C*, *D* and *E*, Fig. 1, its length should be such that its top can be deflected a trifle in any direction. One function of the casing is to admit of a slight shifting of the top of the bolt, so that it can be inserted into its hole in the machine bedplate even if either it or the bedplate hole has been mislocated slightly. Unless the bolt is long enough so that it can be sprung or deflected, the function of the casing will be defeated.

In determining the over-all length of an anchor bolt for a given installation, such as that shown in Fig. 2, several inches must be added to the nominal buried length, *P*. At the upper end the additional length are: A clearance of at least ¼ in. above the nut, the thickness of one nut, or even of two, if locknuts are employed, the thickness of the machine bedplate or foot through which the bolt passes, and at least 1 in. should be allowed for grout. At the lower end of the bolt the following must be provided for: The thickness of the anchor plate, the thickness of the nut, and a ½-in. extended end. These quantities added together will give the total or over-all length of the rod required for making the anchor bolt.

All anchor bolts may be divided into two general classes, removable and non-removable, in accordance with the method used for their installations. Non-removable bolts, such as those shown at *A*, *B*, *C*, *D*, *F*, and *G* in Fig. 1, cannot be taken from the foundation after they are once installed. Removable bolts, like those shown at *E*, Fig. 1, and that depicted in Fig. 3, can be removed from their foundations at any time.

Advantage of Making Anchor Bolts Removable

Removable bolts are desirable, particularly in large installations, for two reasons. The first is that where the bolts are removable, if one cracks or breaks—an infrequent, but occasional, occurrence—a new one can be readily inserted. The other reason is that a machine can be installed much more rapidly and at less expense where the bolts are removable. If the bolts are non-removable it is necessary in skidding the machine bedplate into position to jack it up over the threaded bolt ends protruding from the foundation, and when the bedplate is in its correct lateral position to lower it over the bolts. The extending bolt ends always make much extra work by interfering with the skids and, furthermore, they are frequently bent or their threads battered while the machine bedplate is being installed. Where the bolts are removable the bedplate is brought to its correct position on the foundation, and after being put in place the bolts are dropped down through the holes in the bedplate, through their casings and into the nut which is supported in the anchor plate below.

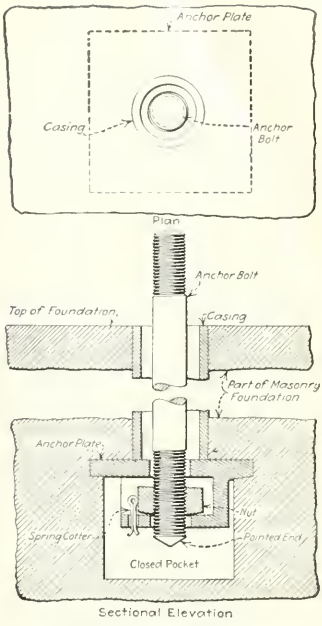


FIG. 3. POINTED ANCHOR BOLT WITH CLOSED POCKET

The height of this bolt is adjustable after the machine has been set in place. The lower end can be screwed into or out of the lower nut.

Removable bolts are almost essential for large machines because if a non-removable foundation bolt of a large machine be broken it will be extremely difficult and expensive to dig out the great mass of masonry of the foundation so as to obtain access to the lower end of the bolt. With a foundation for a small machine much less of this masonry removal would be necessary; furthermore it is much easier to raise a small machine above the projecting ends of non-removable bolts and to let it down over them than it is with a large machine.

Use of non-removable anchor bolts such as those shown in Fig. 1, at *A*, *B* and *C* usually is restricted to small and unimportant foundations. It is impossible to remove these bolts without cutting away a large portion of the foundation. They have, however, the advantages of low cost and ease of installation.

Bolts of Small Machines Should Not Break

With small machines exceedingly large bolts uusually can be employed—that is, bolts which are designed with unusual factors of safety—without materially increasing the cost of the foundation. Where the bolts are thus proportioned and there is practically no likelihood of their ever breaking, the application of "built-in" bolts is justified in the case of a small machine. It should always be remembered, however, that where the bolts are built in solid, it will be necessary when the machine bedplate is being set to jack the machine up over the ends of the bolts which extend from the top of the foundation. This may or may not be disadvantageous.

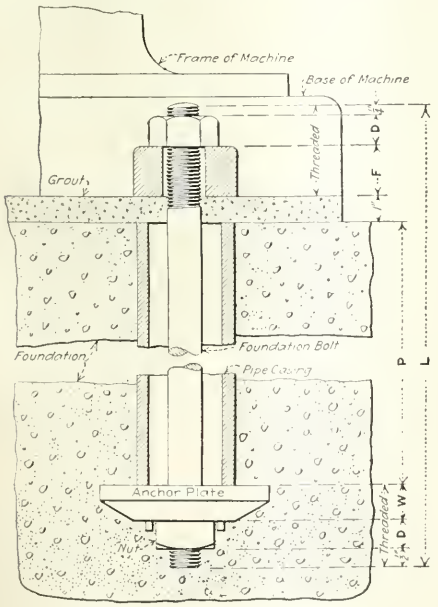


FIG. 2. ILLUSTRATING ALLOWANCES NEEDED IN ORDERING ANCHOR BOLTS

It must not be overlooked that there are two bolt thicknesses, *D*, *D*, the bedplate thickness; *F*, the grouting allowance of 1 in. and an aggregate length of ¾-in. for the projection of the threads above and below the top and bottom nuts, all of which must be allowed for in addition to the net length, *P*, in obtaining the gross length, *L*, of the rod from which the bolt must be constructed.

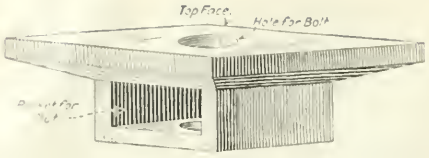


FIG. 4. ANCHOR PLATE WITH RECESS FOR NUT
With this device the level of the top of the rod can be adjusted to suit conditions after placing of machinery.

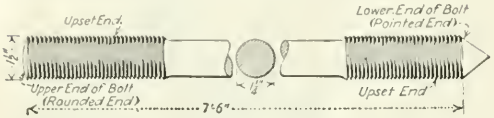


FIG. 5. ROD ENLARGED, OR "UPSET," AT THREADED ENDS
In order to make the heavier rods as light as possible those parts which have to be threaded are made of such a diameter that the base of the threads is of the same diameter as the body of the rods. Thus in a sense the thread is cut in the excess metal.

Where anchor bolts are removable, pockets must be provided under their ends as well as anchor plates, so that the lower extremity of each bolt can be inserted in the anchor plate and nut from the top of the foundation. An anchor-plate pocket in such a case is merely a cavity built into a foundation to accommodate the lower end of an anchor bolt where it is threaded through its nut.

Two classes of pockets are in general use, namely open and closed. An open pocket is one (see Fig. 1, E) that is accessible from the outside of the foundation. A closed pocket, Fig. 3, is merely a cavity under the anchor bolt and is, therefore, not accessible. The terms "accessible" and "inaccessible" are sometimes used instead of open and closed.

Open pockets are preferable to closed ones because where the pocket is open, the lower nut always is accessible and can be renewed in case its thread strips. Furthermore, the anchor plate for an open pocket can be replaced with slight effort, if it breaks. Where the pocket is closed much work may be involved in making repairs such as those just indicated. In practice, however, nuts seldom strip or anchor plates break, hence closed pockets are employed in many instances, particularly where the bolts with which they are associated are well in toward the center of the foundation and away from its edges.

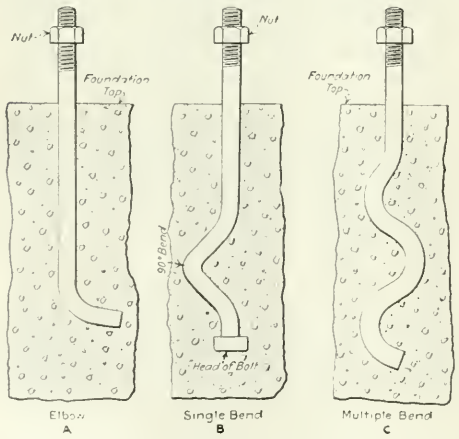


FIG. 6. DEFORMED, DISTORTED OR BENT BOLTS
The distortion should be well below the top of the foundation, for the resistance of the concrete depends on the length that has to be sheared. Any irregularity near the top of the foundation is of little value, especially if in the same plane as those below. The multiple bend bolt, *C*, is like a bolt with two "heads," one at the end and the other part way of its length. The upper bend has small holding power.

Deep-Seated Bolts Should Have Closed Pockets

To convert such closed pockets—those well removed from the sides of the foundation—into open ones would necessitate relatively long tunnels. Such tunnels sometimes are difficult to provide. Where pockets are used at the lower ends of foundation bolts a nut-pocket anchor plate, as shown in Fig. 4, should be used. Such an anchor plate is provided with a recess for the reception of the nut, by which means it is retained in position and prevented from turning.

Where pockets are provided the lower ends of the anchor bolts should be pointed as shown in Fig. 3, so that they will readily engage in the nuts held in the anchor plates. Where closed pockets are used, the nuts are placed in the plates prior to their insertion in the foundation. If the pocket is open, the insertion of both nuts and plates can be deferred until just prior to the installation of the bolts.

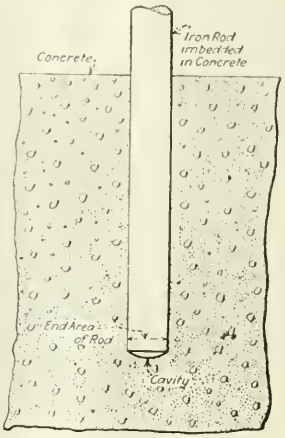


FIG. 7. END AREA INEFFECTIVE TO HOLD BOLT
Cavities form under the ends of rods when they are incorporated in concrete, and consequently only the sides of the bolts can be relied on to provide the needed adhesion.

The nut in a recessed anchor plate does not fit tightly in its recess because accuracy is impossible with unmachined castings of this kind. Consequently such a nut is free to shift from $\frac{1}{8}$ in. to $\frac{3}{4}$ in. in any direction within its restricted cavity. If the lower end of the anchor bolt is pointed the bolt will readily "find" the threaded hole in the nut, which is thereby shifted to a position concentric with the longitudinal center line of the bolt. If the lower end of such a bolt is not pointed some difficulty may be experienced in effecting an engagement between it and the nut as it rests in its anchor plate.

When Standard Machine Bolts May Be Used

Standard machine bolts used as anchors are shown in Fig. 1 at *A*, *B* and *C*. These bolts can be conveniently applied to the foundations of small machines because they usually can be obtained from stock at any machinery supply house or hardware store. Threads, heads and nuts of machine bolts in the United States are all proportioned in accordance with standard dimensions given in engineers' and machinists' handbooks. Where the diameter of an anchor bolt is $\frac{3}{4}$ in. or less, standard machine bolts can, in most cases, be effectually employed.

Threaded rods used as anchor bolts are shown in Fig. 1 at *D* and *E*. Most of the anchor bolts used in the United States probably are of this type. These consist merely of plain round-iron or mild-steel rods threaded at both ends. The diameter to be employed in any given installation is determined in accordance with the directions given in preceding paragraphs. The length also can be found as outlined.

Only Large Anchor Bolts Should Be Upset

The ends of anchor-bolt rods of large diameter should be upset as shown in Fig. 5, so that the cross-sectional area of the rod in its unthreaded portion will equal the diameter of the rod at the root of the threads. It is not economical to upset rods less than say 1¼ in. in diameter because the cost of the upsetting operation in such cases exceeds the value of the material saved by this process. Obviously, the tensile strength of any threaded rod should be determined by the cross-sectional area at the root of the thread.

Deformed bolts sometimes are used as anchors for small machines, as shown in Fig. 1 at *F* and in Fig. 6. Bolts of this type usually are applied in concrete foundations, although sometimes they are used in those built of brick or stone laid in mortar. The bolt is deformed to prevent its turning in the masonry when the nut is being screwed on or off and to prevent the withdrawal of the anchor. It frequently occurs that the depth of a foundation is such that it does not permit the installation of a plain round bolt of such length that it will adhere to the concrete with sufficient tenacity to withstand the stress imposed. In such cases the resistance of the bolt to withdrawal may be greatly increased by deformation in accordance with one of the methods shown.

Excessive deformation of such a bolt is neither desirable nor necessary. Where a plain round rod is used an elbow can be bent upon its lower end as shown at *A*, Fig. 6. If the extending part of the elbow has a length equal to five or six bolt diameters it will be ample. Where a machine bolt is used it can be deformed as shown at *B*, Fig. 6, by bending in it a 90-deg. knee. The apex should be offset about three or four diameters.

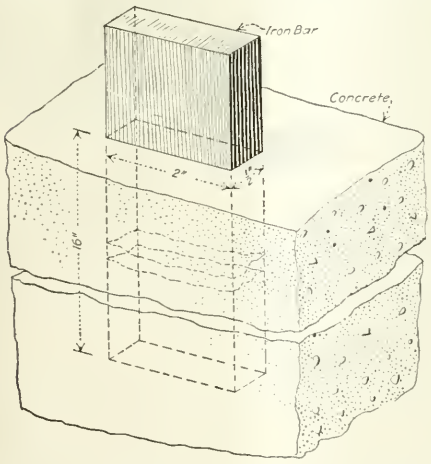


FIG. 8. ILLUSTRATING CALCULATIONS ON THE ADHESION OF IRON BAR IN CONCRETE

The adhesion may be expected to equal 250 lb. per sq.in. on all areas except the end area, but with a fair factor of safety 75 lb. is the better figure to take. No one can tell what the pull to be resisted will measure, but there is no advantage in having the adhesion greatly exceed the strength of the bolt against rupture.

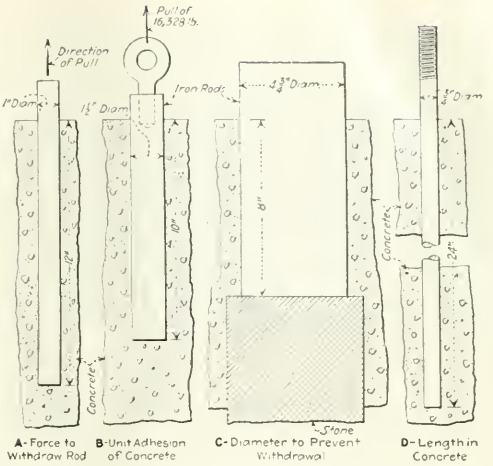


FIG. 9. SKETCHES ILLUSTRATING FOUR PROBLEMS

Illustration *C* shows how by a ridiculous allowance of only 8 in. for the depth of the bolt it becomes necessary to make it 4⅞ in. in diameter to obtain the required adhesion, which, of course, is an immense waste of expensive material—rod, nuts, etc. The large hole in the bedplate also would weaken it materially. This shows why long bolts with ample washers are needed and used.

Deform Only Lower End of Anchor Bolt

Where any bolt is deformed the knee or bend should be quite close to its lower end. If such a bend is near the upper end of the bolt—that is, if it lies in the foundation near the top—there is a possibility that when a stress is imposed, the bend will straighten and break out the masonry of the foundation. It is for this reason that the bent bolt *C*, Fig. 6, is one of poor design. One bend near the bottom of the bolt probably will be ample to hold it in place. The other two bends near the top are unnecessary and may be the cause of failure.

Some construction men prefer to make a semicircular bend in a deformed bolt, as shown in Fig. 1 at *F*. The advocates of this method maintain that the forming of a 90-deg. bend (*B*, Fig. 6) in a rod is liable to greatly reduce its strength. Deformed or bent bolts are widely used in structural steel work for anchoring columns to footings.

Headless bolts—that is, those without anchor plates or nuts at their lower extremities—can be effectively used for relatively small machines where the foundations are of concrete. The adhesion of this material (as will be shown later), provided the bolt is embedded in it for a sufficient length, will be great enough to prevent withdrawal.

Headless bolts should not be used in brick or stone masonry foundations. The adhesion between the surface of the bolt and the foundation in practically every case of this kind is so small in the aggregate that it offers but little resistance to withdrawal. Even if a brick or stone foundation is laid in cement mortar, only a small portion of the embedded surface of the bolt may be in contact with the mortar itself. Practically no adhesion exists between brick or stone in such a founda-

tion and the surface of the bolt. For this reason an anchor plate should invariably be placed on the lower end of a bolt when these materials are used to construct a foundation.

Adhesion between iron or steel set in concrete varies from about 250 to 400 lb. per square inch. In practice a value of about 250 lb. per square inch is assumed as the ultimate bonding strength. In reinforced concrete work it has been authoritatively recommended that the safe adhesive strength between mild steel or iron rods and the concrete in which they are embedded may be taken as about 75 lb. per square inch of surface in contact.

This means that for every square inch of exposed surface of a rod embedded in concrete there will be an adhesion—that is, a resistance to withdrawal—of between 250 and 400 lb. per square inch, but, assuming a factor of safety of about 3.3 to 5.3, the safe adhesion will be 75 lb. per square inch, as above noted. These values are for plain round or square bars. In computing the effective adhesion surface of a rod the area of the end of the rod is neglected because, as shown in Fig. 7, there is nearly always a cavity underneath the extremity of every rod set in concrete. That part of the rod in contact with this cavity or air pocket is, of course, ineffective as regards adhesion.

The adhesion between any iron rod and the concrete in which it is embedded can be computed from the following formulae:

(1) $p = a \times A$ (pounds)

(2) $a = \frac{P}{A}$ (square inches)

(3) $A = \frac{P}{a}$ (pounds per square inch)

Wherein p = the total adhesion of the concrete to the rod in pounds, that is, the pull necessary to withdraw the iron or steel rod from the concrete a = the area of the sides of the rod in contact with the concrete, and A = the unit adhesion in pounds per square inch between the rod and the concrete, values for which are given in a preceding paragraph.

As an example: How many pounds pull would be required to withdraw from the concrete a ½ x 2-in. iron bar (shown in Fig. 8) embedded for a distance of 16 in.? *Solution*—The area of the sides of the rod in contact with the concrete is: $16 \times (2 + 0.5 + 2 + 0.5) = 16 \times 5 = 80$ sq.in. Assuming from a preceding paragraph that a unit adhesion of 250 lb. per square inch exists between concrete and iron and substituting this value in formula (1) we have: $p = a \times A = 80 \times 250 = 20{,}000$ lb.

The adhesion or resistance to withdrawal of a round iron or steel rod set in concrete is given in the following formulae: The superficial area of any cylinder = 3.1416 $d\ l$ (wherein d is the diameter and l the length or πdl), from which it follows that:

(4) $P = A\pi dl$ (pounds)

(5) $A = \frac{P}{\pi dl}$ (pounds per square inch)

(6) $d = \frac{P}{A\pi l}$ (inches)

(7) $l = \frac{P}{A\pi d}$ (inches)

In the above P = the pull in pounds necesary to withdraw—or the resistance to withdrawal exerted by—the round iron or steel rod set in concrete; A = the adhesion of concrete to steel or iron in pounds per square inch; $\pi = 3.1416$, a constant; l = the length in inches, of the portion of the rod set in the concrete and d = the diameter of the rod in inches.

Again assuming an example: How many pounds pull will be required to withdraw the round rod of Fig. 9*A* from the concrete? This rod is 1 in. in diameter and is set in the concrete for a distance of 12 in. *Solution*—Assuming 250 lb. per square inch as the adhesion of the concrete to the steel, and substituting in formula (4): $P = A\pi dl = 250 \times 3.14 \times 1 \times 12 = 9{,}420$ lb. Therefore a pull of about 9,500 lb. would withdraw the rod. Another example: If a pull of 16,328 lb. (Fig. 9, *B*) withdraws a round steel rod 2 in. in diameter set in concrete a distance of 10 in., what is the adhesion in pounds per square inch of the concrete to the rod? *Solution*—Substituting in formula (5):

$$A = \frac{P}{\pi dl} = \frac{16{,}328}{3.14 \times 2 \times 10} = \frac{16{,}328}{62.8}$$

$$= 260 \text{ lb. per square inch.}$$

Therefore the unit adhesion of the concrete to the iron, with conditions assumed as above, is 260 lb. per square inch.

Let us take still another example: It is desired to so set a rod in concrete that it will safely withstand a pull of 5,000 lb. Conditions are such that the rod can be embedded only 8 in. What must be its diameter so that the total adhesion between it and the concrete will be sufficient to prevent the pull above assumed from withdrawing it? *Solution*—Assume a factor of safety of 6. The safe unit adhesion of the concrete to the rod then will be $250 \div 6 = 41.7$ lb. per square inch. Now substituting in formula (6):

$$d = \frac{P}{A\pi l} = \frac{5{,}000}{41.7 \times 3.14 \times 8} = \frac{5{,}000}{1{,}047.5} = 4.78 \text{ in.}$$

Hence the rod should be 4.78 in., or, say, 4¾ in. in diameter (as shown in Fig. 9, *C*) to provide sufficient adhesion surface to prevent withdrawal under the conditions assumed. This is an extreme case and one that probably would not occur in practice. It is given merely to illustrate the principle.

Let us take yet one more example: A ¾-in. diameter mild steel rod has a probable breaking strength of about 14,000 lb. How far should such a rod be set in concrete so that the adhesive strength between the concrete and the metal surface will just equal its probable breaking strength? *Solution*—Assume that the unit adhesion of concrete = 250 lb. per square inch. Substituting in formula (7) we have:

$$l = \frac{P}{A\pi d} = \frac{14{,}000}{250 \times 3.14 \times 0.75} = \frac{14{,}000}{5.887} = 24 \text{ in.}$$

Hence the ¾-in. rod should be set in the concrete for a distance of at least 24 in.

The tensile strength, or supporting power, of a round iron or mild steel rod, assuming the elastic limit of this material to be 25,000 lb. per square inch, is:

(8) $T = \frac{25{,}000\ \pi d^2}{4}$ (pounds)

(9) $T = 6{,}250\pi d^2$ (pounds)

Wherein T = the supporting power, in pounds, of a round iron or steel rod when stressed to the elastic limit, or to 25,000 lb. per square inch; $\pi = 3.1416$, a constant, and d = the diameter of the rod, in inches. Mild bolt steel has an elastic limit of about 25,000 lb. per square inch and will yield excessively if stressed beyond this amount.

The depth to which a rod should be set in concrete so that its supporting power is just equal to the adhesion

between its surface and the concrete can be computed as indicated below. For the condition just stated to be satisfied it is obvious that the adhesion of the concrete to the rod should be exactly equal to the strength of the rod, that is:

(10) $P = T$

Taking 250 lb. per square inch as the adhesion between concrete and steel

(11) $250\pi dl = 6{,}250\pi d^2$

(12) $250l = 6{,}250d$

(13) $l = 25d$

Hence it is apparent that to insure against the withdrawal of a round iron anchor bar it should be set in concrete a distance at least equal to 25 of its own diameters. Theoretically such a rod would pull out when the stress upon it became equal to 25,000 lb. per square inch of its cross-sectional area.

It should be noted, however, that in the above demonstration it was assumed that the rod was not threaded. A threaded rod is obviously weaker than an unthreaded one. Foundation bolts always are threaded. Consequently the quantity "25d" is theoretically a liberal one. the letter "d" in all of the above formulæ indicates the outside diameter of the rod, not the diameter at the root of the thread.

In practice the rule followed in setting round iron rods in concrete when it is desired that their full strengths may be developed is that the rod should be embedded at least 30 diameters. Inasmuch as the strength of the bond between a rod and the concrete in which it is embedded is a somewhat uncertain factor, plain rods in order to develop their full strength should for safety be embedded somewhat more than 25 diameters—the theoretical distance.

The value of 30 diameters, given above, is believed to be a conservative one. Where an anchor embedded in concrete has a head on its lower end—that is, where a machine bolt is used—it probably is the best practice to disregard the resistance of this head to withdrawal when a tension is imposed on the bolt. Such a bolt should be considered as being a plain rod without head.

An anchor rod that has been cast into a concrete foundation a distance determined by the rules given above is shown in Fig. 1 at G and in Fig. 9 at D.

Steel Timbers Last as Long as the Mine

By D. C. Ashmead
Wilkes-Barre, Pa.

IT SOMETIMES seems strange that the use of steel mine timber, particularly at shaft bottoms, has not been more generally adopted. Seldom is the life of a shaft less than ten years, while it may vary from this up to one hundred years or even more. The use of wood, especially if untreated, in a place of this kind appears little short of folly. The average life of wooden timbers underground is not more than five years, while in many cases it does not exceed three. Of course places may be found where its life will be longer than the period named. On the other hand, under certain conditions its life may not reach one year.

To employ a material of construction of which the span of useful life is short and that will consequently require renewal several times during the life of the shaft hardly appears to be good engineering. The cost of a few replacements will exceed the expense involved in a permanent installation. After this each additional replacement represents a total loss.

SHAFT STATION AT LYTLE COLLIERY
The H-legs are 8 in. and the I-beams are 20 in. deep. They are set on 5-ft. centers.

Take as an example a shaft that has an estimated life of fifty years. If the timbers in this shaft are untreated they will require renewal from ten to twelve times before this opening is abandoned. If treated wooden timbers are employed they require renewal, say, every ten years, or five times during the life of the shaft. If steel timbers were put in place at the start it would not be necessary to replace them at all, provided, of course, that they were properly cared for and periodically painted.

The shaft station serving the sixth level in the mine of the Lytle Coal Co., a subsidiary of the Susquehanna Collieries Co., near Minersville, Pa., has been remodeled and all wooden timber dispensed with. The station proper is about 75 ft. long and contains a double track near the shaft. These tracks are then joined into one which extends for a short distance to a point where it branches into three headings.

In the main part of the station eleven three-piece sets of steel timbers have been placed. These have 8-in. H-section legs and 20-in. I-beam cap pieces 20 ft. long. Farther back or away from the shaft such heavy roof supports are unnecessary. Here 14-in. I-beam cap pieces on 8-in. H-legs are installed.

These steel sets are placed on 5-ft. centers. The spaces between the H-section legs are filled with concrete, while over the I-beams pieces of old mine rail have been placed with the space between them and the roof filled with wood lagging. It is advisable to employ wood against the roof, as this acts more or less as a cushion, taking the weight of the roof and transmitting it uniformly to the steel timbers. If wood lagging were not thus used weight might be suddenly thrown upon the timber locally, causing it to bend and perhaps fail.

Where the two tracks are merged together, much smaller I-beams may be safely used to hold the roof, these being here only 10 in. deep. The span at this point is 10 ft. and the legs of the sets are 6-in. H-sections. In one of the headings serving this shaft 9-in. I-beams supported on 6-in. H-section legs are employed. In all eleven sets of steel timber with 20-in. I-beams 20 ft. long are used, giving 10 ft. of clear headroom; five sets with 14-in. I-beams; fifty sets with 10-in. I-beams; and twenty-eight sets with 9-in. I-beams, making a total of 94 sets.

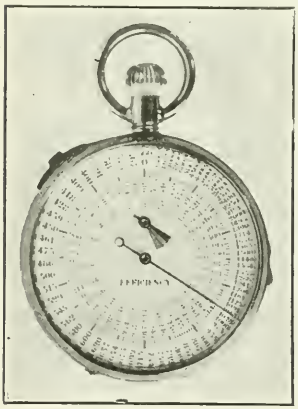
Installation of these steel timbers, if reasonable care is bestowed in their preservation, practically assures the safety of the shaft station as long as the mine remains in operation.

Time-Study Watch That Records Number of Operations Performed in One Hour

TO MEET the ever-increasing demands of various industries for time- and motion-study equipment, a new instrument has been designed termed the duration time-study watch. This is intended to handle the timing, analysis and observation of from one to ten operations, up to and including five minutes of duration.

As illustrated, this instrument has three circles on the face of the dial. The outer one is in red, the second circle is in black and the inner circle in blue. The large hand makes a complete revolution in 100 seconds, and the small hand in the center moves over a red, black and blue sector, thereby showing in which circle the large hand is indicating.

All figures on the face of the dial denote production per hour, based on the timing of ten operations. As an illustration: If ten operations were observed to have been performed in 20 seconds, the figure under the large hand in the red circle would show 1,800 operations per hour, based on ten operations having been completed in 20 seconds. If instead of ten operations one were observed to have lasted 20 seconds, in place of 1,800 it would be necessary to point off one figure with a decimal; the result thus would be 180 operations per hour, based on one operation being completed in 20 seconds.



WATCH FOR TIME STUDY

This watch determines not only the time which an operation takes but gives the number of operations per hour that can be performed at that rate.

If an operation is timed and its duration is 130 seconds it will be noted that the large hand will have made one total revolution and thirty seconds additional, while the small hand in the center of the dial will have passed the first sector and show in the second. This is black and denotes that the number of operations must be read in the black circle. Accordingly reading under the 30-second mark in the black circle the figure 277 will be noted. However, this figure being based on the observation of ten operations, and only one having been timed in that period, it is necessary to point off one figure, and the result is then 27.7 operations per hour, based on one operation timed in 130 seconds. The same applies to work requiring longer periods; as the small hand moves in the colored sector, showing in which circle the large one is operating, it is easy to calculate the elapsed time.

The instrument has the take-out time feature, which allows the operator to start and stop the watch without returning the large hand to "zero." When an operation is entirely completed, pressing the crown down returns both hands to the starting point. The dial is divided into seconds and half seconds.

The instrument is of sturdy construction, designed for industrial purposes. With present endeavors to analyze and cut costs it should prove a valuable adjunct to every plant. It is placed on the market by the Mortimer J. Silberberg Co., of 122 South Michigan Ave., Chicago, Ill.

Straight Dynamite That Will Not Freeze Even in Zero Weather

E. I. DU PONT DE NEMOURS & CO. has developed and perfected a formula for the manufacture of straight dynamite which results in that explosive being proof against freezing even in zero weather. In consequence of this development the company has determined to discontinue the manufacture of its former straight dynamite and hereafter all explosives will be made by the new low-freezing method. The perfecting of the formula is the result of years of experimentation in the laboratory and in the field. Straight dynamite has for years been the standard of the world and in nearly every kind of open work, but a disadvantage has been its liability to freeze at temperatures below 50 deg. F. As any dynamite loses some part, if not all, of its efficiency when chilled or frozen, many attempts have been made to make it low-freezing. The perfection of the new "powder" by the Du Pont company makes it possible to use straight dynamite the year round in industrial operations. Thawing, with its loss of time and attendant dangers, has practically been eliminated.

Which Equipment Should I Install—A Motor Generator or a Rotary Converter?*

BY C. A. BOOTH
St. Louis, Mo.

IT is frequently necessary to supply direct current when only alternating-current power can be obtained from the central-station mains. Either motor generators or rotary converters may be employed for changing the alternating to direct-current power. A rotary converter probably is the most desirable equipment to use for such service.

This statement might not have been true five years ago—before rotary converters were developed to their present state of perfection. The synchronous or rotary converter usually costs less and occupies less floor space than does an equivalent motor generator. However, there is a fixed relation between the alternating-current voltage delivered to a synchronous converter and the direct-current voltage delivered by it. On the other hand, with the motor generator, either the alternating or the direct-current voltage may, within reasonable limits, be varied independently of one another. By the aid of suitable equipment the direct-current voltage furnished by a synchronous converter can be increased or decreased by adjusting the alternating-current potential.

One feature of a synchronous motor-generator set that sometimes makes its installation desirable is that by overexciting the synchronous motor, the power-factor of the alternating-current system that serves it may be improved.

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GAS EXPLOSION KILLS ONE AND INJURES EIGHT.—As the result of a gas explosion in the Knickerbocker mine of the Philadelphia & Reading Coal & Iron Co., near Pottsville, Pa., in the afternoon of June 22 one man was killed and at least eight injured. It was said to be the heaviest explosion ever experienced in the mines of Schuylkill County. Many miners were burned and the mine set on fire.

Results Obtained by Air Jigging and the Advantages Which the Absence of Water Affords*

Air Jig Reduces Ash and Phosphorus but Slightly Increases Sulphur, Which in Coal Tested Apparently Is Part of Coal—Refuse Tailings So High in Ash That to Outward Appearance They Are Entirely Free of Coal

By Edward O'Toole†
Gary, W. Va.

DIFFERENT types of dry-concentrating and jigging machines have been tried for the separation of ore, seeds and cereals, one of which has been adapted to coal separation during the past year. This machine gives promise of satisfactorily solving this seemingly hopeless problem. It applies the same principle to coal separation that is used for the separation of seeds, cereals, beans, nuts, etc.

On this machine air, which is more than eight hundred times lighter than water, is used as the flotation medium. The material to be separated should first be properly sized. The process effects segregation by taking advantage of the difference in the weight of the materials to be separated. When mixtures containing materials differing in specific gravity are fed to the deck of the machine each material is separated by that difference in weight, and the segregated matter is propelled across the deck surface to suitable discharge spouts.

An ordinary blower fan is built into a suitable base frame, on which is mounted a running gear carrying an air chest which receives the air delivered by the fan. A perforated deck of steel, cloth or silk forms the air chest cover and constitutes the separating mechanism of the machine. An air gate is built into the base frame for regulating the quantity of air handled and a speed-change device is incorporated into the operating mechanism to regulate the number of vibrations of the deck by which the material is propelled across its surface.

Tiny Jets Lift Coal Above Corrugations

The air from the fan is lightly compressed within the air chest, and passes through the apertures of the perforated deck in a multiplicity of tiny jets. These, on expanding, create an air film on the upper surface of the deck. The air film supports the deckload of material and causes the separation, the adjustments of the deck and its oscillations, relegating each particle to its own appropriate delivery point.

When the air film is applied, as the material is fed to the machine, the particles become stratified, the heaviest sinking to the bottom nearest the deck surface, the lightest rising to the top, and the intermediate-weight particles forming zones, or strata, between these extremes. With this vertical zoning or stratification of the material at the feed corner the propulsion across the deck surface causes the zones to separate and report at different points.

The air used is regulated, or its pressure reduced to the point where it is just sufficient to cause a stratification of the material and not great enough to cause a "boiling" or "blowing" of the particles. When so regulated the mass of particles becomes practically as fluid as water, the heavier elements readily settling through the mixture and the zones of segregated materials slipping easily, one from the other, to report at different points along the delivery edge.

Weighs Each Particle, Sorting Accordingly

As a matter of fact the machine is nothing but an extremely sensitive and accurate weighing device, using a film of air, under pressure, as a balance. However, it goes further and separates the particles which differ in weight, collecting those of similar specific gravity and discharging each class to a separate receptacle.

This machine originally was built for the separation of ores and other minerals, with a view to using it where there was a scarcity of water, the principal installations being in Mexico. Later it was adapted to the cleaning of seeds, nuts, cereals, etc., throughout the United States. To date more than four hundred machines have been installed for these purposes. In fact, this process is adapted to the cleaning or separation of all dry granular substances—that is, practically everything dug from the earth or grown from the soil —as well as the numerous artificial mixtures which are the result of combinations of such materials. Coals of all kinds are readily cleaned on this machine, particularly the fine sizes of purer coal, because the purer this material is the more readily does it separate from mechanically-mixed mineral matter. An abundance of

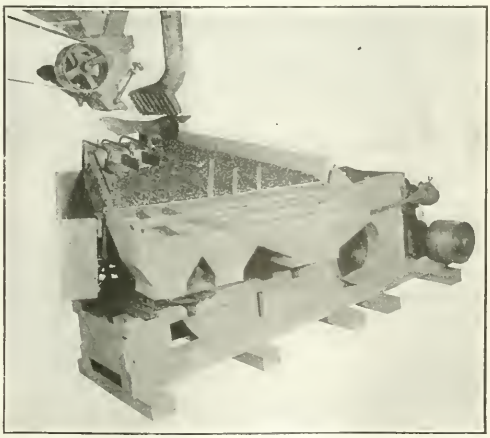


FIG. 1. FRONT VIEW OF TABLE FOR CLEANING COAL
This type of air table is designed to take off only two products, clean coal and clean refuse and no middlings. The lightness of the slate, which looks gray because it is dry, is readily apparent.

*Second part of article entitled "Dry Cleaning by Means of Tables," presented before the American Iron and Steel Institute. The preceding section of the article appeared last week and was entitled "Some of the Many Problems in Cleaning of Coal."

†General superintendent, United States Coal & Coke Co.

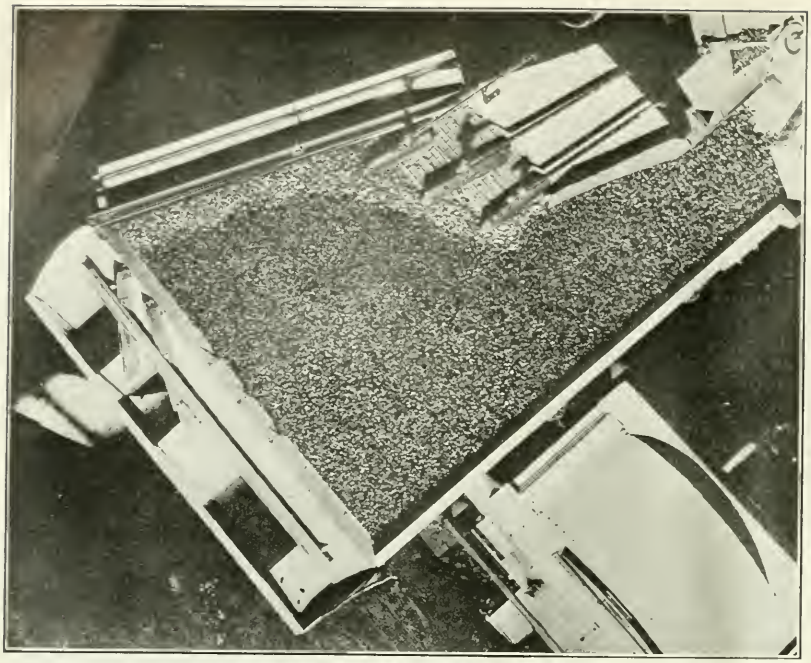


FIG. 2

Bird's Eye View

The slate can readily be detected here also. The air lifts it but little and so it is carried to one side. The coal passes over the corrugations almost as if they did not exist. It is a surprise to all who observe the table in action how soon and how assuredly the slate separates from the coal and exhibits by its lighter tint its preference for the side of the table on which it is to be taken off.

warm air of low humidity exists in the return of coal mines that could be readily applied to the use of these machines.

Best Coal for Metallurgical Purposes

Seams containing alternate thin layers of good coal and sulphur, slate or boney coal can be finely ground to break them apart, then separated; the good fine coal can be used for metallurgical purposes, while the remainder could be disposed of as its quality would warrant. Or the fines from such seams, which are now considered worthless, can be separated, then marketed as their quality would justify. Many such seams are found in the Middle West.

This method of coal cleaning was first used at the plant of the McAlester-Edwards Coal Co., at McAlester, Okla., the machinery installed being that used for the cleaning of ores. Later, tests were made at the plant of the manufacturers, in Dallas, Tex., under the supervision of J. R. Campbell, chief chemist of the H. C. Frick Coke Co., on a box-car load of Pocahontas coal shipped from Gary, W. Va., for testing purposes.

In the meantime the manufacturers made arrangements with the Central Pocahontas Coal Co., at Welch, W. Va., to install a small demonstration plant at one of its operations at Welch, where a number of demonstrations and tests are being conducted. Table I shows results of some of the tests run for a large coal-mining company in the Pocahontas field, and also for the St. Louis Coke & Chemical Co. on some of its Illinois and Indiana coals.

Note the small carbon content in the refuse, also the large reduction in phosphorus, and the slight increase in the sulphur, which would indicate that the coal carries the sulphur and the refuse the phosphorus, while the carbon is present as hydrocarbons, as no coal substance is visible to the naked eye in the refuse.

Table II opposite gives the result of a table test on one carload of seam No. 5 Indiana coal from mine No. 8, of the Ayrshire Coal Co., Oakland City, Ind., made April 25, 1921:

TABLE I. TEST ON 11,702 LB. POCAHONTAS NO. 3 SEAM COAL

Size of Coal	Screen Test Lb.	Oz.	Crude Heads Lb.	Oz.	Clean Coal Lb.	Oz.	Refuse Tails Lb.	Oz.	Dust Lb.	Oz
2 in. on 1¼ in.	....	..	....	..	....	..	....	..	....	..
1¼ on 1 in.	12	8	....	..	....	..	....	..	....	..
1 in. on ½ in.	385	0	385	0	334	0	38	0	13	0
½ in. on ½ in.	1,002	0	999	0	879	0	109	0	11	0
½ in. on ¼ in.	1,280	8	1,280	0	1,164	0	109	0	7	8
¼ in. on ½ in.	797	0	797	0	720	0	70	8	6	8
½ in. on ¼ in.	2,722	8	2,522	8	2,351	0	159	0	12	8
¼ in. on ⅛ in.	1,878	0	1,878	0	1,784	8	79	8	14	0
16 mesh on 26 mesh	763	0	763	0	718	0	35	8	9	8
Through 26-mesh	2,627	0	2,627	0	....	..	....	..	....	..
Totals	11,467	8	11,251	8	7,950	8	600	8	73	8

ANALYSES OF COAL

Size of Coal	Crude Heads Ash	Sulphur	Phos.	Clean Coal Ash	Sulphur	Phos.	Refuse Tails Ash	Sulphur	Phos.
1 in. on ½ in	21 76	0 45	0 012	5 26	0 50	0 004	63 90	0 25	0 024
½ in. on ½ in	14 23	0 45	0 008	5 58	0 50	0 003	68 11	0 23	0 030
½ in. on ¼ in	12 67	0 47	0 009	6 75	0 64	0 003	66 22	0 23	0 026
¼ in. on ⅛ in	8 26	0 49	0 007	5 00	0 53	0 006	73 85	0 19	0 031
⅛ in. on ½ in	9 41	0 50	0 008	3 95	0 53	0 003	71 94	0 21	0 031
½ in. on 16-mesh	6 50	0 57	0 008	3 14	0 55	0 004	79 24	0 20	0 033
16 on 26-mesh	9 80	0 53	0 007	4 28	0 56	0 003	77 37	0 22	0 032
Through 26-mesh	9 85	0 53	0 005	....	....	.....	.....	.....	.....

ANALYSES OF DUST

Size	Ash	Sulphur	Phos.
1 in. on ½ in	8.27	0.52	0 003
½ in. on ½ in	6.64	0.49	0 006
½ in. on ¼ in.	8.62	0.54	0 008
¼ in. on ⅛ in.	8.70	0.49	0 007
⅛ in. on ½ in	10 80	0.48	0 008
½ in on ⅛ in	12 00	0.46	0 006
16 on 26-mesh	11.71	0.52	0.005

REMARKS.—1½-in. on 1-in. was not treated, as quantity (12 lb., 8 oz.) was too small. Samples for this test were taken in small portions, as regular intervals, over a period of three days. Through 26-in. mesh (2,627 lb.) was not treated on tables, as the smaller screens had not arrived at testing plant. Refuse removed was 0.0533 per cent of total amount treated on table. Lost in mechanical handling, 234 lb., 8 oz. Lost in mechanical handling on table, 216 lb.

TABLE II. TEST OF SEAM NO. 5 INDIANA COAL

Size of Coal	Crude Heads Lb.	Crude Heads Oz.	Clean Coal Lb.	Clean Coal Oz.	Refuse Tails Lb.	Refuse Tails Oz.	Dust Lb.	Dust Oz.
1½ in. on ¾ in.	535	8	516	8	17	8	1	8
¾ in. on ½ in.	463	12	445	0	17	0	1	12
½ in. on ¼ in.	259	8	243	0	13	8	3	0
¼ in. on ⅛ in.	557	8	519	4	33	0	5	4
⅛ in. on 16-mesh	226	8	205	8	19	0	2	0
16-mesh on 26-mesh	109	8	100	0	8	8	1	0
Totals	2,152	4	2,029	4	108	8	14	8

ANALYSES OF COAL

Size of Coal	Moisture	Crude Heads Ash	Crude Heads Sulphur	Crude Heads Phos.	Clean Coal Ash	Clean Coal Sulphur	Clean Coal Phos.	Refuse Tails Ash	Refuse Tails Sulphur
Dust		14 42	2 98						
¾ in. on ½ in.	6 55	13 13	2 98	0 018	7 94	2 46	0 009	66 60	16 94
½ in. on ¼ in.	8 29	11 46	3 50	0 007	7 48	2 23	0 005	64 72	20 02
¼ in. on ⅛ in.	7 02	13 53	3 05	0 008	7 94	2 31	0 004	62 25	18 66
⅛ in. on 16-mesh	8 93	11 63	2 99	0 007	8 32	2 18	0 004	62 00	13 91
16-mesh on 26-mesh	8 47	15 00	3 11	0 007	9 00	2 26	0 005	75 11	11 49
Through 26-mesh	7 96	15 50	3 15	0 008	10 35	2 36	0 005	71 38	12 40

The following tables give the results of a test on one carload of coal from seam No. 6 in Franklin County. The coal was taken from the Black Brier Mine of the St. Louis Coal & Iron Co., at Johnston City, Ill.

TABLE III. TEST OF ILLINOIS COAL

Size of Coal	Crude Heads Lb.	Crude Heads Oz.	Clean Coal Lb.	Clean Coal Oz.	Refuse Tails Lb.	Refuse Tails Oz.	Dust Lb.	Dust Oz.
2 in. on 1½ in.	592	0	560	0	29	8	2	8
1½ in. on ¾ in.	649	8	611	0	36	8	2	0
¾ in. on ½ in.	373	0	347	0	24	8	1	8
½ in. on ¼ in.	800	8	739	0	58	8	3	0
¼ in. on ⅛ in.	368	8	342	0	26	0	0	8
⅛ in. on 16-mesh	180	0	161	0	17	8	1	8
Through 26-mesh	414	0	....	.	.	.	..	..
Totals	3,377	8	2,760	0	192	8	11	0

ANALYSES OF COAL

Size of Coal	Crude Heads Ash	Crude Heads Sulphur	Crude Heads Phos.	Clean Coal Ash	Clean Coal Sulphur	Clean Coal Phos.	Refuse Tails Ash	Refuse Tails Sulphur
Dust, ¾–⅛ in.	13 95	2 32	0 014					
1½ in. on ¾ in.	10 20	2 31	0 006	7 31	1 65	0 003	65 00	8 92
¾ in. on ½ in.	13 83	3 05	0 009	7 50	1 64	0 005	67 38	7 90
½ in. on ¼ in.	13 24	2 27	0 007	7 22	1 54	0 003	72 00	8 62
¼ in. on ⅛ in.	11 91	2 22	0 006	6 62	1 57	0 003	72 00	8 78
⅛ in. on 16-mesh	14 18	2 68	0 010	7 00	1 53	0 004	71 41	12 94
16 on 26-mesh	15 61	2 64	0 016	8 87	1 54	0 005	67 16	14 42
Through 26-mesh	17 39	2 90	0 015	....	....	.....	..	....

From these analyses it will be noted that the effect of dry cleaning is to separate a large part of the refuse from the coal. It makes no difference in what relative quantities the dirt and coal appear, provided regular amounts are fed to the machine and it is kept in working condition. If there is a streak of coal in the bed that is inferior or high in ash or sulphur but contains a high fuel value this machine will separate it from the low-ash and low-sulphur coal and the slate at one operation; the high-ash and high-sulphur coal can be shipped or used for steam generation and the better grade of coal can be used for metallurgical purposes. It will be possible to get as many grades of product from one of these machines as exist in the coal bed.

The capacity of this machine is about three tons per hour when working on coal sized ½ to ⅛-in. mesh; on smaller sizes the capacity is less, and on larger more, with an average of about six tons per hour per machine for all grades. It is estimated that machines working on coal 1½ to 2 in. in size will clean ten tons per hour.

Spare the Water, Which Is Bad as Ash

A reliable dry-cleaning and separating machine in the coal industry will effect a great economic saving to the world. It will help conserve the coal resources by making seams and portions of seams merchantable that are now unmerchantable. It will help solve the coal-preparing difficulties of the fuel producer and insure the production of a clean coal in times of scarcity of labor as well as in periods of plentiful labor supply. It will eliminate engine failures on the railroads, or at least those arising from inferior fuel, and thereby admit of more constant and regular traffic. It will benefit the coal consumer by giving him good, pure fuel, which will increase the capacity of whatever device he may use for its consumption, be it cook stove, locomotive, coke oven or blast furnace. The efficiency of such consuming instrument will be increased in proportion to the reduction of the ash in the coal. In addition, it will save the consumer the money he is now paying for the water which the washer has added and at the same time it will save him the fuel which is now being wasted in eliminating this water.

Wages Paid British Coal Mine Workers

THE British Government issued the following figures, which show the estimated earnings per shift in May, 1921, of the highest-paid class of underground workers and the lowest-paid class of surface laborers in the coal-mining industry. These figures would have operated under the proposals put before the Miners' Federation by the Government and they will be those in effect in September of this year under an understanding that wages will not be reduced to exceed 2s, in July, 2s. 6d. in August and 3s. in September; after that they will be 20 per cent above pre-war wages.

BRITISH WAGES PRIOR TO WAR AND IN SEPTEMBER, 1921

District	Average Coal Getters on Piece Work Pre-War	Average Coal Getters on Piece Work May, 1921	Lowest Rate Surface Laborers Pre-War	Lowest Rate Surface Laborers May, 1921	Average All Adults Pre-War	Average All Adults May, 1921
Scotland	8s 3d.	19s.6d.	4s.	10s.	7s.2d.	15s.6d.
Northumberland	8 5	20/–	4s.6d.	10s.7d.	6 11	14 10
Durham	8 3	16/6	5 –	10 9	6 10	14 11
South Wales	9 4	20/–	5 3	11 9	7 4	16 5
Somerset	5 9	15/–	3 5	9 3	5 –	12 –
Forest of Dean	6 9	16/–	4 2	9 10	5 7	12 8
Bristol	6 10	16/–	3 5	8/–	5 –	12 6
Cumberland	8 2	20/–	4 4	11 3	6 11	14 11
Lancs. and Cheshire	8 7	17/–	4 1	10 –	6 8	14 –
North Staffs	9 1	13 6*	4 4	9 7	6 7	12 9
North Wales	8/–	15 –	4 –	10 –	6 4	13 4
Shropshire	6/5	13/6*	3 5	9 2	5 1	12 9
South Staffs	7 1	13 6*	3 10	9 7	5 3	13 –
Cannock Chase	8/6	18/–	4 3	9/6	6/8	13 –
Warwickshire	10/1	20/–	4 2	9 4	6/7	13 8
South Derby	9 3	19/6	4 –	10 2	6 10	13 8
Leicester	7/–	17/–	4 5	10/6	6 4	13 9
Yorkshire	9 7	20 –	4 7	11/6	7 8	15 5
Notts. and N. Derby, Notts. and Erewash	9/9	19/6	4 9	11/6	7 2	15/6

* Day-wage.

A three-shilling (73c.) reduction all over the federated area is assumed. The pre-war figure for surface laborers represents earnings of the lowest-paid classes. The full possible week for coal-getters is about 5½ days on average and for surface workers six days. The figures given for coal-getters on piece-work are necessarily estimates, as any piece-work earnings must depend upon output, but the calculation is based upon actual earnings, with allowances for the loss of certain war wage payments which have now ceased.

WAGE CONVERTED TO AMERICAN MONEY AT NORMAL EXCHANGE*

District	Average Coal Getters on Piece Work Pre-war	Average Coal Getters on Piece Work Sept., 1921	Lowest Rate Surface Laborers Pre-war	Lowest Rate Surface Laborers Sept., 1921	Average All Adults Pre-war	Average All Adults Sept., 1921
South Wales	$2 27	$4 87	$1 29	$2 86	$1 79	$4 00
Notts. and North Derby.	2 38	4 75	1 16	2 80	1.75	3 78
Notts. and Erewash						
Scotland	2 01	4 75	0 97	2 44	1 75	3 78
Yorkshire	2 34	4 87	1 12	2 80	1 87	3 76
Durham	2 01	4 02	1 22	2 62	1 67	3 64
Cumberland	1 99	4 87	1 06	3 29	1 63	3 64
Northumberland	2 05	4 87	1 10	2 58	1 69	3 62
Lancashire and Cheshire	2 09	4 14	1 00	2 44	1 62	3 41
Leicester	1 71	4 14	1 08	2 56	1.54	3 35
South Derby	2 25	4 75	0 97	2 48	1 67	3 33
Warwickshire	2 46	4 87	1 02	2 27	1 60	3 33
North Wales	1 95	3 66	0 97	2 44	1.54	3 25
Cannock Chase	2 07	4 39	1 04	2 32	1 62	3 17
South Staffs	1 73	3 29†	0 93	2 34	1.28	3 17
Shropshire	1 56	3 29†	0 83	2 23	1 24	3 11
North Staffs	2 21	3 29†	1 06	2 34	1 60	3 11
Forest of Dean	1.65	3 90	1 02	2 40	1.36	3.08
Bristol	1 67	3 90	0 83	1.95	1 22	3 05
Somerset	1.39	3 66	0 83	2.25	1 22	2.92

* Arranged in order of average rates of pay for all adults May, 1921.

† Day wage. Rest on piece work.

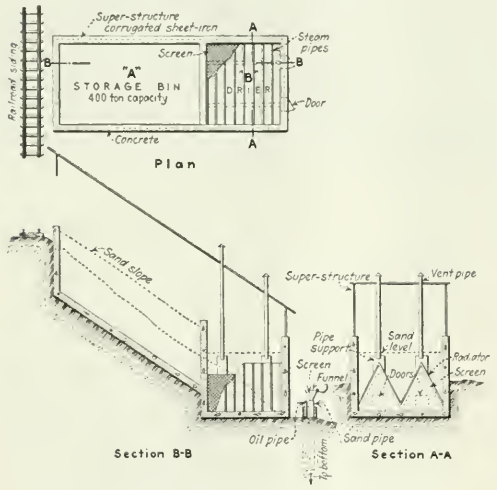
Sand Dried by Live Steam and Oil Heated By the Same Means Are Piped Into Mine

By Alphonse F. Brosky
Pittsburgh, Pa.

TWO unusual features at the No. 3 mine of the Pittsburgh Terminal Railroad & Coal Co., four miles southwest of Pittsburgh, Pa., are the arrangements for sand drying and for the supply of oil to the bottom of the shaft for car lubrication.

The standard coal-fired sand drier provided with a cone-shaped sand container is markedly inefficient, for the following reasons: (1) When using this type of equipment someone must be employed to do nothing but dry sand; (2) coal must be transported to the sand house periodically; (3) the sand does not flow freely and frequently clogs the lower opening through which it is supposed to run. Other disadvantages in the use of this old type of apparatus are the small capacity of each drier and the difficulty encountered in feeding fresh sand and removing it when dried.

The dry sand falls in a semicircular ring about the bottom of the drier and when a fresh supply is added



SAND DRIER AFFORDING LARGE CAPACITY

A radiator of pipes, each forming an inverted W, furnishes the heat. The dried sand falls through a screen placed immediately below the radiator. Vent pipes withdraw the moisture as fast as it is liberated. The sand is dropped by a pipe line into the mine.

at the top some of it usually spills over the side and mixes with that on the floor, resulting in a product not as dry as it should be. In its essential details the sand house at the plant mentioned consists of two compartments, *A* and *B*, which serve as a storage bin and a drying compartment respectively. The bin is built of concrete surmounted by a shed, the walls and roof of which are of corrugated sheet iron. The capacity of this bin is 400 tons and the slope of the floor is a little greater than the angle of repose of sand. This insures gravity replacement as the sand at the bottom is removed. A new supply consequently may be easily shoveled from a railroad car into the bin.

The drier itself consists of radiating pipes in the form of an inverted W, directly beneath which are located two sets of screens provided with truncated tops. Vent pipes lead from the top of the sand bed through the roof to the atmosphere. These create a draft, withdrawing the entrapped water vapor from around the radiators.

A 1-in. steam pipe supplies steam from the boilers to the 1¼-in. radiator sections. The steam, after partial condensation, passes through a ½-in. drain pipe to the atmosphere. Upon drying the sand falls through the screen to the two receiving bins beneath, from which doors open to the outside of the building. Through these the dried sand is removed. Just outside these doors is a borehole with an 8-in. pipe extending down to the underground workings. Within this casing are two smaller pipes, a 3-in. pipe for sand and a 1½-in. pipe for oil. Around these but within the 8-in. casing, air is allowed to circulate freely.

Large Covered Funnel Encloses Screen

The small pipes, as well as the casing, extend to the working level underground. Fitted to the upper end of the sand pipe is a large covered funnel in which is placed a screen. The dried sand is fed into this receptacle and, dropping down through the pipe, is delivered to a storage bin underground. Oil for use in the mine is emptied from a tank car into a storage tank. Here, if necessary, it is heated by a submerged steam coil and made easy flowing. From this reservoir it is drawn by a Bowser hand pump and delivered to the borehole, down which it travels to the bottom by gravity.

This system of sand-and-oil conveyance to the workings was devised by John Mahoney, general superintendent of the company. The merits of the sand drying and distributing plant may be summed up as follows: (1) Live steam from a near-by boiler house is utilized, resulting in high thermal efficiency; (2) the drier requires extremely little attention; (3) dry sand moves to the underground storage bin by gravity and during its passage does not become contaminated by foreign substances; (4) the capacity of the plant is large; (5) the means employed for moving the sand is cheap and effective.

Gas Mask for Carbon Monoxide Perfected

THE first public demonstration of a new gas mask invented to protect the wearer against carbon monoxide was given in the afternoon of May 26, in the special smoke room of the U. S. Bureau of Mines, Pittsburgh, Pa. It utilizes the special chemical mixture called Hopcalite, developed by the U. S. Bureau of Mines and the Chemical Warfare Service of the U. S. Army. The bureau for its research into the value of various types of gas masks, including those for the elimination of carbon monoxide, has a large smoke room especially adapted for testing purposes and it was this room that was used for the demonstration.

In this test two men entered the smoke room, the air of which contained 1 per cent of carbon monoxide. One of the men carried a canary bird into the room in order that its actions might indicate to the observers the poisonous nature of the atmosphere. The canary bird collapsed in 45 seconds and was immediately removed to fresh air, where it was revived with oxygen.

Frequent tests were made with the M. S. A. carbon-monoxide detector to show the observers the strength of the gas. The wearers of the mask remained in the atmosphere for 30 minutes doing vigorous work part

of the time, and experienced no ill effects whatever from the carbon monoxide. The gas masks gave perfect protection throughout the entire period of the test.

The new gas mask will afford protection in higher percentages of carbon monoxide than 1 per cent, yet if a man breathe that percentage it will kill him in a few minutes' time. In about half an hour, however, 0.1 per cent of carbon monoxide will seriously affect a man who is working and is therefore breathing hard, and 0.2 per cent will affect him seriously in about ten minutes. The mask is manufactured by the Mine Safety Appliances Co., of Pittsburgh, Pa.

Plank Platform Lifted and Lowered by Cage Protects Men from Falling Into Shaft

By R. W. Mayer
California, Pa.

OPEN shafts are always a source of danger. Many men are recorded each year as falling down shafts or being killed or injured by objects which become dislodged and fall on those below.

To obviate this danger the Canadian Collieries, Ltd., of Cumberland, B. C., has entirely covered its shaft openings with platforms made of 2-in. plank. These inclose or are built around the hoisting cable and rise and fall with the cage when it rises above the landing. In this movement the platforms are directed by, or slide along, the cage guides.

The top of the cage is provided with extra timbers designed to receive and support the platform or shaft cover. In its upward movement the cage lifts the platform with it to the end of the hoist. When the cage descends, the platform descends with it until the floor or landing is reached. There the shaft cover is caught and it remains in that position, effectually covering the opening, until the platform is again lifted by the ascending cage. Near the end of the hoist when the cage and platform come in contact the speed is so reduced that the two meet without appreciable shock and no damage is done to either. In descending the cage has not had time to gain any great speed before the platform is caught and comes to rest on its supporting timbers.

Device for Holding Reinforcement While It Is Being Embedded in Gunite

WHEN the attempt was made some years ago to apply reinforced gunite for the fireproofing of mines and the building of walls difficulty was encountered in obtaining a device that would satisfactorily hold the reinforcing wire or expanded metal away from the surface to be coated until it could be embedded in the gunite. The solution of this problem, shown in the illustrations below, is known as a gunite furring post.

This device serves to support and at the same time to secure the reinforcing material in such manner that it may be thoroughly embedded in the layer of gunite. When this material is applied over a wooden surface an ordinary wire nail holds fabric, post and surface securely together and in their proper relation. (See Fig. 1.) When applied over a metallic surface, as in roof or floor slabs, the post acts simply as a support, as shown in Fig. 2.

At first these posts were made of light metal, but it was found that when so constructed they were too easily crushed, and accordingly they were made heavier.

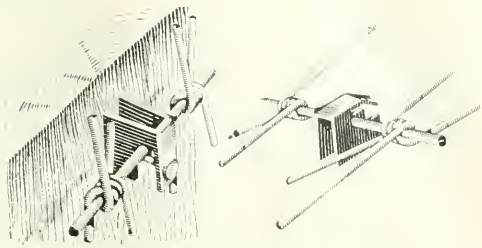


FIG. 1 FIG. 2

KEEPS REINFORCING WIRE IN PLACE FOR GUNITE

As now built they rarely crush even when stepped on by a man of ordinary weight. The Cement-Gun Construction Co. of Chicago, Ill., has the patent rights.

Cost of Preparing Pulverized Coal

DURING 1920 the cost of preparing coal, says *Power* of July 5, 1921, in the power plant of the Clarkdale Smelter was as follows:

Unloading, storing and reclaiming coal, per ton	$0.07
Conveying and primary crushing, per ton	0.09
Drying and disintegrating, per ton	0.30
Pulverizing	0.52
Total operating costs	$0.98

These figures include power, labor, supplies, repairs and plant expense, but do not include depreciation and other fixed charges. The installation costs of a pulverizing plant are as follows:

Storage and reclaiming plant, per ton storage capacity	$13.00
Primary crushing plant, per ton daily capacity	32.00
Drying and disintegrating plant, per ton, daily capacity	286.00
Pulverizing plant, per ton daily capacity	402.00

With a 300-ton plant the investment, with a seven-day storage plant, would be around $243,000; if interest, depreciation and taxes are assumed to equal 15 per cent, then the fixed charges per ton total $100 per day, or 33c. per ton. The entire pulverizing costs then become $1.31 per ton.

Coal Wage Costs Per Ton in Britain

IN VIEW of the dispute in the British coal-mining areas the following table, which shows the rising wage costs per ton, is interesting:

District	September Quarter 1920 British Money	September Quarter 1920 American Money	March 1921 British Money	March 1921 American Money
Derby, Nottingham and Leicester	20s. 8 45d.	$5 05	21s. 6 91d.	$5 26
Yorkshire	22s. 4 65d.	5 45	23s. 2 53d.	5 66
Stafford, Shropshire, Worcester and Warwick	23s. 9 68d.	5 80	25s. 2 52d.	6 14
Durham	25s. 6 73d.	6 23	26s. 8 36d.	6 51
Northumberland	26s. 2 17d.	6 38	29s. 7 33d.	7 21
Scotland	26s. 8 35d.	6 51	27s. 1 25d.	6 61
Gloucester, Somerset and Kent	28s. 4 65d.	6 91	34s. 4 79d.	8 38
Lancashire, Cheshire and North Wales	29s. 6 53d.	7 20	30s. 1 09d.	7 33
South Wales	32s. 1 96d.	7 84	40s. 4 12d.	9 83
Cumberland and Westmorland	33s. 8 27d.	8 21	35s. 5 57d.	8 64

Thus it will be seen that in every district there has been a rise in wage costs, especially in South Wales, Gloucester and Northumberland, where the depression in the coal-exporting districts has inflated the production costs. All conversions from British to American money are at normal rates of exchange and consequently do not show the real costs with which the exporter must contend.

When Strikes Get Serious

"One result of the coal strike," says the *Daily Express*, "will be a shortage of beer." We have thought all along that the miners' strike would sooner or later lead to something serious.—*Punch.*

Problems of Operating Men

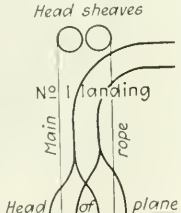
Edited by James T. Beard

Gravity Plane to Serve Two Mines

To Avoid Lengthening Haulage Rope Run Out the Cars from the Lower Mine Onto the Plane and Block Them There Ready To Be Coupled to the Next Descending Trip from the Upper Mine

PROBLEMS in gravity-plane haulage have always interested me and I was particularly taken with the one presented in *Coal Age*, June 2, page 999, where a superintendent contemplates serving two mines with a single gravity plane 1,100 ft. in length, the lower mine (No. 2) being a more recent opening and located 100 ft. down the incline from the old mine (No. 1).

After studying carefully the suggestions offered by the editor, in replying to this inquiry, I am inclined to think that there would be some difficulty experienced in keeping the two ropes from getting entangled should an extra length of rope be provided to reach from No. 1 to No. 2 landing. This rope, it was stated, would lie at the side of the track till needed to lower a trip from No.-2 landing, when it would be coupled to the main rope for that purpose. With this preliminary, allow me to give my idea of the best method to adopt, in order to avoid the use of an extra length of rope, and preclude any possibility of its becoming entangled.



Referring to the figure, install a switch on the incline at a point suitable to make connection with the track on No.-2 level, as indicated by the dotted lines in the figure and already explained in the reply to this inquiry. Also, install a good safety block at a point on the incline a sufficient distance below the switch to hold the number of cars it is desired to lower from No.-2 mine.

This being done, the cars from No. 2 are first lowered from that landing onto the incline where they are held by the block until the trip from No. 1 is lowered. The No.-2 cars are then coupled to the trip and the engineer takes up sufficient slack to permit the safety block to be shifted, after which he lowers the entire trip.

A similar switch can be installed on the opposite track and a like safety block provided that can be operated and made to hold the empties for No. 2 when that trip has reached this point of the incline. Again, the engineer slacks back enough to permit the No.-2 empties to be uncoupled.

The empties for No. 2 having been uncoupled from the trip, the latter is hoisted to No.-1 landing, after which the No.-2 cars are coupled to the auxiliary rope from that level and drawn from the incline, by a runabout track that passes under the plane, in the manner indicated and explained previously by the editor.

The plane can be arranged, if desired, for the loads from No.-2 mine to travel the right-hand track only, the empties for that mine being hoisted on the left-hand track. This, however, would necessitate serving No.-2 mine only each alternate trip. For some time past, we have been operating an arrangement similar to the one I have mentioned and the scheme has proved successful.

J. B. K.

Confluence, Pa.

[It should be stated here that, in adjusting the system proposed by this correspondent, which has some features favoring its use, ample provision must be made for sustaining the excess of load on the engine when the additional cars from No.-2 mine are coupled to the trip, and the No.-2 empties are removed while the trip is still 100 ft. above the foot of the incline.

It will be observed this causes a variable load to be controlled, and it will be necessary to strike a suitable balance between the two conditions. When No.-1 cars are descending from that landing to No. 2, a comparatively light load is in counter-balance with a full load of empties. On the other hand, when the No.-2 empties have been detached from the system the full loaded trip is offset by the comparatively light empty cars for No. 1 mine. Our correspondent has not mentioned this point.—EDITOR.]

SECOND LETTER

THE question of arranging a gravity plane so as to enable it to serve two mines, the new opening (No. 2) being 100 ft. down the incline from the old mine (No. 1), appeals to me as a simple proposition. As has already been stated in the reply to this inquiry, a short length of rope sufficient to reach from No. 1 to No. 2 landing must be employed in order to handle the coal and empties for the lower opening.

Instead of a single one, I would use two of these shorter ropes, however, which may well be called "dead ropes," inasmuch as they are kept lying at the side of the track when the system is serving No. 1 mine.

Using a single rope, it will only be possible to change the service from No. 1 to No. 2 mine when the end of the main rope at the top of the plane is on the side where the dead rope lies; although it is possible, of course, to have the dead rope when idle lie between the two tracks and in that case but one rope would be necessary.

SHOWING CAPPING OF ROPE ENDS

The ends of all the ropes must be capped in a manner suitable for coupling, and a short length of coupling chain should be used to attach the rope to the first car when hoisting or lowering a trip.

The operation of the system is about as follows: An empty trip having arrived at No.-1 landing and it being desired to lower coal and hoist empties for No.-2 mine, the headman at No.-1 landing uncouples the short coupling chain on the main rope and couples in its place the end of the dead rope lying on the side of the track.

At the same time, the headman at No.-2 landing couples the short chain on the lower end of the dead rope to the loaded trip, which has been previously run out onto the incline from No.-2 landing and blocked. When all is ready and the signal is given from No.-2 landing and the foot of the incline the system is started.

In my sketch, I have indicated how the coupling of the two ropes together, or the short chain to the end of either rope is effected. The capping at each rope end is arranged to hold a clevis or a pin. A clevis is attached to each end of the main rope and the lower end of the dead rope. The clevis pin is made secure by a cotter pin or other lock. The clevis pin when inserted is passed through the first link of the chain or the hole in the capping of the dead rope, which makes a simple and safe method of coupling, either the

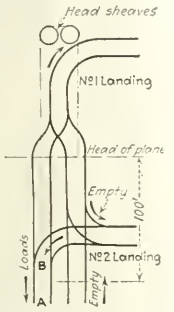
chain or the rope. This method of coupling is the same as that used in coupling ropes in main-and-tailrope haulage. WILLIAM DICKINSON.

Whipple, W. Va.

THIRD LETTER

REPLYING to the request for suggestions regarding the utilizing of a gravity plane serving one mine and adapting it to handle the coal from another opening lower down the slope, permit me to offer the following plan:

Make one of the two tracks on the incline the loaded and the other the empty track. Connect these tracks by switches in the manner shown in the accompanying figure. It will be observed that the empty switch from No.-2 landing is turned up the incline, while the loaded switch crosses over the empty track and is turned down the incline on the other side. All the switches are automatic and require no attention.



Following is the method of operation: Assuming that a loaded trip is standing on each landing ready to be lowered, No.-2 trip is first run out onto the incline and lowered by suitable means to the car-stop or block located on the incline at A. There it is held awaiting the lowering of No.-1 trip to that point. When this is done and the two trips have been coupled together the block is released and the double trip allowed to descend the plane to the foot of the incline, by gravity.

In the same time, the empty trip has been hauled up the incline and reached the head of the plant at No.-1 landing. The empty cars for No.-2 mine are then uncoupled and run by gravity down the incline, and through the automatic switch to No.-2 landing, which completes the cycle of operation.

PLAN MUST CONFORM TO THE LOCAL CONDITIONS

This general idea may have to be modified to suit local conditions. Without exact data regarding the inclination of the plane, weight of cars loaded and empty, number of cars per trip, etc., it is manifestly impossible to work out the scheme in detail. I will refer briefly to some of these matters that are essential to the success of the proposition.

For example, starting again from the beginning of the cycle and assuming that both mines are producing equal quantities of coal and served by cars of like weight and capacity, it is evident that the loaded trip from No.-1 mine must be able to start and haul up the grade twice its number of empties, until the double trip is made up at No.-2 landing. In order to do this, however, it will be necessary to establish a steeper grade from No.-1 to No.-2 landing that will meet this condition.

Again, it is probable that an auxiliary drum and rope will be required to lower the loaded trip from No.-2 landing to the car-stop on the incline to await the trip from No.-1 mine.

It is also probable that suitable means must be employed to lower the empties to No.-2 landing, after they have been hauled to the head of the plane and uncoupled from the main trip. Under some conditions, it may be advisable not to haul these cars further up the incline than is necessary to drop them into the switch leading to No.-2 mine.

EXACT DATA NECESSARY

All of these details can only be worked out from a knowledge of the situation and the necesssary data for that purpose. It should be mentioned here that the strain on the rope when handling a double trip from the two mines will probably be such as to require using a stronger haulage rope.

It will also be necessary to increase the brake power on the winding drum or headsheaves, in order to suitably control the movement of the cars on the incline. If this is not done, smaller trips can be hauled so as to bring the load within the capacity of the ropes in use. JOHN S. WATTS,

Consulting Mechanical Engineer.

New Glasgow, N. S.

FOURTH LETTER

MY PLAN of treating the problem presented in *Coal Age*, June 2, p. 999, in regard to making a single incline serve two mines, one located above the other on the same hillslope, will probably differ from others that may be offered, but it appeals to me as practicable.

In order to illustrate this plan, I have prepared a diagramatic sketch, showing the length measured on the incline between the two landings or mine openings and the foot of the incline, and the relation of the descending and ascending loaded and empty trips at the moment of clearing each other, midway on the incline.

RECONSTRUCT A PORTION OF INCLINE TO REDUCE TRACK

My idea of providing a construction or arrangement that will be adapted to serve both mines may not be strictly applicable to the present case, as it involves the reconstruction of a portion of the present incline. However, I believe it will be of interest in this connection, and will describe it briefly.

The plan makes possible a considerable shortening of the track required on the incline. Instead of the 1,100 ft. of double track necessary in this case, my scheme would call for but 700 ft. of double track on the lower end of the plane, with 400 ft. of single track above it.

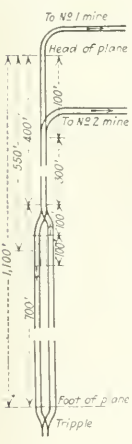
The middle point on an incline 1,100 ft. long is 550 ft. below the head of the plane. As indicated in the diagram, at the moment when the head end of the ascending empty trip is opposite the rear end of the descending loaded trip, both trips should be on straight track and clear of each other.

Now, assuming trips of ten cars are to be handled, occupying approximately 100 ft. of track, each, the head end of the ascending trip and the rear end of the descending trip being opposite each other, are each 50 ft. above the midway point on the incline, or 500 ft. below the head of the plane. Allowing another 100 ft. up the incline to the switch where the two tracks join as shown in the diagram, leaves 400 ft. of single track reaching from this switch to the head of the plane.

Viewing the situation from this angle, it would seem practicable, in providing for the most economical construction, to take out the switch on No.-1 landing at the head of the plane, and use but a single track on the first 400 ft. of the plane.

ADVANTAGE GAINED IN THE USE OF SINGLE TRACK

The use of a single track in the upper portion of the plane will have several advantages. Perhaps, the most important is that it will greatly simplify the proposition in respect to switches and crossovers required at No.-2 landing. The plan is more economical of material and the cost of upkeep will be less than when a full double track incline is used. In operating the system and handling coal from No.-2 mine, the extra length of rope required to be coupled to the main rope can be used without danger of interfering with haulage from No.-1 mine. When not in use this rope will lie at the side of the track.



Hooversville, Pa. P. M. WEIGLE.

[In connection with this suggestion, the question will be asked by many, "Why not extend the same principle of single tracking the incline to the lower portion of the plane, leaving only double track for the trips to pass each other safely when hauling from either mine?"

When serving No.-2 mine, the length of haul is 1,000 ft. and the middle point is then 500 ft. above the foot of the incline. At the moment the head end of the descending loaded trip is opposite the rear end of the ascending empty trip, they will be 450 ft. above the foot of the incline; and, allowing another 100 ft. to the lower switch of the passing track will make this switch 350 ft. above the foot of the incline.

In this arrangement the distance between the two switches of the passing track is 350 ft., which is the total length of double track required, leaving 1,100 − 350 = 750 ft. of single track throughout the incline.—EDITOR.]

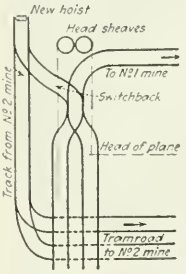
FIFTH LETTER

THE plan referred to in a recent inquiry in *Coal Age*, in respect to making a single incline plane serve two openings at different elevations on a hillside, reminds me of the many experiments we made in attempting a like proposition at our plant, some time since, and all without avail.

In the start, we extended our tipple landing to accommodate longer trips and the handling of more cars. Again, we installed a car-haul, at a point a short distance up the incline from the tipple, for the purpose of hauling the empty cars up to that point where they could be coupled to the end of the main rope, whenever it was desired to handle a trip from the lower mine.

Besides these attempts, we tried other schemes too numerous to mention, but finally gave them all up as being impracticable and causing much delay in putting out coal from the upper mine, which was greatly hampered by the new arrangement. In most of these attempts we had trouble with the ropes at the cross-overs that were required to bring No.-2 coal out onto the incline.

We are now working successfully an entrely different scheme. This consists in establishing a new hoist just above No.-1 landing and on one side of the incline, as shown in the accompanying figure. The empty and loaded tram tracks from No.-2 mine are carried across the incline by an overhead bridge. If conditions should require these tracks could be carried under instead of over the incline.



After crossing the incline, the two tracks are brought together by a switch, and No.-2 loads and empties are handled from that point over a single track, reaching to the new hoist above No.-1 landing. As shown in the figure, this single track is connected by a switchback with the main tramroad from No.-1 mine, at the head of the incline.

This arrangement enables us to haul the loaded cars from No.-2 landing up to the point mentioned, above No. 1, and drop them by gravity to the head of the main incline, by which they are then lowered to the tipple, either separately or in a combined trip of cars from both mines.

Similarly, empty cars for No.-2 mine are hoisted over the switchback and dropped down the new incline to No.-2 landing. This plan has proved very satisfactory and enabled us to overcome the trouble at first experienced.

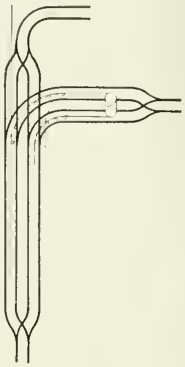
D. S. ALLISON.

Salt Lake City, Utah.

SIXTH LETTER

IN ANSWER to the inquiry in reference to handling the output from two openings 100 ft. apart, measured on the incline, and using the same plane, permit me to describe briefly a certain rope haulage in use at a mine where I was employed when a boy. If I am rightly informed, the mine is still operating the same system.

The plan was what was known as a modification of the endless-and-tailrope systems of haulage, which was something new at that time.



Since then, the method has been employed in a number of mines where branch haulage is required to bring the coal from different sections of a mine out to the main road. In applying this system to handle the coal from two openings over the same incline, as shown in the accompanying figure, it was necessary to first install a separate pair of headsheaves on both the upper and the lower landings. What I will call the main rope passed from the upper landing back over the headsheaves at the top of the plane and reached from that point down the incline to the tipple.

At No.-2 landing a short length or "branch rope" passed back over the headsheaves at that place and was carried around rollers in the track connecting this landing with the track on the incline. At the branch switch on the incline, there was a special coupling in the main rope.

After lowering a trip of cars from the upper landing to the tipple, if it was desired to have the next trip handle the coal from the lower landing the main rope was uncoupled at the branch switch and coupled to the branch rope, the other end of which was already attached to the loaded trip standing on that landing. When everything was ready, this loaded trip was started down the incline, while a trip of empty cars was pulled up the plane and through the switch onto the lower landing, reaching that point just as the loaded trip arrives at the tipple.

In this arrangement, it will be necessary to spike good guardrails to the track on the curve leading to the lower landing, in order to hold the cars to the rails and prevent derailment when rounding that curve. Special couplings should be used, made of plow steel to give them the required strength. In each case, the headsheave should be placed under the track, which will have a tendency to hold the rope well down on the rollers.

From the description I have given, the operation of this system should be clearly understood. In the figure, I have indicated by the dotted line the position of the branch rope at the lower landing when disconnected from the main rope. WILLIAM D. ROBERTS.

Morgantown, W. Va.

Inquiries Of General Interest

Authority of Examining Board

Correspondent, Questioning the Authority of an Examining Board to Omit the Oral Examination of Candidates Who Fail to Pass Their Written Examination, Appeals to *Coal Age* and Readers

AT A RECENT examination of candidates for the position of mine inspector in the bituminous region of Pennsylvania, the examining board sitting at Pittsburgh refused to give the oral examination to any candidate who failed to receive the required percentage in his written examination.

As I understand the mining law, it requires the appointment of an examining board whose duty shall be to conduct the examination of candidates on a certain day giving to each applicant a written and an oral examination.

The question I want to ask is, Has an examining board any authority to set aside the oral examination of a candidate as required by law? Granting that a candidate has failed to pass his written examination and, on that account, could not receive a certificate from the board even if he passed the oral examination with flying colors, does that fact allow the board to omit the oral examination of such a candidate?

Cannot the candidate claim the right to be given the full examination, both written and oral, required by law? To

my mind, the act of this examining board, in refusing to give a candidate his oral examination, impairs the entire examination of other candidates who cannot be legally appointed inspectors of mines.

I hope to see this question answered and discussed in *Coal Age*. If mine workers are required to obey the law and are to be prosecuted for its violation, must not officials who fail to do the same suffer likewise? INQUIRER.

Johnstown, Pa.

In our opinion, this correspondent has inadvertently read into the law more than the words convey. Art. 19, Sec. 4, of the Bituminous Mine Law of Pennsylvania, reads as follows: "The principal examination shall be in writing, and each applicant shall also undergo an oral examination pertaining to explosive gas, safety lamps, methods of ventilation and mine management."

In our judgment, the words "shall also undergo" place the obligation on the candidate and not on the examining board. The law does not state that the applicant shall be given, but shall undergo an oral examination.

In providing for the examination and certification of candidates for official mining positions, the evident intention of the lawmakers was that the examining board should determine the fitness of candidates by giving them an examination. The law distinctly makes the written examination the principal one.

It seems logical to conclude that a candidate having failed to pass the written examination to the satisfaction of the board, nothing more is required to determine that he is incompetent and unqualified for the position. That being the case, it should conclude the matter and relieve the examining board from going further in a vain attempt to ascertain the candidate's fitness.

If an examining board omit an oral examination after a candidate has failed in the written examination, having already determined that the candidate is unqualified, it has fulfilled the purpose of its appointment.

It can be further stated that Sec. 2 of the article previously mentioned authorizes the examining board to "formulate rules for conducting the examination." We are advised by the Department of Mines that, in this case, the chairman of the examining board announced to the assembled candidates that the oral examination would not be given to those who failed to make the percentage required in the written examination, and no protest was made by any of the candidates present, who thus obligated themselves to abide by this ruling of the board. It is readily conceded that an examination conducted in a manner that fails to comply with the requirements of the law would not be legal, nor would any appointment made as the result of such examination be legal. We shall be glad to learn the opinions of others regarding the matter.

Examination Questions Answered

Pennsylvania Bituminous Firebosses' Examination, April 5-8, 1921

(Selected Questions)

QUESTION—*What are the lawful duties of a fireboss? State briefly.*

ANSWER—The law requires a fireboss to examine carefully every working place in his district before the men enter the mine for work. He must also examine all places adjacent to live workings and all roads, travelways and unfenced roads leading to abandoned places and falls. Before proceeding, he must see that the air current is traveling in its proper course. He must use no other light than that of an approved safety lamp and start his examination not more than three hours before the time appointed for work. He must mark the date of the examination on the face and side of each place examined as evidence of his work having been done. At the entrance of any place where gas or other danger is discovered, he must place a danger signal to warn persons not to enter such a place. On completing his examination, he must enter a report of the same in a book kept for that purpose and specify any danger he may have found, stating its character and location. The fireboss is required to make a second examination of the working places in his district during working hours.

QUESTION—*When and where would you place a danger board and how and by whom should the danger be removed?*

ANSWER—The law requires a danger board to be placed at the entrance of the mine by the fireboss when he enters to make his first examination in the morning. He must also place a danger board at the entrance to any place where he may find danger. It is the duty of the mine foreman or the fireboss by his direction, to see that all dangers discovered are promptly removed by competent workmen under their supervision.

QUESTION—*Describe the construction of a safety lamp for official use by a fireboss and state with what lamp you are most familiar.*

ANSWER—A safety lamp designed for the use of a fireboss consists of two essential parts, the oil vessel and a gauze chimney. The common unbonneted Davy lamp has always been a favorite with firebosses. The brass oil vessel of this lamp is equipped with a round-wick burner and a pricker for raising or lowering the wick. The oil burned is a good quality of sperm or cottonseed oil. The gauze chimney surmounting and attached to the oil vessel is made of standard, steel-wire mesh having 28 wires (28 B.w.g.) to the inch, or 784 openings per square inch. The chimney is cylindrical having a diameter of 1 9-16 in. and a height varying from 4½ to 6 in., in different types of this lamp. The main gauze is supplemented by a gauze cap that fits over the top of the chimney. The chimney is held in place at the top by a brass ring, supported on three brass standards or rods. A brass shield or cap surmounts the standards and to this a handle is attached for carrying the lamp. A screw-plug secures the chimney to the oil vessel.

QUESTION—*Name at least one dangerous practice that is frequently indulged in by the following persons: Miners, motormen, brakemen, rockmen, timbermen, tracklayers and wiremen.*

ANSWER—A miner may neglect to set needed timber, mine his coal without spragging, use too short a fuse, or bite off the end of the match of a squib, in blasting. A motorman may jump on or off his motor to open a door or throw a switch, while the machine is running. Brakemen may fail to properly sprag or apply the necessary brakes on a steep grade. Bratticemen may fail to set a sufficient number of posts or properly hang the canvas or extend a brattice to a sufficient distance to sweep the gas from the face of a place or heading. Rockmen may overcharge a hole, or fail to set temporary timbers for their protection when taking down loose rock. Timbermen will often fail to protect themselves in like manner when replacing broken timbers. Trackmen may leave old rails and other material in an unsafe position at the side of the road, or stow away the same where it will obstruct the clearance space or shelter holes along the road. Wiremen may fail to shut off the power, before attempting to make necessary changes in the wiring or other electrical installations.

QUESTION—*What first-aid treatment would you give to a workman whose eye has been injured?*

ANSWER—Remove at once any speck of coal or other foreign matter observed on the eye. If the injury is severe, while waiting for the doctor apply absorbent cotton or soft cloth soaked in cool water, bandaging the same, not too tightly, but sufficiently so to prevent movement of the eyelid. Keep the cloth and bandage constantly wet with cool water to prevent inflammation. A few drops of olive oil in the eye will help to allay irritation. Never allow the injured one to rub his eye.

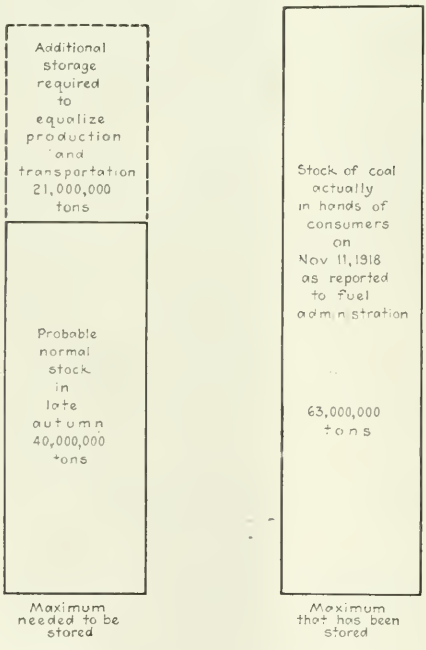
How Shall Irregular Operation of the Bituminous Coal Industry Be Remedied?*

Suggested Correctives Include Storage, Summer Discount in Prices, Sliding Wage Scale and Seasonal Freight Rates—Operators Propose Rebate on Freight Charges Paid on Coal Actually Put in Storage

By F. G. Tryon†

IT HAS been frequently pointed out that as long as consumption is seasonal—and in a climate like that of North America it must always be seasonal—the only way to insure steady working time at the mine is to provide adequate storage facilities at some point between the coal in the ground and the furnace of the consumer.

The extension of the practice of storage turns upon a technical problem—the feasibility of storing coal on a large scale without spontaneous combustion and undue losses through escape of volatile matter or physical degradation. The coals of the Appalachian region can generally be stored better than those of the Mississippi Valley. As to the feasibility of stocking the former there can be no doubt, for they are stored by the Northwestern Coal Dock operators in enormous quantities under trying conditions. There is a widespread belief that the coals of the Mississippi Valley—Illinois, Indiana, Western Kentucky and the fields from Iowa to Texas—will not endure storage. Careful investigation by the engineers who have devoted most attention to this subject, however, indicates that with due precautions these coals also many be stored. Of course the precautions necessary cost money, and to be economically practicable they must be offset by beneficial results.


Additional storage required to equalize production and transportation 21,000,000 tons
Probable normal stock in late autumn 40,000,000 tons
Maximum needed to be stored
Stock of coal actually in hands of consumers on Nov 11, 1918 as reported to fuel administration
63,000,000 tons
Maximum that has been stored

STORAGE COAL REQUIRED TO EQUALIZE OUTPUT

To overcome the seasonal swing in production and transportation of soft coal would require putting in storage between March and August about 21,000,000 tons over and above what is already stored. This would make the total quantity in storage no greater than the actual stock on the day of the Armistice.

The most convincing demonstration of the practicability of storing Western coal in large quantities is seen in the fact that on the day of the armistice consumers had on hand 63,000,000 tons of soft coal, an amount sufficient for six weeks and three days' supply. Millions of tons of this coal was mined in the Middle West. In fact, Appalachian coal had been zoned out of most of the Mississippi Valley except for small quantities moving under permit. Although the purchasers of this Western coal reported many fires, only a small part of it burned up or blew away, and the carry-over into 1919 was so heavy as to depress the market for months thereafter. Western coal has been stored in quantities sufficient to stabilize the demand. What was done during the war can be done again, if only the necessary incentive is provided.

Storage at Mine of Only Limited Value

Storage at the Mine.—It is frequently urged by those who are unfamiliar with mining conditions in America that stocks of coal should be maintained at the mouth of the mines. This is, indeed, the prevailing practice in parts of Belgium and other countries on the Continent, but under the conditions that exist in the United States this practice would be of value only in evening up the small irregularities in operation during a given week. It would have no influence on the seasonal movement of coal from mine to consumer, and would therefore leave untouched one of the most glaring ill effects of the present system—the unequal load upon the railroads. Neither would it furnish a reserve for the protection of the consumer against a breakdown in transportation, and experience during the war has shown that actual suffering and the closing down of plants are due more to delays in the delivery of loaded coal than to diminution in the rate of output at the mines. So many consumers depend upon the mobile reserve of coal in transit that any interruption to normal movement on the railroads means a scarcity of coal. In addition to these facts the extra cost of putting the coal in storage and reclaiming it militates against storage at the mine. As someone has aptly put it, the cheapest place to store coal at the mine is underground in the bed.

Storage on Route.—Accumulations of coal may sometimes be kept advantageously at points along the way from mine to place of use. Examples of this practice are seen in the great storage yards that were constructed years ago by the producers of anthracite. These yards are used as reservoirs to receive the excess production in summer and to furnish, on the approach of winter, the additional tonnage called for by the heavier demand at that season. It is noteworthy that they were established near points of greatest consumption—close to New York City and to the piers from which shipments were made by water to New England.

Only one yard, and that of small capacity, was located in the anthracite region itself. To this type of storage belongs also the great system of docks at the head of Lakes Superior and Michigan, designed to accommodate both anthracite and bituminous coal, which constitutes probably the greatest storage plant for coal in the world. The docks are necessary because navigation on the Lakes must be completed between April 15 and Dec. 10, and they exercise a beneficial influence on working time in the fields of the

*The first part of this article, entitled "Injurious Effects of Irregular Operation of the Bituminous Coal Industry," appeared in *Coal Age* last week. Published by permission of the director, U. S. Geological Survey.

†In charge of coal statistics, U. S. Geological Survey.

northern and middle Appalachians, which supply the Lake trade. To whatever extent similar storage facilities can be constructed elsewhere, the working time in other districts will be equalized. Experience suggests, however, that such intermediate storage is feasible only at some natural breaking point. To halt the loaded train half way to its destination, store the coal, and later reload and transport it the remainder of the journey would be so expensive that the stored coal could not compete with that sent by through-shipment.

The real objection to intermediate storage as a solution of the problem of irregular operation is that it does not guarantee a steady supply to the consumer because the last link in the chain of transportation may fail at the critical moment. Thus, storage yards for bituminous coal in the vicinity of New York would have availed little to supply New England during recent periods of shortage, for the congestion in traffic through the gateways over the Hudson has on many occasions been the limiting factor in supplying New England. Not the least of the benefits of storage is the security it confers upon the consumer, and that security is not his until the coal is actually in his bin.

Storage at Place of Use Safeguards Consumer

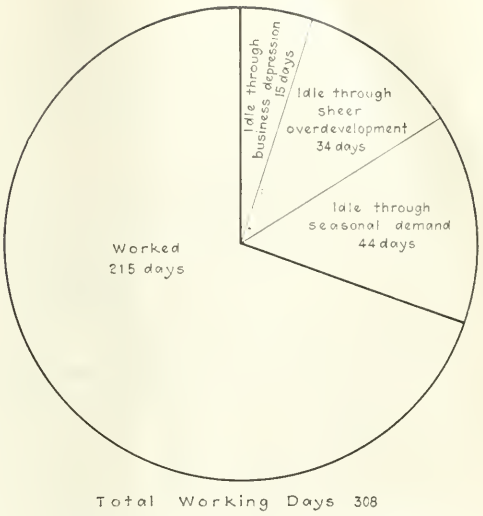
Storage at Point of Consumption.—The true remedy for the seasonal fluctuation in the demand for coal, therefore, is storage at the place of use, which will insure the consumer against the menace of interruption to his line of communication with the mine. The magnitude of the task of storing enough coal to equalize the demand is not so great as might at first be supposed. We already habitually accumulate a considerable stock against winter requirements. If in addition to the present normal stock, 20,000,000 tons can be put in storage between March 1 and Aug. 1, the task is done.

It is urged that the expense of constructing new storage facilities would be prohibitive. The experience of the war indicates that the additional facilities required can somehow be found, for on the day the armistice was signed the total quantity of bituminous coal in commercial storage was at least 63,000,000 tons, and it is improbable that the normal stocks on Nov. 11 exceed 40,000,000 tons. Where the extra 23,000,000 tons was accommodated is something of a mystery to the coal fraternity. Clearly much of it was in emergency stock piles inadequately protected and inconveniently placed. The fact that it was accommodated somehow indicates, however, that the task of storing enough coal to equalize the demand is by no means an impossible one. What was accomplished once by the consumer can be accomplished again, provided only that storage is made attractive to him.

Summer Discount Helps Anthracite Industry

Summer Discount in Prices.—To interest the consumer some inducement in dollars and cents must be offered which will counterbalance the cost of storage. The most successful inducement in actual practice has been the summer discount in the price of anthracite, which was introduced by the railroad companies in the anthracite region in the year 1900. The maximum discount offered amounted to 50c. a ton in the month of April, and was progressively reduced as the season advanced. It was some years after the summer discount was first offered before the working time in the anthracite region showed marked improvement, but since about 1910 the number of days lost per year has notably decreased, and the summer discount has no doubt contributed to that improvement. Some of the leading producers in Oklahoma and Arkansas have followed the same practice for years with beneficial results. Summer discounts on gas and domestic coal also were made by the Rhenish Westphalian Coal Syndicate of Germany. It should be noted, however, that summer differentials in mine prices are practicable only where competition is limited. If applied generally to sales of steam coal in the United States, the practice would involve the use of methods which probably would be construed to violate the anti-trust laws.

Sliding Wage Scale.—One means of making seasonal differences in mine prices possible is a sliding wage scale that varies with the season. The sliding scale that was introduced into the anthracite region in 1902 by direction of the Anthracite Coal Commission was not designed primarily to assist summer discounts in price, but it did in fact facilitate them. Under this scale the wage rate was increased 1 per cent for every increase of 5c. a ton in the price of anthracite at New York Harbor, and decreased as the New York price declined, except that at no time was the wage rate to fall below a prescribed minimum. The sliding wage scale was abandoned by agreement in 1912, but during the decade it was in force it no doubt assisted in maintaining the summer discounts in prices.


Idle through business depression 15 days
Idle through sheer overdevelopment 34 days
Idle through seasonal demand 44 days
Worked 215 days
Total Working Days 308

HOW AMERICAN SOFT COAL MINES HAVE SPENT THE WORKING YEAR—AVERAGE FOR THE PAST THREE DECADES

The records of the U. S. Geological Survey show that in the thirty years 1890 to 1919 the bituminous mines worked on the average only 215 days, and lost 93 possible working days each year. The diagram analyzes the general causes of this lost time; the apportionment between the several causes is estimated from all available data. The losses due to seasonal demand and overdevelopment probably are fairly regular. Those due to business depressions are present in some years and absent in others, the average for the 30-year period being about 15 days.

As the mine laborers will benefit more than anyone else by a stabilization of working time it seems not unreasonable that part of the burden of that stabilization should be borne by them. Such a sliding scale would presuppose premiums during winter as well as reductions in spring and summer. The sliding wage scale has the further advantage that it could be adopted, provided both parties were agreed, by making it a feature of the wage contracts between the unions and the operators. This course would avoid violations of the anti-trust laws and would offer a means of regulating the seasonal demand that could be put into operation by the industry itself without legislation.

Seasonal Freight Rate.—The most promising measure to induce summer storage by the consumer which has so far been proposed in the United States is the establishment of seasonal freight rates on coal. The bill introduced into Congress by Senator Frelinghuysen, of New Jersey, provided for graduated reductions in freight rates from February to July, and graduated increases from August to January. The maximum spread between the highest and lowest months was 50c. a ton. It was to be expected that the universal application of any change in coal freight rates would disturb established competitive relations between different fields and different types of coal, and this, it was shown, would be the probable effect of the Frelinghuysen plan.

No one set of differentials can be devised which will fit the business of all districts, for though in most fields there is a seasonal demand, the type curves of demand in the Appalachian region differ noticeably from those of the

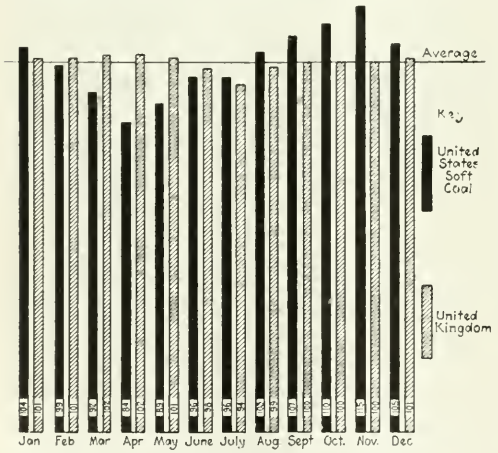
West. As drafted, the bill did not affect intrastate rates on coal, and it was pointed out that unless intrastate rates were swung into line with the differential rates on interstate business, the result would be confusion indeed. As the coal moving in strictly intrastate business constitutes 37 per cent of the total, exclusive of shipments to tidewater and the Lakes, the necessity of working out a harmonious set of differentials on all coal traffic is obvious, if the idea is to be applied at all.

These difficulties suggest that legislation intended to establish seasonal rates should be drawn only in the broadest terms and that large discretionary powers should be vested in the Interstate Commerce Commission. If the application of the principle were made sufficiently elastic many of the objections raised by operators in particular fields could be avoided. The differentials proposed probably were sufficient to offer a real inducement to store coal. They were at least much in excess of the normal seasonal swing in spot prices in most districts. Altogether the principle of seasonal rates, when judiciously applied, appears to offer the greatest promise of affecting the seasonal demand for coal. Its chief advantage lies in the fact that it can be applied by statute without any fundamental change in the régime of competition to which the bituminous industry is at present committed.

A counter-proposal offered by the operators as a substitute for seasonal rates was a drawback or rebate on the freight charges paid on coal actually put in storage.

Deflating "Watered" Mine Capacity

It will be noted that most of the foregoing devices are designed to overcome the seasonal demand. If successful, their net effect would be to distribute the total annual output in twelve equal monthly installments. This result, desirable as it is from many points of view, would not of itself remove the present discrepancy between annual capacity and annual requirements. If an even distribution of demand could be effected at once it would increase the number of days worked in April only to decrease them in November, and the total number of days worked in the year would remain just the same. We should still have an excess mine capacity of 250,000,000 tons and an excess labor force of 175,000 men.



SEASONAL FLUCTUATION IN OUTPUT AT BRITISH AND AMERICAN MINES

Columns represent the rate of output for the month, expressed in terms of per cent of the average rate for the year. Year chosen is 1913, the latest normal year for England. From the even height of the shaded columns it will be seen that in England—next to the United States the greatest producer of coal—the seasonal depression in output has been practically overcome. One factor in this result is the export trade of Britain, a considerable part of which is with the Southern Hemisphere. It is also true, however, that British consumers have adjusted themselves to a routine of steady purchasing, and this in spite of the fact that coal for household use is a larger element in the British internal demand than it is in the internal bituminous market of the United States.

The annual working time can be raised only by deflating the "watered" mine capacity—the overdevelopment and overmanning of the mines. To what extent the evening up of demand would contribute to this deflation is problematical. It ought to minimize fluctuations in mine price and therefore remove the periodic high spot prices, which have heretofore been one of the chief incentives to overdevelopment. Among its results should be fewer new mines and slower development of old mines. Its effect could at best be but gradual and negative, and a single return of a period of scarcity with its orgy of high prices, such as we experienced in 1920, would undo the work of years.

Necessary to Curb Unlimited Competition

The truth is that the remedies so far proposed do not touch the fundamental fact of unlimited competition. They provide no positive way to check the growth of mine capacity. So long as there is no limit to the opening of new mines, our enormous reserves and our guarantee that a new property shall get its share of the available transportation constitute a standing invitation to new enterprises, an invitation that needs only a tempting rise in the price of coal to find ready acceptance. There will remain also the pressure to open new mines in order to meet payments on investments in coal lands and the pressure to increase output in order to lower unit costs.

The necessity of some check on new development is shown by both of the two notable experiments in the stabilization of coal mining afforded by the history of the coal-mining industry. The anthracite operators of Pennsylvania, by means of summer discount and storage, did succeed in eliminating seasonal fluctuations in production. At the same time, however, the small underground reserves of anthracite had set a natural limit beyond which development could not well proceed. The retardation of development enabled production—now equalized throughout the year—to overtake mine capacity. In 1918 the anthracite region averaged 293 working days, or almost theoretically full time. Even in 1919, a decidedly abnormal year, the working time was 266 days.

In like manner the essential object of the German coal syndicate of Essen was to limit competition and so avert overdevelopment and overproduction. The conditions leading to the formation of the syndicate—rapid development, overproduction, irregular demand and sharp fluctuations in price—remind one strongly of the conditions in many coal fields of the United States today.

Unification of Interest to Check Overdevelopment

How far the industry itself can go in checking overdevelopment, in view of our present anti-trust laws, is a question. During the crowded four years from 1916 to 1920 forces have been at work which tend to a unification of policy and of interest. We hear of consolidations of strong companies within the same field; of acquisition by prosperous concerns in one field of properties in rival fields; of heavy investments in captive mines by industrial consumers and railroads. We have seen an increase in the number of operators' associations and in the work done by them, which culminated in the formation of the National Coal Association in 1917. The experience which the operators obtained during the war compelled them to get together and to adopt, for the time being at least, a national viewpoint. Not the least potent influence toward unification has been the prosperity attained during the war, which lifted the industry from a condition of near-insolvency and set it on its feet. This prosperity alone has provided a larger working capital and made possible the purchase of machines, improvements in mining practice, and a general improvement in technical efficiency.

But while these forces have been tending toward unified operation, a set of opposing forces has been at work in the other direction. The high prices and attractive profits and the magnitude of the war-time demand have resulted in an extraordinary enlargement of mine capacity. It is a question which of the opposing forces has made the greater headway. One fact is fairly clear: The tendency to combine has not gone far enough to squeeze out the water. The discrepancy between capacity and demand probably is greater now than it was in August, 1914.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

LIQUIDATION has proceeded very far, and although stability has not yet been established to the level of commodity prices, we have approached a stable equilibrium that will encourage a renewal of trade on the part of those who rebelled against the prices of last year and instituted the buyers' strike, according to the July bulletin of business conditions issued by the Mechanics & Metals National Bank of the City of New York. "The adjustment of prices to a scale means much," the bulletin continues, "particularly with reference to the railroads and the agricultural interests. These interests found themselves hitherto in a very unsatisfactory situation, the worst feature of which was the fact that while the prices they received for their sales were low, the prices they paid for their purchases were so high as actually to forbid liberal buying. The railroads are the greatest employers of labor and purchasers of material in the country; the farmers as a class purchase more manufactured products than any other class of workers. But railroads and farmers must have a margin of income over expenses if they are to buy, and that margin can only come out of a proper equalization of prices.

"Although it sounds like a paradox, in view of the existing depression, business is in a far healthier state than it was at this time a year ago, when merchants were buying for the automatic rise in values which came while their goods lay on the shelves. Lax business methods have largely disappeared; that kind of speculative buying is definitely ended and merchants are seeing to it that purchases are closely adjusted to demand. Fundamental business is the keynote today, with emphasis placed on careful planning and turnover, hard work, service and salesmanship. The public having turned toward useful necessities, a considerable part of the boom material which was produced simply to make sales is no longer being turned out.

"With lower commodity prices, the price of labor is becoming more normal. Railroad wages have been cut down, and steel workers are facing adjustments, which, if carried through without difficulty, will have an excellent effect. There is an insistent call upon the railroads to bring down their charges in line with reductions elsewhere. It is maintained that the relatively low prices now prevailing for commodities make the cost of transportation so much more burdensome to producers than when prices were high and when transportation charges could readily be passed along to the consumers."

Mullins Body Co. Strike Ends

It has been officially announced that the strike of employees at the plants of the Mullins Body Co. at Salem, Ohio, makers of automobile bodies, has been ended, the workmen returning to the plants on the company's terms. The strike was in force for about two weeks.

Lackawanna Cuts Force 12 Per Cent

The Delaware, Lackawanna & Western R.R. announced July 7 a 12 per cent reduction in working forces at its Scranton repair shops, effective Monday, July 11. It also announced the placing of the shops on a 44-hour week basis. The order, it was said, would affect all other shops of the railroad.

Five Mills Close; 4,500 Idle

Four plants of the Greenfield Tap Die Corporation, which employs about 3,000, and the Goodell-Pratt Co. plant, employing 1,500 closed June 30 until Aug. 1. The two concerns are the principal industries of Greenfield, Mass.

Fewer Idle Freight Cars

The number of idle freight cars continues to decline, according to figures given out by the American Railway Association. These showed that there were 377,850 cars in excess of current freight requirements on June 23, or a reduction of 3,896 cars compared with the total on June 15. Surplus box cars, numbering 140,627, showed a decrease of 3,308 in approximately a week, and surplus coal cars numbered 163,982, an increase of approximately 4,500 over that reported for June 15.

B. & O. Mechanics Back at Work

Between 1,500 and 1,600 mechanics returned to work at the Mount Clare shops of the Baltimore & Ohio R.R. July 5 after a furlough of three weeks. The Mount Clare plant now is employing, roughly, two-thirds of the normal force of about 3,000, it was estimated at the company's offices. Including those at Mount Clare 3,600 shop employees returned to work, the others going back to shops at Cumberland, Md., where 450 were put on; Keyser, W. Va., and Glenwood, Pa.

Unemployment Increased in June

A decrease in employment of 2.9 per cent in the country during June as compared with May is indicated by a survey made by the Department of Labor of reports from 1,428 firms employing normally 1,600,000 persons. The decrease since January in these establishments, situated in sixty-five principal industrial centers, according to a statement issued July 7, has been 6.2 per cent. All industries reported decreased employment except food products, textiles, leather, liquors and beverages, stone, clay, glass and tobacco.

2,000 D. & H. Shopmen Return

About 2,000 shop employees of the Delaware & Hudson R.R. in New York State and Pennsylvania went back to work July 5, when several shops of the company were reopened after having been closed for six weeks. Officials of the road said that work was resumed on that date at Colonie and Oneonta, N. Y., and Carbondale, Pa. They estimated there were 1,500 men at work in the Colonie shops, 250 at Oneonta and 250 at Carbondale.

N. Y. Navy Yard Makes More Cuts

It is reported at the New York Navy Yard that 2,300 more workers are to be discharged by the end of this month. One thousand were to have been discharged by Saturday, July 9, and the rest are to be dispensed with when work has been completed on the Brazilian battleship Minas Geraes.

Hold Hearing on Readjustment of Coal Rates to Syracuse; Decision Awaited

APPLICATION having been made to the Interstate Commerce Commission by the coal railroads running into Syracuse and covering that territory generally, for what was called a readjustment of freight rates, a hearing was held in that city on June 27 and 28 by Manual Garcia de Quevede, examiner of the commission, and a large amount of testimony taken for future consideration and guidance in arriving at a decision.

The railroads concerned are the Lackawanna, which proposes to advance its rate 28c. to the Syracuse territory, and the New York Central and the Lehigh Valley, the latter reaching Syracuse over the Central, which propose to reduce their rates 14c. a ton. As the Lackawanna is the chief coal carrier, handling a great part of the anthracite used in the district, the consumers were especially concerned in opposing the changes. A leading part in the opposition was taken by the Syracuse Chamber of Commerce. The roads were liberally represented by attorneys. Some, who are acquainted with the situation, are of the opinion that the retail dealers did not feel like making a very determined opposition to the advance, as the Lackawanna road has been considering the plan of erecting its own local coal plants in Syracuse and if too much antagonized by the trade it might be provoked to do so.

Dr. Zimmerman Reports on Marketability of Beneficiated North Dakota Lignite

DR. ERICH W. ZIMMERMAN, consulting economist of the U. S. Bureau of Mines, has submitted to Director H. Foster Bain a preliminary report on the marketability of beneficiated North Dakota lignite. The report analyzes the conditions surrounding and the difficulties affecting the fuel supply of North Dakota, South Dakota and contiguous territory. The ultimate purpose of this study is to provide the necessary economic data upon which an estimate of the commercial possibilities of beneficiated North Dakota lignite may be built up. The report specifically deals with production and consumption in the territory mentioned, Northwestern fuel prices, Northwestern fuel imports with special reference to their sources, the Lake coal trade to the Northwest and the railroads and the Northwestern fuel supply.

Union Colonizes the Mingo Tent Colonies

HARRY OLMSTED, chairman of the Labor Committee of the Operators' Association in the Williamson field, makes the following statement: "Law-enforcement officers at Williamson are aware that recruits for the forces of the strikers have arrived recently into the hills of Mingo County. The idea of marching organized miners into the Mingo field from the Kanawha region was abandoned, but many of the men from that district have arrived in groups either by train or in automobiles.

"It is the opinion of the operators that these recruits are coming for another purpose than that of reopening the warfare in the Williamson district. They believe that the miners' organization wishes to make an impressive showing in numbers when the Senate committee arrives.

"As evidence of the recruiting process, Major Davis, who is in charge of the district under Governor Morgan's proclamation of martial law, recently detained forty men living in the Lick Creek tent colony of strikers. His examination of these men showed that fifteen of them were not residents of Mingo County, and had not worked a single day in the coal mines of the Williamson field."

Coal Mine a Feature of Mining Congress

A MODEL coal mine built under the supervision of government experts and illustrating the latest form of labor-saving mining machinery will be an interesting feature of the National Exposition of Mines and Mining Equipment which the American Mining Congress is preparing for its twenty-fourth annual convention to be held in Chicago, Oct. 17-22. From cutting machines to ventilating fans every form of modern coal-mining machine will be seen operating under actual working conditions.

When the Coliseum at Chicago opens its doors on Oct. 17 the visitor will have an opportunity of seeing an excellent facsimile of a coal mine and of exploring its recesses. He will come to an open shaft, enter a cage and descend to the bottom. Further on he will enter a chamber where he can observe the cutting machines and loaders at work. An electric locomotive will pull the cars to the conveyor, which will lift the coal to the mouth of the mine.

Western Kentucky Towns and Coal Mines to Get Power and Light from Utilities Co.

THROUGH a deal just closed whereby the Kentucky Utilities Co. takes over under a ten-year contract the power plants of the two largest western Kentucky coal companies, the St. Bernard Coal Mining Co., at Earlington, and the W. G. Duncan Coal Co., at Greenville, arrangements are being made to supply power to a large number of towns and coal companies which have neither light nor power at the present time. It is planned to string 150 miles of transmission, which will cost around a half million dollars and require probably a year to install, according to L. B. Herrington, vice-president of the utilities company.

It is reported that there is 5,000 hp. available, produced in the two plants, which have coal in good producing mines at hand. It is planned to distribute power through large generating plants at these mines and furnish power to Central City, Madisonville, Providence, Clay, Sturgis, Dawson, Greenville, Princeton, Morganfield and Uniontown. This is the largest power contract ever made in western Kentucky and the first looking toward hooking up a number of coal operations. It will result in a saving in the transportation of coal and materially aid in improving mine operation.

Big Explosion Wrecks German Mine, Killing Eighty-Three Men Out of Hundreds

A DOUBLE explosion that knocked men down a half mile away occurred in the Mont Cenis mine near Herne in Westphalia, Germany, on Sunday, June 19, killing 83 men out of hundreds who were working in the mine at the time. A number of men were still entombed on June 21, among them Herr Roechling, a son of the owner, who was engaged in the mine when the explosions occurred. One hundred persons were injured. Methane is said to have been the cause of the disaster and to have hindered the rescuers.

Tidewater Coal Exchange Issues Supplement No. 3 to Mine Classification No. 1

THE Tidewater Coal Exchange, Inc., issued as of June 22, Supplement No. 3 to Classification of Mines No. 1. This supplement will be mailed to each yearly subscriber. Copies of Classification No. 1 and Supplement No. 3 are available also to the coal-purchasing public and all interested parties and will be mailed on receipt of 25c. and extra copies of Supplement No. 3 will be mailed on receipts of 10c. For $1 monthly supplements will be regularly supplied, containing all changes, additions and eliminations.

Try to Mine Coal Before Law Can Act

CLAIMS are made that the Glen Alden Coal Co. is triple-shifting its operations in the surface beds at the Archbald, Sloan and Hyde Park collieries so as to obtain as much coal as possible from them before the new laws come into effect on Aug. 27, when it will be impossible to mine the upper beds without violating the Kohler law or accepting the Fowler law provisions. The lower measures may be worked with less prospect of injury to the surface. The Se-Rob Coal Co., with mines in West Scranton, also is running two shifts, though formerly it worked only one.

Effect Upon America's Foreign Trade of Improved Production of Manufactured Goods in Europe*

By Herbert Hoover

THERE is a feeling of some uneasiness and even of pessimism regarding the future or our foreign trade, in which I do not participate. The importance of our foreign trade requires but little defense. I may say in passing that our whole standard of living greatly depends upon our imports and that our exports are the great balance wheel for our production. Exports are vital to the stabilization of our industries, of price levels, of wages and of employment.

While our exports do cover but a small percentage of our total production, on the other hand they do comprise a large percentage of the production of certain industries. For instance, we generally export 20 per cent of our wheat, 60 per cent of our cotton, 75 per cent of our copper, not to mention others. Unless we find a market for the surplus production of our great industries, we shall continue to keep some twenty-five millions of our people in reduced buying power. We might even drive them into poverty—during the many years that would be required to shift the whole basis of our internal production. Nor does a nation become rich by its exports alone, but by its trade.

While many of the causes of the present depression lie within our own borders, yet there may be no recovery from these hard times for many years to come if we neglect our economic relations abroad. Even if we lower our vision of civilization in this crisis solely to our own selfish economic interest, we are yet mightily concerned in the recuperation of the entire world. The hard times that knock at very cottage door today came from Europe. No tariffs, no embargoes, no navies, no armies can ever defend us from these invasions. Our sole defense is the prosperity of our neighbors and our own commercial skill. The recovery of our foreign trade can march only in company with the welfare and prosperity of our customers.

When we analyze the present foreign trade situation, we find tremendous shifts in economic currents since 1914. Indeed, we find great changes still in progress. If we would guide our policies of production and of trade aright we must keep these great changes constantly in mind. These profound alterations naturally fall into two divisions: The shift in the world's production and markets and the shift in the world's financial relations. They bear upon each other, and they affect our three primary groups of food, raw material and manufactured goods differently.

World Changes in Production and Markets

The United States.—There have been great changes in our own economic situation. We have not alone shifted from a debtor to a creditor nation. Our capacity for surplus production in food and manufactures has grown enormously during the war until we have taken front rank of the world in foreign trade. The direction of our trade has shifted greatly. During the last year about one-half of our whole foreign trade was with Europe, but of our exports to them 80 per cent were foodstuffs and raw material; of our exports to states outside of Europe about 75 per cent were manufactured goods. Europe in turn is our serious competitor in marketing our manufactured goods to the rest of the world. We have enormously increased our imports of tropical and other commodities that we do not produce.

The Noncombatant Countries.—Since the great war began the world outside the fighting states of Europe has gained mightily in wealth, in standards of living, and in consuming power. Even omitting the United States, it has gained something like forty millions in population. The countries not directly affected by the war are indeed suffering from the general depression, but this depression with them is only the aftermath of the malevolent forces born of the past war booms. They have none of the deep economic wounds of the fighting states, and they will be quick to recover. During the war the productive capacity of these states, except possibly Japan, had no unusual increase because of their isolation through shortage of shipping.

Russia.—One of the economic shifts that affects the whole world profoundly is from Russia. Russia bore much the same relation to western Europe before the war that the Mississippi Valley bears to our Northeastern States. Russia was one of the great food bases of the manufacturing countries of western Europe, exchanging food for their fabricated products. These manufactured goods in turn were to some degree produced from our raw materials. Even at best it will be many years before Russia will have recovered. We are today the only great source of enlarged food production. Europe must and will draw from us a great proportion of food supplies that she formerly drew from Russia. I see no basic reason why we should not continue to export approximately the same large volume of foodstuffs that we have shipped abroad during the past twelve months. This item alone at even present prices would be triple our pre-war food exports, and would represent the equal of more than 60 per cent of our whole pre-war export trade.

German Reparation Certain to Have Profound Effect

Germany.—Another great but uncertain shift in world forces will arise out of Germany. The reparation payments must have a profound effect upon the whole economy of the world. Germany is to pay outside her borders to the Allies $500,000,000, plus 26 per cent export duty, or, say, a minimum of about $750,000,000 per annum. Germany is left without much gold foreign property or foreign business earnings of consequence; therefore these payments must be made mostly by the sale of manufactured goods outside her borders. But beyond the reparation payments, she must also sell goods abroad in the amounts necessary to buy her imports of food and raw materials.

Any calculation based on the pre-war trade of Germany implies an enormous increase—perhaps more than doubling—of her pre-war exports. In view of the export duty and other payments, she must produce these goods for about one-half our production cost in order to take our markets. Such an increase in exports must be manufactured goods, and until the world consumption grows, these must be marketed in displacement of the goods of other industrial nations. We shall certainly feel the effects of this flow of goods that must be produced if she is to make reparation payments. On the other hand, Germany must take more raw materials from us for this purpose. In any event, the crowding in the market of German exports will affect her immediate neighbors more than ourselves, for 80 per cent of her market, pre-war as well as in the future, must lie in Europe itself.

Effect Upon Us of Improved European Production

Any improvement in European production of manufactured goods will favorably affect our market for those raw materials, such as cotton and copper, where we possess the final supplies. In considering the demands for such raw materials we must remember that the manufacturing countries of western Europe have lost for a long time to come any great markets in Russia and Turkey; the population of Europe as a whole has not the consuming capacity for manufactured goods that it had before the war and, therefore, we must expect a less than pre-war consumption in the confines of Europe for their remanufacture of our raw materials. But on the other hand, they will find after this depression is passed that the markets of the rest of the world are larger than before the war. I am confident they will

*Abstract of an address before the National Shoe and Leather Exposition and Style Show (Inc.) Boston, Mass., July 12, 1921.

gradually return to pre-war demand for our cotton, copper, etc. Fortunately, our producers have realized this temporary situation and have vigorously reduced their production so that they should eventually realize better prices than at present.

As to our manufactures containing a large element of labor cost, in which we do not enjoy special advantages, we must look out and take measures of our own. We can no doubt devise tariff measures that will protect our domestic market, but if we are to hold to our foreign markets in this vast group of our manufactures, and thus to keep our people employed, we have several things to attend to. Fundamentally, we must get our production costs down. That lies only along the road of increased efficiency in our whole industrial machine. It means a willingness of our working people to put forth every effort that is in them consistent with health, proper family life and good citizenship. The surest road to a continued high wage and the surest safeguard against unemployment is to remove every restriction on effort. I am confident we can hold our markets, our higher standards of living and of wage if we will all put our backs into it.

Shift in Credits Overshadows Other Problems

Overriding all these questions of production and markets is one of credits. Our whole financial relation to the rest of the world has greatly shifted. From a nation owing some five billions of dollars to the rest of the world for moneys borrowed, the war has reversed our position so that the world, principally Europe, owes us today from thirteen to fifteen billions of dollars, of which about ten billions is due our government. Before the war we had to export a surplus over our imports, and beyond this had to contribute through remittances of immigrants, tourists, shipping, etc., great sums to pay interest upon our debts.

The reason for the piling up of this vast debt is, of course, that we have not only loaned money to the Allies but have also since the war vastly increased the surplus of our exports, and the movement still continues to accumulate in our favor. Unless we would cease a large part of our war increased productivity with all the resulting unemployment and losses of such a cessation, we must continue for some time to export in excess of our imports. I may repeat that if today we stop giving more credits and demand payment of interest on debts due our government, our exports will further decline, and the decline will find its interpretation in more unemployment among our own people and more displacement of our industries.

Dollar at Premium All Over the World

The natural effect of our continued surplus of exports (although we have as yet made no demand for payment of interest on the government debt) is that our dollar is at a premium over even the most stable currencies in the world. Thus the cost of producing our commodities is higher than in any other country. This does not so materially affect the export of those commodities of which we hold a final supply, such as the food supplies and our raw materials, or those articles in the manufacture of which we have unique ability. It does, however, partly blockade our exports of manufactured goods in which we directly compete with Europe. Exchange itself is not the cause but the effect. It bears the same relation to trade that the barometer does to the weather. It is but an indication of the movement of commodities and credit. Our higher barometer means we need more credits outward or as an alternative we must send less goods out or take more goods in.

Attempts to bring exchange to parity or to create international securities of any kind are open to the objection that they involve an element of inflation and that they practically open the gates of credit from the United States without regard to risk, how its purpose affects us or whether it really benefits the borrower. Loans from our government direct to foreign governments or foreign merchants have a hundred objections and disagreeable entanglements which we learned well enough during the war. In all this maze of difficulty and the unsettlement over credits and debts I would sum up that wisdom consists in knowing what to do next rather than debates upon perfection.

I believe all trading states of consequence in the world can even now finance their imports of food supplies. The stronger of them can finance their imports of raw materials. We are, indeed, importing very much larger quantities of tropical produce than before the war and our own consumption of these commodities will continue to grow. The margin of credits needed beyond our imports in order to keep commerce alive for the present are, first, comparatively short term amounts to cover part of our exports of raw materials and the distribution period of our manufactured goods and, second, constant refinance of debts or interest already owed to us.

In summary, on the production and marketing side of our commerce we can say that our food exports should remain on a greatly enlarged scale; that the demand for our raw materials should slowly increase toward pre-war amounts; that in respect to our manufactures we should be able to hold special fields or repetitive production and ingenuity; that we will need to make a fight to hold the markets for manufactured goods where we come more directly into competition with the European manufacturer, but that we can do it if we will work and apply our brains to it. On the financial side of our situation, I do not believe our world credit situation is at all so unsurmountable or that it requires extraordinary solutions.

I may repeat that we need to realize above all things that, even if we lower our vision of civilization in this crisis solely to that of our own selfish economic interest, we are mightily concerned in the recuperation of the entire world. There is an economic interdependence in the world that recognizes no national boundaries. The greatest jeopardy to the standard of living of our people is the lowered standards of Europe. Now that we have become a great debtor nation we must learn that this great debt must be wisely directed so that we do not stifle both our own growth and the growth of others.

We are not a nation of machines, and houses, factories and railways. We are a nation of men, women and children. Our industrial system and our commerce are simply implements for their comfort and happiness. When we deal with those great problems of business and economics we must be inspired by the knowledge that we are increasing and defending the standards of living of all our people. Upon this soil grow those moral and intellectual forces that make our nation great.

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429 Coal Vessels Dock at Duluth-Superior Up to June 30: 162 Last Year

VESSELS arriving with coal at Duluth-Superior for the season up to June 30 totaled 429 as compared with 162 during the corresponding period last year.

Receipts of coal at the docks during June and for the season to June 30, compared with 1920, are as follows, in net tons:

	1920		1921	
	Anth.	Bit.	Anth.	Bit.
Northwestern	51,600	73,000	53,000	335,800
Berwind		42,100		209,800
Pittsburgh	43,700	85,100	45,800	401,500
Carnegie	15,800	33,600	8,700	216,900
Hanna	20,200	40,000	10,800	104,000
Reeves			6,600	5,800
Boston	8,300		8,700	74,500
Inland		23,900		77,200
Clarkson		23,500	12,000	118,800
Northern	17,270	7,100		123,200
Zenith Furnace		24,300		47,500
Philadelphia & Reading		22,300	30,000	60,000
U. S. Steel Corporation		255,000		188,400
Reis	17,500	24,400	11,500	106,700
Pursglove		17,200		39,900
Lehigh Valley	43,200			
Great Lakes		11,100	7,800	45,200
June receipts	217,570	632,600	194,700	2,155,200
Total to June 1	174,500	276,400	261,900	1,633,200
Total to June 30	392,070	959,000	456,600	3,788,400

Anthracite receipts in excess of last year, 64,530 tons.
Bituminous receipts in excess of last year, 2,829,400 tons.

Pause in Coal Legislation; Stabilization a Constant Menace; Regulation Believed to Be Inevitable

By Paul Wooton
Washington Correspondent

APPARENTLY there is to be an intermission in legislative activities pertaining to coal. It is becoming increasingly evident that Senator Frelinghuysen played his hand well when he put up the seasonal rate bill to be shot at by the Senate. By withholding the coal stabilization bill he now is able to keep the opponents of that measure on the qui vive continually. The bill is on the calendar with the ever-present possibility of its being called up unexpectedly, possibly when but few Senators are in the chamber. The more likely course, however, is that Senator Frelinghuysen will be content to allow the measure to remain on the calendar until sentiment in the Senate toward such legislation may undergo a change. Were there to be a repetition next autumn of the conditions which prevailed last year, it is recognized that there would be a chance to pass the bill.

It is generally admitted that had the Calder committee recommended legislation no more drastic than the Frelinghuysen bill, it could have been put through Congress at that time. Many Senators opposed to even as mild a form of regulation as is proposed in the Frelinghuysen bill are of the opinion that regulation for the coal industry is only a matter of time. The time may be greatly extended, they believe, if everything runs smoothly in the production and distribution of coal. At any rate, it is evident that the public is not going to insist upon punishment for the coal trade for what happened in 1920.

In a way, the coal industry has a new lease on unregulated life, but the length of the lease will depend almost entirely upon what happens—regardless of whether or not coal producers or dealers are responsible. In that respect the coal industry apparently is to be favored by the absence this fall of a coal shortage. Information reaching Washington, both through government and private sources, is to the effect that stocks are being well maintained. Current needs apparently are being abundantly cared for by the present rate of production, with little prospect that demand will increase at any time during the coming autumn or winter beyond the point where adequate distribution is assured. In that connection it may be started that the hope for increased buying of coal is based at this time more largely on export than on increased activities on the part of American industries.

Minnesota Property Owners Launch Propaganda for Government Coal Control

THE "Property Owners' Federation, Inc.," with headquarters in Red Wing, Minn., is now conducting a mail propagnda in the interests of coal nationalization. While its professed idea is to bring about "government regulation of production, distribution and sale of coal, not for government ownership of mines," it is obvious what such a program would lead to.

Circulars sent out by this organization bear the fac simile signature of "K. Neuston, secretary." The reading matter asks for a constitutional amendment, if needed, to enable the government to control coal distribution, and points to the records of state fuel administrators during the war as a source of valuable information. It says that the same sort of control is desired for coal as is being applied to railroads and grain markets. "Five efficient and reliable leaders" in Washington who are listed as men who will listen to a public appeal are named—President Harding, Secretaries Hoover and Fall, and Senators Calder and Frelinghuysen.

Recipients of the circulars are asked to send the names of substantial business acquaintances anywhere in the United States. The Federation engages to send in return "letters of one terse sentence urging prompt action" which the recipient is to sign and mail. The Federation also says it will mail at the same time "a wide-range array of facts and data from which you can form your high pressure personal letters to the officials at Washington, whom we have just mentioned." It is requested that $5 accompany each list mailed to the headquarters. What this money will be used for is not definitely stated, save that it "will finance this issue to a successful finish."

Some of the Neuston circulars have already reached the anthracite region. Traces of this activity have been found in New Jersey and elsewhere. It is a propaganda which, if it is at all successful, probably could be combated best by means of protests from business organizations and individual citizens, addressed to proper persons in Washington. The general tenor of the circular, and of the propaganda for that matter, according to a report from Philadelphia, is strongly reminiscent of the extra-official activities of a former fuel administrator in the Northwest, who never allowed the facts to disconcert him when he placed his fuel theories before the public.

Attorney General Grants Hearings to Indicted Operators and Miners

IN compliance with a request of the Committee on Judiciary of the House of Representatives Attorney General Daugherty gave a hearing July 5 to representatives of coal-mine owners indicted for alleged conspiracy in connection with the coal miners' strike last year. The following day the Attorney General gave a hearing, at the request of Samuel Gompers, president of the American Federation of Labor, to representatives of the mine workers who were indicted.

The House also asked Mr. Daugherty to render an opinion on the constitutionality of a bill introduced in the Senate by Senator Nelson, chairman of the Judiciary Committee, which was passed by the Senate and is now before the House Committee on Judiciary. Under the terms of the bill a person or corporation indicted under the Federal statutes could be denied a preliminary hearing in the place of his or its domicile and tried in a Federal court situated where they reside or have their place of business. Both operators and miners contend that the bill is unconstitutional in that it denies them the right to a preliminary hearing and trial in the place of their domicile. The purpose of the legislation is to enable the government to try the cases in the U. S. Court at Indianapolis.

No. 1 District, United Mine Workers, will hold its nineteenth consecutive and fourth biennial convention at Wilkes-Barre on July 18 and succeeding days. All local unions between Mocanaqua and Forest City are included in the district. The meeting will be held in the Y. M. C. A. Building, North Main Street.

Bids Opened for Coal for New York Schools: Only Three Bids for Full Amount

PATRICK JONES, superintendent of school supplies of the Board of Education of New York City, opened bids on June 27 for the furnishing and delivering of more than 130,000 net tons of anthracite and bituminous coal for heating the schools and buildings of the Board during the year ending April 30, 1922. The bids received showed considerable variation. For furnishing and delivering the entire tonnage for the Borough of Manhattan there were three bidders. The bids received together with the various tonnages were as follows:

	W. Farrell & Son	C. D. Naughton & Co.	Inter-City Fuel Co.	Penn Fuel Co.
Broken,* 15,000 tons	$12 39	$13 13	$13 89	.....
Egg, 1,000 tons	12 39	13 93	14 33	.....
Stove, 400 tons	12 39	13 93	14 33	.....
Pea, 2,000 tons	10 39	11 00	11 07	.....
Buckwheat No. 1, 10,000 tons	7 49	8 15	8 85	$7 95
Buckwheat No. 1,* 14,500 tons	7 49	8 15	8 85	7 95
Buckwheat No. 3,† 10,750 tons	5 49	6 42	7 56	5 74
Semi-Bituminous,† 3,750 tons	8 39	8 48	10 05	7 44
Semi-Bituminous 1,350 tons	8 39	8 48	9 55	7 94

Items marked †, if awarded, to be awarded in conjunction with each other. If item marked * is accepted, items marked † will not be awarded.

For delivering coal in District No. 3 the following bids were received:

	Stephens Fuel Co.	Inter-City Fuel Co.	Weber-Bunke-Lange Coal Co.
Broken, 4,300 tons	$13 10	$13 94	$12 50
Egg, 200 tons	13 10	14 38	12 50
Stove, 100 tons	13 10	14 38	12 50
Pea, 1,100 tons	11 30	12 02	10 00
Buckwheat No. 1, 4,000 tons	8 34	8 90	7 50
Buckwheat No. 1, 5,500 tons	8 34	8 90	7 50
Buckwheat No. 3, 3,950 tons	6 50	7 61	.....
Semi-bituminous, 1,550 tons	8 50	10 10	.....

For furnishing and delivering the tonnage required in the in the Borough of the Bronx, the following bids were received:

	W. Farrell & Son	V. H. Youngman & Co.	Stephens Fuel Co.
Broken, 4,000 tons	$12 39	$13 23	$13 10
Egg, 500 tons	12 39	13 53	13 25
Stove, 400 tons	12 39	13 73	13 25
Pea, 500 tons	10 39	11 23	11 30
Buckwheat No. 1, 3,800 tons	7 49	8 48	8 34
Buckwheat No. 1, 8,600 tons	7 49	8 48	8 34
Buckwheat No. 3, 6,000 tons	5 49	6 96	6 50
Semi-Bituminous, 2,600 tons	8 39	8 96	8 50

For furnishing and delivering the following tonnages to the schools in Brooklyn, the bids received follow:

	Wyoming Valley Coal Co.	Bacon Coal Co.	Putnam Coal & Ice Co.
Broken, 18,000 tons	$12 24	$12 20	$13 20
Egg, 500 tons	12 24	12 20	13 20
Stove, 575 tons	12 24	12 45	13 50
Pea, 2,600 tons	9 74	10 52	10 71
Buckwheat No. 1, 12,400 tons	7 29	7 35	8 25
Buckwheat No. 1, 11,600 tons	7 29	7 35	8 25
Buckwheat No. 3, 8,500 tons	5 29	5 54	6 50
Semi-Bituminous, 3,100 tons	8 24	7 31	8 45
Semi-Bituminous, 700 tons	8 24	7 31	8 45

For furnishing and delivering the tonnage required in the Borough of Queens, the following bids were received:

	Wyoming Valley Coal Co.	Commonwealth Fuel Co.
Broken, 5,650 tons	$12 24	$12 63
Egg, 190 tons	12 24	12 63
Stove, 350 tons	12 24	12 98
Pea, 750 tons	9 74	10 24
Buck. No. 1, 3,500 tons	7 29	7 89
Buck. No. 1, 3,100 tons	7 29	7 89
Buck. No. 3, 2,300 tons	5 29	5 97
Semi-bituminous, 800 tons	8 24	8 44
Semi-bituminous, 235 tons	8 24	8 44

Another Connellsville Wage Reduction

ABOUT 7,000 mine and coke workers in those plants of the Connellsville region which are not operated by the United States Steel Corporation have received a further reduction in wage of 10 per cent, making the rate about 33⅓ per cent below the rate paid Jan. 1, but the wage is still some 45 per cent above the prevailing rate in 1912. Few cokemen are immediately affected, as only 7 per cent of the independent ovens are in operation. The H. C. Frick Coke Co. now has a scale, made May 16, which by this recent wage reduction is rendered somewhat higher than that of the independents. The change in the independent scale was made July 5.

The schedule as posted by W. F. Rainey, Inc., to take effect July 1, runs as follows:

Per Day:	
Drivers, motormen, brakemen, timbermen, brattiemen, etc.	$4 50
Helpers and inside labor	3 75
Fire bosses	6 25
Outside labor	3 00
Per 100 Bushels	
Pick mining and loading in rooms and ribs	2 06
Pick mining and loading in headings	2 26
Pick mining and loading in wet headings	2 44
Loading machine-mined coal	1 48

The Washington Coal & Coke Co., at Washington Run, also made the same wage reduction as Rainey on July 1, and the American Coke Corporation, operating plants at Linn, Orient and Martin, followed suit on July 7. Both these companies are running their mines about full, but are not making coke. The Washington Coal & Coke Co. has about 1,000 ovens.

New Bill Taxes Coal Imports from Countries Levying Duty on American Coal

WHILE coal has been placed on the free list by the Committee on Ways and Means of the House of Representatives, the bill as reported to the House provides "that when any country, dependency, or other subdivision of government imposes a duty on such articles imported from the United States, an equal duty shall be imposed upon such articles coming into the United States from such country." The paragraph includes bituminous and anthracite coal, culm, slack, shale and coke, as well as "compositions used for fuel in which coal or coal dust is the component material of chief value, whether in briquets or other form."

The producers of coal in the State of Washington had asked for a duty of 75c. on all imports of coal. It would take that amount, it was said, to equalize producing costs. The action of the Ways and Means Committee will allow the collection of a duty of 53c. a ton so long as Canada continues its present duty on coal imported into that country.

The Committee on Ways and Means recommends a duty of 35c. per barrel on crude petroleum and 25c. per barrel on fuel oil. This action was taken at the last minute before the reporting of the bill. Both petroleum and fuel oil were on the free list on the bill given out in advance to the press.

New Jersey Seeks Cause of High Prices

SENATOR FRELINGHUYSEN'S passionate appeal for more information about the coal business may be gratified at last. At least, a legislative committee in his own State of New Jersey has determined to find out about "conditions responsible for the excessive cost of coal in New Jersey." Its inquiry was scheduled to begin in the City Hall, Jersey City, on Monday, July 11. Senator William B. Mackay, of Hackensack, is chairman of the committee.

Massachusetts Fuel Director Would Test Pennsylvania Anthracite Tax

EUGENE C. HULTMAN, State Fuel Administrator of Massachusetts, recommended July 1 that proceedings be brought by Attorney-General J. Weston Allen in behalf of the Commonwealth of Massachusetts to test the constitutionality of the Pennsylvania laws, now in effect, which impose taxes on coal mined in that state and intended for shipment elsewhere.

The taxes, the Fuel Administrator contends, would increase the cost to consumers in Massachusetts from 30c. to 40c. a ton. The Attorney-General was asked to consider also whether injunction proceedings might be brought to restrain enforcement of the laws.

Statistics the Means to an End. Not an End in Themselves

To Be Worth While, Facts Must Be Collected at First Hand — Bureau of Mines Reports Often Basis of Technical Inquiries

By George Otis Smith*

AT BOTTOM, the issue becomes one of grammatical number: whether statistics *is* or *are*? *Is* statistics a separate branch of science, with a field peculiarly its own, or *are* statistics simply facts stated by means of figures?

The scientific bureau is a fact finder; if successful, it finds facts, it works out their interpretation, and it publishes the truth. Many of the facts thus gathered can be stated quantitatively as well as qualitatively—that is, numerals as well as words can be used in describing the results of the investigation. Tables of figures and graphic curves and diagrams may help to set forth the facts exactly, but whatever may be the form or the means of their presentation the facts are the things to be sought and found and published. To the government official who is seeking to give the public the results of scientific investigations made at public expense statistics *are* simply the means to an end, not an end in themselves.

So, then, we can dress up facts for public appearance in either words or numerals, or in both. The U. S. Geological Survey, for instance, gathers facts of many kinds and in many different fields. Each year our engineers determine the exact elevation or geographic position of a thousand or more points on the earth's surface; and statistics of this type are tabulated in books and are recorded on monuments, commonly called bench marks. Other engineers determine each year the amount of water flowing in our principal rivers and streams; figures are collected at 1,250 stations and tabulated in an annual series of statistical volumes. Another group of facts that are collected regularly relate to the monthly output of electric current by more than three-thousand public-utility power stations. Or the study that expresses its results in long tables of figures may be the work of the chemist and petrographer, as, for example, the monumental Professional Paper 99, with its 8,602 chemical analyses, a kind of world census of the igneous rocks.

Mineral Data of Survey Have Worldwide Repute

Statistics of another and better-known type, with which the Geological Survey has been busy for forty years, are the facts of mineral production in the United States—facts that have been collected annually by one group of men along a well-established line of precedents and policy. The mineral statistics of the U. S. Geological Survey are not only its best-known statistical product but they have a worldwide reputation, which puts them in a class by themselves as compared with similar statistics collected by the French, British, Belgian and German governments. What are the reasons for the difference?

To begin with, whether facts are to be expressed in numerals or in words, they are best collected at first hand. A field service is superior to an office force for gaining the personal touch which gives life even to statistics. The ideal collector of facts, moreover, is the field man who has known his subject for years, and that subject is not merely statistics but the reality behind the words and figures. The investigator who expresses some or all of his facts in tables of figures is not thereby put in a separate class. He is essentially an engineer, or a chemist, or a geologist—not necessarily a statistician. It is the special training of the fact collector in this or that science that makes him able to give the highest value to his facts, for while the way in which he presents his facts may bring out that value and add to their practical usefulness, neither words nor numerals can create that value.

Statistical inquiries considered as a whole usually have little in common except this word "statistics"; properly define that word or use some synonym, and the need of coordination disappears. Cotton and copper are leading items of export, and the facts as to production and stocks on hand of both are of large commercial value, yet crop reports and studies of ore reserves are best made under different auspices. Specialization yields the best results.

The issue of centralized statistics versus specialized service is likely to become the difference between a mechanical assembling of figures, without interpretation, by office compilers who know little of their subject at first hand, and a continued study in which numerical statements of facts are interpreted by specialists who have lived with their subjects for years. Statistics of themselves are only an adding-machine product, no more to be set up and worshiped than the verbal output of the typewriter, and to segregate the Federal adding machines would be no more rational than to assemble all the government typewriters. It is the man behind the adding machine and its operator who counts, and that man is likely to be a fact finder rather than a statistician.

Mere Adding Machine Statistics of Little Value

Moreover, the environment of this fact-finding activity exerts a strong influence. If the tie that binds this investigation and that study is nothing more than the adding machine the whole product may be expected to show that it is machine-made. Specialization in a government bureau means the association of specialists working on allied subjects, under a supervision that is both well informed on the special subjects of inquiry and sympathetic with the aims of the workers. To revert to the illustration of cotton and copper, subjects of study so diverse are not easily combined. Even a super-statistician in a centralized bureau of statistics might know no more about cotton than the Director of the U. S. Geological Survey, nor as much about copper as a bureau chief in the Department of Agriculture.

Finally, the collection of facts and their publication in statistical form is not the end of the government activity on the subject. Just as the facts regarding cotton or copper take on commercial meaning, so they also form the starting point for scientific investigation in the specialized work of the bureaus or departments. The activity of the Geological Survey and the Bureau of Mines in their engineering work on coal and oil affords the best instance of a comprehensive program in which the collection of statistics of mineral production or mine accidents is only one part, though an important part, for these facts have from time to time been the point of departure for technical investigations. In the Department of the Interior the investigations that touch minerals have the threefold purpose of assuring supply, decreasing cost, and increasing value as measured by usefulness. In investigative effort of this type statistics are merely tools.

*Director, U. S. Geological Survey.

The Geological Survey is preparing a summary of its April stock report. This is being done largely as a matter of record. The appropriations allowed the Survey for the next fiscal year are insufficient to permit of the gathering of any further reports on coal stocks.

The Alabama State Board of Examiners will hold its next semi-annual session for the examination of applicants for certificates as first- and second-class mine foremen and fireboss, in the offices of Chief Mine Inspector C. H. Nesbitt, Chamber of Commerce Building, Birmingham, Ala., July 25-29 inclusive.

The Interstate Commerce Commission has been advised by the Association of Railway Executives, the National Electric Light Association and the National Committee on Gas and Electric Service that they will aid in steps to accumulate as much coal as possible at this time while transportation is available.

The Directors of the National Coal Association planned to meet in Chicago July 13. The secretaries of the local associations and individual operators were invited to attend. Important reports were expected to be submitted by the government relations committee, the railroad relations committee and the committee on publicity.

Bituminous Output, January-April, 1921, by States, Estimated by Geological Survey

ESTIMATES of the production of bituminous coal by states during the first four months of the present year have been issued by the Geological Survey. As the estimates are based upon records of cars of coal loaded by the principal carriers, they are subject to material revision. When a railroad originates coal in more than one state its tonnage must be arbitrarily apportioned between the states in question. While therefore the estimates for the country as a whole are probably correct within 2 per cent, the estimates for individual states are subject to a much larger margin of error.

Making due allowance for probable revisions, it is instructive to compare the production attained during the first four months of the present year with that in earlier years. In the first column of the following table the output is shown by major groups of states. The second column shows what production for twelve months would amount to if the 4-month rate were continued. In the last three columns comparable data are given for the calendar years from 1918 to 1920.

It will be seen that production from January to April, 1921, was at only 70 per cent of the 1920 rate, and even only 85 per cent of the rate in 1919, a year of subnormal production.

PRODUCTION OF SOFT COAL, BY GROUPS OF STATES, 1918-1921
(In thousands of net tons)

	First Four Months of 1921	Year 1921 at Same Rate as 1st 4 Mos.	1920	1919	1918
Northeast *a*	74,813	224,439	331,510	288,250	351,365
Southern Appalachian *b*	5,828	17,484	23,500	20,420	26,083
Eastern Interior *c*	32,021	96,063	130,800	94,600	130,768
Western Interior *d*	6,652	19,956	29,930	22,590	30,724
Mountain States and Northwest *e*	9,726	29,178	40,680	32,090	40,341
Totals	129,040	387,120	556,420	457,950	579,281

(*a*) Michigan, Pennsylvania, Ohio, West Virginia, Maryland, Eastern Kentucky, and Virginia. (*b*) Alabama, Georgia, and Tennessee. (*c*) Illinois, Indiana, and Western Kentucky. (*d*) Iowa, Kansas, Missouri, Oklhoma, Arkansas, and Texas. (*e*) Colorado, New Mexico, Utah, Wyoming, Montana, North Dakota and Washington. (*f*) Alaska, California, Idaho, North Carolina, Oregon and South Dakota not included.

ESTIMATED PRODUCTION OF SOFT COAL, BY STATES, JANUARY TO APRIL, 1921
(In thousands of net tons)

	January	February	March	April	Year to April 30
Alabama	1,338	1,068	995	900	4301
Arkansas	157	119	120	111	507
Colorado	1,054	747	618	643	3,062
Illinois	7,074	5,313	5,100	4,580	22,067
Indiana	2,243	1,834	1,720	1,240	7,037
Iowa	610	506	489	417	2,022
Kansas	508	399	389	382	1,678
Kentucky	2,568	2,028	2,100	2,053	8,749
Maryland	231	228	207	189	855
Michigan	125	98	80	72	375
Missouri	433	310	320	287	1,350
Montana	279	283	274	211	1,047
New Mexico	262	203	204	197	866
North Dakota	56	54	53	35	198
Ohio	2,963	2,232	2,335	2,098	9,628
Oklahoma	230	173	168	182	753
Pennsylvania	11,465	8,930	8,620	7,124	36,139
Tennessee	454	371	357	328	1,510
Texas	102	81	83	76	342
Utah	397	309	257	234	1,197
Virginia	518	408	378	383	1,687
Washington	270	244	265	169	948
West Virginia	6,229	4,307	4,670	5,091	20,297
Wyoming	694	598	576	540	2,408
Other states *a*	10	8	14	11	43
Total bituminous	40,270	30,851	30,392	27,553	129,066

(*a*) Includes Alaska, California, Georgia, Idaho, North Carolina, Oregon and South Dakota.

Howat Given Jail Sentence and $500 Fine

ALEXANDER HOWAT and August Dorchy, district president and vice president, respectively, of the United Mine Workers of America in Kansas, convicted of a violation of the Kansas Industrial Relations Law, were sentenced on July 8 to serve six months in jail and pay a fine of $500, Judge Frank W. Boss, of the Cherokee County District Court, delivering the judgment. The judge also ordered the two men to give a bond of $2,000 each that they would not violate again the law under which the Industrial Court was established. However, as Howat and Dorchy had filed an appeal the court ordered that they retain their liberty on their present appearance bonds of $2,000. A new trial was denied them.

The judge could have been more severe, as the full extent of the law is a year in jail and a fine of $1,000. Howat addressed the court before sentence was passed, denouncing his trial and declaring that he had not been given fair treatment. He asserted that he did not know he was violating the law when he called a strike, and he complained that the court did him a wrong when it denied to members of the mine workers' union the right to sit on the jury. Judge Boss in passing sentence declared that to have allowed union miners to try the case would have been a travesty of justice.

The jury chosen unquestionably sympathized with the accused, all but one after the trial joining in an affidavit declaring that they did not believe the officials of the union just convicted guilty of "any wrong." The defense used the declaration as part of the claim for a new trial, but Judge Boss paid no attention to it.

The jurors' affidavit declared that the jury did not believe in the Industrial Court law and returned a verdict of guilty solely because they had made oath that "they would be governed by the law as set forth in the judge's instructions and the evidence, and that, had it not been for said law given them by the court in said instructions, not one of the said jurors would have made a finding that the defendants had done wrong."

Central Pennsylvania Coal Operators to Take Strenuous Action Against Union

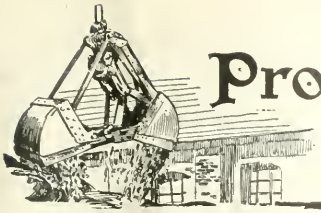
INDIVIDUAL operators are strongly insisting that the Central Pennsylvania Coal Operators Association take some action upon the wage scale. Each day indicates more clearly the necessity for some definite stand if the district is to continue to do business.

Important developments are brewing and it is quite likely that a definite stand will be taken within the coming week. T. H. Watkins, president of the Pennsylvania Coal & Coke Corporation, will speak at a meeting of the Rotary Club at Clearfield on July 14, at which time important announcements on the situation will be made. It is possible that a policy of dealing with the officials of the United Mine Workers will be announced.

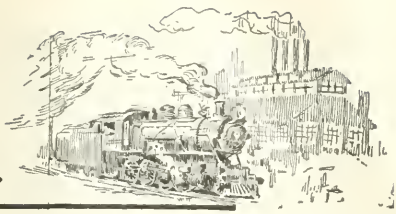
Senator Walsh Demands Investigation of Alleged Washington Coal Lobby

INVESTIGATION of the alleged coal lobby in Washington is demanded by Senator Walsh, of Montana, in a minority report from the sub-committee of the Senate Committee on Judiciary on the King resolution for investigation of dye and other alleged lobby interests in Washington. The sub-committee majority, however, consisting of Senators Cummins, of Iowa, and Sterling, of South Dakota, recommend that the lobby investigation be confined to the dye interests, as specific charges were made in the Senate as to its existence and activities. Senator Walsh in his minority report says: "Equally specific charges have been made in the Senate touching the coal lobby," and recommends that the investigation cover interests which have attempted to influence tariff, revenue and other legislation pending in Congress "relating to the coal-mining industry and the transportation of coal." The Senator probably has in mind the charges of Senator Frelinghuysen, of New Jersey, that the National Coal Association, American Wholesale Coal Association, anthracite operators and Retail Coal Merchants' Association had opposed his coal bills.

DAN CAMPBELL, THE CHECKWEIGHMAN ordered off the property of the Pennsylvania Coal Co. during the strike which ended June 27, was reinstated on June 28 after a conference between the officials of the company and John Collins, district president, and Daniel McHugh, district board manager.



Production and the Market



Weekly Review

PRODUCTION of soft coal is now suffering from the nationwide hot wave. Every year, no matter how strong the demand, in July and August there is a slowing up in mining and movement of coal attributable to hot weather. In the week ended July 2 the output of soft coal, according to the Geological Survey, was 7,591,000 net tons, a slight decline from the 7,716,000 tons produced during the previous week. Production in the week of July 9, because of the holiday on the Fourth, was, of course, low. The hot weather slump is now upon us and as no field or market holds promise of early gains the next few weeks will be dull indeed.

Far-Sighted Buyers Quietly Purchasing

Prices are such that canny buyers are being tempted into purchases of storage coal on a scale few suspect. There is much lamentation about the delinquency of the consumer that is not justified—some are on the job and are getting coal at what our field correspondents describe as "ruinous" prices. *Coal Age* index of spot prices of bituminous coal went up one point to 90 on July 11 from 89 the previous week. There is nothing in prospect, however, to keep the price trend upward, and with the conviction gaining ground that coal freight rates are not to be reduced, the coal shippers who continue to pound away in their selling efforts are being rewarded in scattering business that would not otherwise be in hand. One house that recently put forth an intelligent, serious advertising effort to interest a special line of trade in storage coal has already felt the effect in inquiries and in sales.

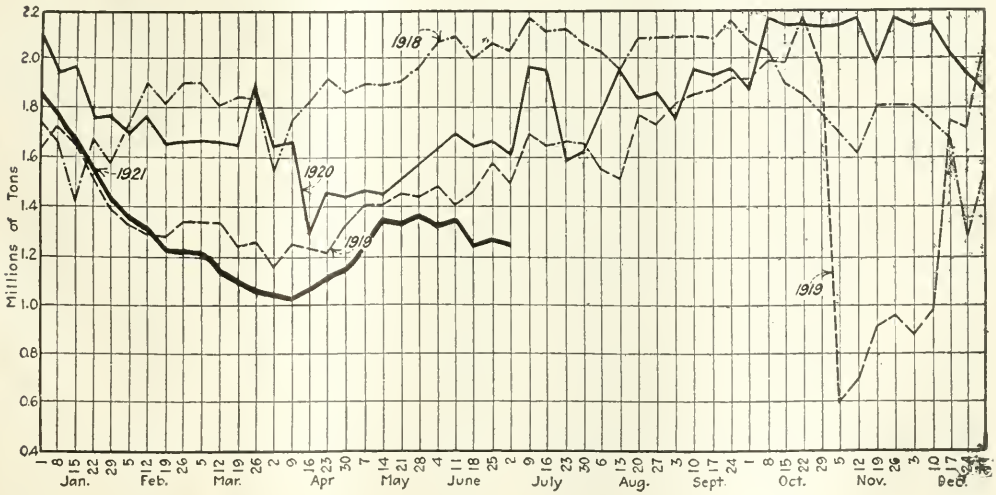
Exports and Lake Trade Fail to Bolster Output

Exports to Europe and the Lake business are no longer holding the output even to early June levels, the production in the Northern and Middle Appalachians fluctuating with the strength of these two outlets and the total production varying up and down from around seven and a half million tons a week as these fields respond to the only markets that have been active this summer.

Commenting on the fact that compared with the average of eight years preceding, 1921 is forty-one million tons behind in bituminous output up to June 30, the Geological Survey says that before concluding that this represents a shortage it should be remembered that there has been a greatly decreased consumption attendant on the business depression and that cumulative production is but little less than in 1914, a year of depression, and is even slightly ahead of 1915, when total output was 442,000,000 net tons.

Anthracite production is holding at a little better

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

than 1,800,000 net tons a week, from 90,000 to 100,000 below the level of the early summer months. The total to date for the year to July 2 is 46,477,000 net tons, compared with 44,608,000 in the same period of 1920.

BITUMINOUS

In the face of poorer demand for soft coal, production continues to decline. During the week ended July 2, the total output, as shown by the report of the Geological Survey, declined 125,000 net tons to 7,591,000 tons. Loadings on Tuesday, July 5, reflect the holiday on the Fourth, being about 6,000 cars less than for the preceding Tuesday, and it is certain that observance of the holiday extended into the week, further reducing output.

Hampton Roads dumpings for foreign account continued heavy throughout the week ended July 2. According to the Geological Survey loadings were 75 per cent greater than during the week preceding. Total dumpings for the week ended July 7 were 538,735 net tons compared with 616,329 the week before. The end of the British strike has caused numerous cancellations of charters and softening of c.i.f. prices, late quotations being off as much as $1 from the figures of last week.

Inquiries coastwise continue almost nil. A few special lines in New England are making a fair showing, but in general industry sees no light ahead for some time to come. Operators are making special concessions to move both water and rail coals, but although this practice has become widespread very little business has resulted, and the market has only been weakened further.

June production was approximately 33,852,000 net tons, an increase over the May figure of 512,000 tons. However, June contained one more working day than May and the average daily production per working day declined from 1,325,000 to 1 302,000 tons. The following table shows the June output for nine years and the cumulative production in each year to June 30. It will be seen that the output in June, 1921, was smaller than in any June of recent years save one. In June, 1914, only 31,412 000 tons were produced. At that time, as now, a general business depression existed, and a strike lasting from April to July closed practically all the mines in Ohio.

Year	June Production	Cumulative Production to June 30
1913	37,405 000	226,000 000
1914	31 412 000	205,000 000
1915	33 957 000	193,000 000
1916	37 742 000	246 000 000
1917	46 824 000	273,000 000
1918	51 138 000	282 000 000
1919	37 054 000	214 000,000
1920	45 114 000	258 000,000
1921	33,852 000	196 000 000

If the second half of the year 1921 shows no greater output than the first half the total for the year will be less than 400,000,000 tons. The last year in which the country required less than 400,000,000 tons was 1909.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

	Market Quoted	June 7, 1921	June 28, 1921	July 5, 1921	July 12, 1921†
Low-Volatile, Eastern					
Pocahontas lump	Columbus	$5 75	$5 65	$5 75	$5 50@$6 00
Pocahontas mine run	Columbus	3 30	3 55	3 25	3 15@ 3 40
Pocahontas screenings	Columbus	2 65	2 40	2 35	*2 00@ 2.25*
Pocahontas lump	Chicago	5 25	5 65	5 65	*4 75@ 5 25*
Pocahontas mine run	Chicago	3 15	3 15	2 50	**2 00@ 3 25**
*Smokeless mine run	Boston	6 45	6 00	5 90	5 75@ 6.00
Clearfield mine run	Boston	2 35	2 20	2 10	*1 75@ 2 85*
Cambria mine run	Boston	3 05	2 85	2 80	*2 40@ 3 00*
Somerset mine run	Boston	2 25	1 95	1 90	*1 65@ 2.10*
Pool 1 (Navy Standard)	New York	3.50	3 20	3 15	*3 00@ 3 15*
Pool 1 (Navy Standard)	Philadelphia	3 35	3 00	2 80	2 75@ 2 85
Pool 1 (Navy Staudard)	Baltimore	3 30	2 90	2 75	*2 60*
Pool 9 (Super. Low Vol.)	New York	2 85	2 75	2 55	2 35@ 2 75
Pool 9 (Super. Low Vol.)	Philadelphia	2 95	2 70	2 40	2 30@ 2 50
Pool 9 (Super. Low Vol.)	Baltimore	2 95	2 65	2 55	*2 25@ 2 55*
Pool 10 (H. Gr. Low Vol.)	New York	2 50	2 45	2 25	2 10@ 2 40
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2 60	2 40	2 20	2 00@ 2 35
Pool 10 (H. Gr. Low Vol.)	Baltimore	2 35	2 30	2 25	*2 00@ 2 25*
Pool 11 (Low Vol.)	New York	2 15	2 15	1 95	1 90@ 2 00
Pool 11 (Low Vol.)	Philadelphia	2 35	1 90	1 90	1 75@ 2 00
Pool 11 (Low Vol.)	Baltimore	2 10	2 10	2 10	*1 75@ 1 90*
High-Volatile, Eastern					
Pool 54-64 (Gas and Steam)	New York	1.95	1 95	2 00	*1 75@ 2.15*
Pool 54-64 (Gas and Steam)	Philadelphia	2 05	1 85	1 75	1 75
Pool 54-64 (Gas and Steam)	Baltimore	1 85	1 70	1 85	*1 50@ 1 75*
Pittsburgh sc'd. gas	Pittsburgh	2 55	2 50	2 50	**85@ 3 00**
Pittsburgh mine run(steam)	Pittsburgh	1 95	1 85	1 85	**2 00@ 2 15**
Pittsburgh slack (gas)	Pittsburgh	1 75	1 60	1 60	*1 40@ 1 50*
Kanawha lump	Columbus	3 50	3 45	3 40	*3 00@ 3 50*
Kanawha mine run	Columbus	2 25	2 20	2 15	2 00@ 2 25
Kanawha screenings	Columbus	1 35	1 20	1 15	1 00@ 1 30
Hocking lump	Columbus	3 40	3 15	3 15	**3 00@ 3 50**
Hocking mine run	Columbus	2 15	2 10	2 15	2 00@ 2 25
Hocking screenings	Columbus	1 20	1 20	1 10	**1 15@ 1 25**
Pitts. No. 8 lump	Cleveland	3 25	3 25	3 25	3 00@ 3 50
Pitts. No. 8 mine run	Cleveland	$2 30	$2 10	$2 20	**$2 15@$2 30**
Pitts. No. 8 screenings	Cleveland	1 65	1 15	1 20	**1 20@ 1 30**
Midwest					
Franklin, Ill. lump	Chicago	3 65	3 55	3 80	*3 00@ 4 05*
Franklin, Ill. mine run	Chicago	3 00	2 90	2 90	**2 75@ 3 50**
Franklin, Ill. screenings	Chicago	2 00	1 90	1 90	1 25@ 2 50
Central, Ill. lump	Chicago	3 15	2 65	2 65	*2 00@ 3 00*
Central Ill. mine run	Chicago	2 50	2 40	2 40	2 00@ 2 75
Central Ill. screenings	Chicago	1 65	1 65	1 65	1 00@ 2 25
Ind. 4th Vein lump	Chicago	3 15	2 90	2 90	*2 85@ 3 25*
Ind. 4th Vein mine run	Chicago	2 75	2 50	2 50	2 25@ 2 75
Ind. 4th Vein screenings	Chicago	1 75	1 65	1 70	1 25@ 2 15
Ind. 5th Vein lump	Chicago	3 00	2 75	2 75	2 25@ 3 25
Ind. 5th Vein mine run	Chicago	2 50	2 40	2 40	2 00@ 2 75
Ind. 5th Vein screenings	Chicago	1 85	1 65	1 70	1 25@ 2 10
Standard lump	St. Louis	2 15	2 15	2 25	2 00@ 2 50
Standard mine run	St. Louis	1 75	1 75	1 75	1 75
Standard screenings	St. Louis	1 15	85	85	85
West Ky. lump	Louisville	2 55	2 65	2.75	*2 85@ 3 00*
West Ky. mine run	Louisville	2 10	2 00	2.10	1 75@ 2 40
West Ky. screenings	Louisville	1 50	1.55	1 45	*1.00@ 1 75*
South and Southwest					
Big Seam lump	Birmingham	3 65	3 65	3 50	*3 25@ 3 50*
Big Seam mine run	Birmingham	2 60	2 50	2 25	*2 00@ 2 25*
S. E. Ky. lump	Louisville	3 70	3 70	3 45	**3 40@ 3 60**
S. E. Ky. mine run	Louisville	2 35	2 25	2 25	2 00@ 2 50
S. E. Ky. screenings	Louisville	1 35	1 40	1 25	**1 00@ 1 75**
Kansas lump	Kansas City	5 25	5 40	5 40	5 25@ 5 50
Kansas mine run	Kansas City	4 40	4 25	4 25	4 25
Kansas screenings	Kansas City	3 25	3 25	3 25	3 25

* Gross tons, f. o. b. vessel, Hampton Roads.
† Advance over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	June 28, 1921		July 5, 1921		July 12, 1921†	
			Independent	Company	Independent	Company	Independent	Company
Broken	New York	$2 61	$7 85@$8 15	$7 30@$7 75	$7 85@$8 15	$7 40@$7 75	$7 85@$8 15	$7 40@$7 75
Broken	Philadelphia	2 66	7 90@ 8 20	7 45@ 7.85	8 00@ 8 20	7 55@ 7 85	8 00@ 8 20	7 55@ 7 85
*Broken	Chicago	5 62	12 75	12 50	12 75	12 70	12 75	*12 55*
Egg	New York	2 61	7 85@ 8 50	7 30@ 7 75	7 85@ 8 50	7 40@ 7 75	*7 80@ 8 25*	7 40@ 7 75
Egg	Philadelphia	2 66	7 90@ 8 20	7 45@ 7 85	8 00@ 8 20	7 55@ 7 85	8 00@ 8 20	7 55@ 7 85
*Egg	Chicago	5 62	12 60	12 45	12 60	12 70	12 60	*12 45*
Stove	New York	2 61	8 15@ 8 60	7 60@ 8 10	8 15@ 8 60	7 70@ 8 10	*8 10@ 8 50*	7 70@ 8 10
Stove	Philadelphia	2 66	8 15@ 8 60	7 80@ 8 20	8 25@ 8 70	7 90@ 8 25	8 25@ 8 70	7 90@ 8 25
*Stove	Chicago	5 62	13 20	12 80	13 20	12 95	13 20	*12 70*
Chestnut	New York	2 61	8 15@ 8 50	7 60@ 8 10	8 00@ 8 60	7 70@ 8 10	*7 80@ 8 25*	7 70@ 8 10
Chestnut	Philadelphia	2 66	8 15@ 8 50	7 75@ 8 20	8 25@ 8 60	7 80@ 8 25	8 25@ 8 60	7 80@ 8 25
*Chestnut	Chicago	5 62	12 95	12 70	12 95	12 95	12 95	*12 70*
Pea	New York	2 47	5 50@ 6 00	5 85@ 6 20	4 75@ 5 00	5 95@ 6 45	4 75@ 5 00	5 95@ 6 45
Pea	Philadelphia	2 38	5 50@ 5 75	6 10	5 50@ 6 25	6 00@ 6 20	5 50@ 6 25	6 00@ 6 20
*Pea	Chicago	5 62	10 90	10 80	10 90	11 20	10 90	11 20
Buckwheat No 1	New York	2 47	2.75@ 3 00	3 50	2 75@ 3 25	3 50	*2 60@ 3 00*	3 50
Buckwheat No. 1	Philadelphia	2 38	2 50@ 3 00	3 50		3 50	2 50@ 3 00	3 50
Rice	New York	2 47	2 00	2 50	1 75@ 2 25	2 50	*1.60@ 2 00*	2 50
Rice	Philadelphia	2 38	1 75@ 2 25	2 50		2 50	*1.75@ 2 00*	2 50
Barley	New York	2 47	1 00	1 50	75@ 1 50	1 50	*.60@ 1 25*	1 50
Barley	Philadelphia	2 38	1 00@ 1 25	1 50		1 50	*.75@ 1 25*	1 50
Birdseye	New York	2 47		2 50		2 50		2 50

* Prices and freight rates net tons; quotations f.o.b. cars, Chicago.
† Advances over previous week shown in **heavy type**, declines in *italics*.

The distribution of cargo coal loaded at lower Lake Erie ports has been similar to that of the past two years. Total shipments to the end of May—4,630,000 tons—were more than three times as large as in 1920 and but 83,000 tons less than the heavy tonnage shipped in 1919. The proportion shipped to American ports was 79.6 per cent in 1921 against 82.7 per cent in 1919 and 76.2 in 1920.

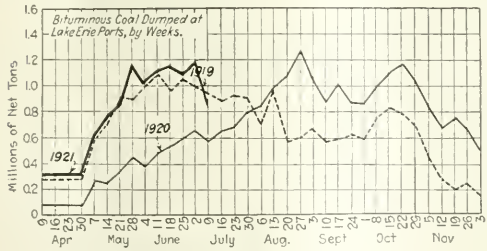
Shipments to American ports on Lake Superior were relatively as well as absolutely less than in 1919, while those to Canadian points were proportionately higher. The tonnage shipped to Lake Michigan ports was more than 100,000 tons greater than in 1919 and was 29.3 per cent of the total, against 26.4 per cent two years ago.

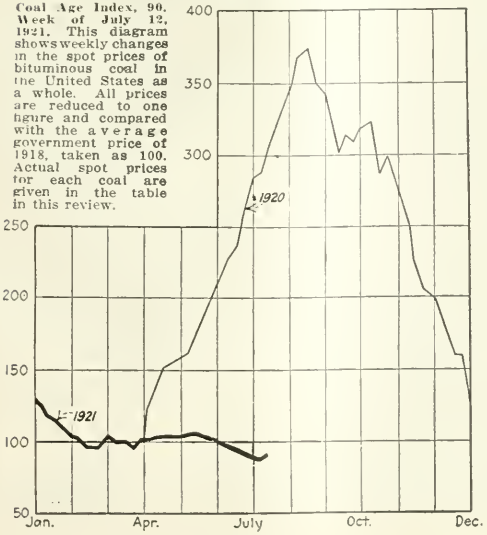
Lake shipments through the Soo canals for June were 3,009,392 net tons of bituminous and 247,048 tons of hard coal. Receipts at the Duluth-Superior harbor in June were 2,125,453 tons of the former and 192,830 tons of the latter. The total receipts exceeded those of May by nearly 35 per cent. Cumulative receipts for the season were 4,243,623 tons, an increase over the corresponding period in 1920 of 2 855,606 tons.

RECEIPTS OF COAL AT DULUTH-SUPERIOR HARBOR DURING THE SEASON OF 1921
(in net tons)

Month	Hard	Soft	Total
April	83,058	120,212	203,270
May	173,190	1,548,880	1,722 070
June	192,830	2,125,453	2,318,283
Total to June 30	449,078	3,794,545	4,243,623

Lake dumpings for the week ended July 11 declined sharply. Cargo loadings were 783,360 net tons, vessel fuel 23,090 tons, making a total of 806,450 tons, as compared with 1,145,517 the preceding week. Total movement for the year to date is 11,067,735 tons as against 4,772,342 tons in 1920.





Coal Age Index, 90. Week of July 12, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

(NET TONS)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date (a)
June 18b	7,551,000	183,021,000	10,095,000	237,340,000
Daily average	1,258,000	1,279,000	1,683,000	1,653,000
June 25b	7,716,000	190,737,000	10,556,000	247,896,000
Daily average	1,286,000	1,279,000	1,759,000	1,657,000
July 2c	7,591,000	198,328,000c	10,286,000	258,182,000
Daily average	1,265,000	1,279,000	1,714,000	1,659,000

(a) Less one day's production during New Year's week to equalize number of days covered for the last two years. (b) Revised from last report. (c) Subject to revision.

ANTHRACITE

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date (a)
June 18	1,941,000	42,762,000b	1,853,000	40,960,000
June 25	1,847,000	4,609,000b	1,870,000	42,830,000
July 2	1,868,000	46,477,000	1,778,000	44,608,000

(a) Less one day's production during New Year's week to equalize number of days covered for the last two years. (b) Revised from last report.

BEEHIVE COKE

Week Ended July 2 1921(a)	Week Ended June 25 1921(b)	Week Ended July 3, 1920	1921 to Date	1920 to Date(c)
48,000	50,000	374,000	3,401,000	10,906,000

(a) Subject to revision. (b) Revised from last report. (c) Less 2 day's production during New Year's week to equalize number of days covered for last two years.

ANTHRACITE

Production of hard coal during the week ended July 2 was 1,868,000 net tons, 21,000 tons in excess of the preceding week's output. With retail yard receipts heavier than deliveries to householders, orders for domestic sizes are being obtained with increasing difficulty.

It is interesting to note that independent prices are being cut, as is usual in periods of dull markets, but with no apparent effect, and some operations have already been forced to close. The public is not able to spend money on house coal for storage purposes, and while some argue that this will lead to a wild autumn rush, there are others who remember former lean years when householders practiced rigid economy to the detriment of the usual seasonal tonnage movement.

COKE

Beehive coke production continues its downward trend, with the zero mark as the apparent objective. The output for the week ended July 2 is estimated by the Geological Survey at 48,000 net tons, as compared with 50,000 tons the week preceding. Cumulative production for 1921 to date is 3,401,000 tons, less than one-third of that in 1920.

An additional wage cut of 10 per cent by some Connellsville independents has caused a slight resumption of work, but the market still may be termed as lifeless. Odd lots of furnace coke have been cleaned up and there are fewer offerings at "what it will bring." Connellsville furnace is now quotable $3@$3.25; foundry $4@$4.50.

AN ANNOUNCEMENT ISSUED July 6 by the Pennsylvania Coal & Coke Corporation stated that the company had made a complete revision and reduction in all salaries, averaging about 20 per cent, applying to all officers, superintendents, foremen, monthly men, clerks and stenographers. This reduction applies to all operating departments as well as the general offices in New York. The company is now operating only nine mines out of thirty-four, owing to the impossibility of meeting competition of other fields operating on the 1917 scale of wages. The nine mines operating are working only from one to four days a week.

Foreign Market And Export News

Hampton Roads

In spite of the settlement of the British strike, cargoes of coal have gone forward steadily during the week, and many dealers have contracts for still further shipments to Great Britain and her dependencies. Several cargoes, however, consigned to British ports, have been canceled, which is thought to have had some effect in reducing the market. Other cargoes have been purchased afloat during the week, after they had loaded preparatory to moving to the British Isles.

C.i.f. prices have softened with the ending of the British deadlock. In some cases a drop of $1 per ton has been recorded from the figures quoted last week.

During June a total of 278 coal cargoes left this port for foreign shores, which almost establishes a record for one month's business. British vessels lead, with American ships next.

Clearances last week were as follows. (Ports given when of record):

		Tons
For Brazil:		
Am. Schr. Charles Davenport, for Bueoos Aires		1,810
For France:		
Bel. S.S. Nervier, for Havre		7,146
For Greece:		
Ger. SS. R. C. Rickmers, for Piraeus		7,000
For Italy:		
Ital. SS. Luigi Rizzo, for Civita Vecchia		7,358
Ital. SS. Tuscolo, for Palermo		6,588
For Spain:		
Span. SS. Cabo Espartel, for Seville		2 614
For United Kiogdom:		
Am. SS. Henry Clay,	for Falmouth	10 083
Am. SS. West Galeta,	for Falmouth	6,825
Am. SS. Nyanza,	for Falmouth.	6,783
Am. SS. Evergreen City,	for Falmouth.	6,515
Am. SS. Invincible,	for Falmouth	10,019
Am. SS. Sunelsco,	for Falmouth	4,399
Am. SS. Eastern Breeze	for Falmouth	4 921
Am. SS. Surailco,	for Falmouth	4,388
Am. SS. Suholco,	for Falmouth	4 384
Fr. SS. Surville,	for Falmouth	3,355
Br. SS. Manhattan, for Liverpool		1,977
Br. SS. Tresillian, for Queenstowa		5,521
For West Indies:		
Am. Schr. Elizabeth Freeman, for Teneriffe		2,538
For Gibraltar:		
Am. SS. Virginian		10,067
Br. SS Vestalia		7,318
Br. SS. Levant, for Funchal		4,473
Br. SS. Bournesmouth, for Las Palmas		6,895

C.I.F. PRICES—AMERICAN COAL—GROSS TONS

	June 28, 1921	July 5, 1921	July 12, 1921
United Kiogdom	12 60	12 15	11 00@11 35
West Italy	12 25	12 40	11 75@12 00
French Atlantic		11 90	11.00@11 35
Scaadinavian	13 35	13 40	13 00
The Plate	11 40	11 40	
Rotterdam		11 40	11 00
Havaoa	8 60	8 90	8 50

English Market Gains Strength

(By cable to Coal Age)

British coal mines are very slowly getting back in the producing state. Although no official figures of production are yet available for the first week of work after the strike, unofficial reports indicate very small outputs, for which there is heavy demand Inland and for local bunkers, leaving almost nothing for export. The official figures for exports from the United Kingdom in June, the last month of the strike, show but 7,502 gross tons.

Prices of best Admiralty large coal f.o.b. Cardiff were 47s. 6d.@50s. on Monday of this week, a gain over 45s. for the same coal a week ago. Best smalls for bunkers are now quoted at Cardiff at 24@25s. Prices of best Durham at Newcastle-on-Tyne are now 40s. compared with 35s.@37s. 6d. a week ago. No change is reported in Tyne primes at 40s.@42s. 6d.

It is reported that the rate on coal freights from the United Kingdom to the Plate has been fixed at 17s. 9d.

French Lessons from British Strike

Paris Correspondence

Although for the last seven or eight months purchases of American coals for French account have been practically nil, the recent British strike has taught French buyers once for all that it will not do to be dependent upon only one source of supply for such portion of their coal requirements as cannot be filled by either home production, German, or Saar coals.

Under prevailing circumstances the strike proved to be rather a boom than otherwise to French coal interests, as it permitted the sale of a fairly large tonnage which encumbered the market. But what would be the position if, admitting a general resumption of trade and France's industry were fully at work, there were to be another miners' strike? It would be simply disastrous and, having realized this after two nearly consecutive strikes, quite a lot of French consumers are examining how they can keep in touch with the American market, even if they have to pay more for such portion of their requirements as would be placed with U. S. exporters. It is therefore to the interest of American exporters to study the French trade attentively, and try and meet this desire by entering French business on really competitive lines, if they care for this trade at all.

French Coal Market Liquidating

Special Correspondence to Coal Age

Much nervousness prevails in French industrial circles in view of the possibility of a resumption of business because of the present low level of stocks. Many Chambers of Commerce and even some members in Parliament have officially suggested the prohibition of exports of coal from France. It seems that there is hardly any need for this as such coals as were supplied chiefly to Great Britain (11,000 tons in April and 450,000 tons in May) really represent only certain grades of coals which the French mines could not dispose of Inland, and a certain quantity of Saar coals which was actually in excess of French requirements.

Stocks of coals in French depots in metric tons on April 30, 1921, were:

Havre	1,257,230
Marseilles	1,137,071
Rouen	25,814
Strasbourg	526,426
Rochefort	118,231
Bordeaux	1,935,060
St. Nazaire	252,205
Dieppe	49,470
Cherbourg	391,819
La Pallice	94,839
Brest	1,093,419
Boulogne	50,939
Dunkirk	14,520
Chantenay	119,579
Other depots	115,353

The total was 7,181,975 tons, of which 738,599 tons was in the various ports (1,421 tons floating and 737,358 tons discharged) as against 1,037,730 tons in ports on March 31,

The total production of coal from French mines in April was 2,257,444 tons and for the Saar district 693,083 tons. Stocks at the French mines on the same date were 1,566,306 tons and at Saar mines were 467,655 tons.

Stocks held by the railway companies at the end of March were 2,312,390 tons compared with 2,183,778 tons at the end of April, a quantity sufficient for 75 days operation. Therefore, taking into account the present low home consumption and the fair stocks of French and Saar coals which will rapidly increase now that exports to the U. K. have come to an end there is no cause for immediate alarm.

Coal available for consumption in France in March and April, 1921 (not including coke and coking fines) is shown as follows:

	Metric tons—April	Metric tons—March
French	1,782,531	1,878,541
Saar	200,335	192,306
British	57,413	363,126
Belgian	119,973	86,414
German	577,428	593,998
American	29,119	28,754
	2,766,799	3,143,139

The item "French coals" includes production of the Lorraine mines. Under "Saar coals" is represented only coal actually delivered to France, total production of this district having been 597,235 tons in April. These figures show a reduction of more than 370,000 tons over the March and February available quantities, and nearly 500,000 tons as compared with the January figures. They also illustrate the present poor conditions of French Industry.

Italian Market Weak

(By cable to Coal Age)

Limited demand for coal in Italy is holding prices down, despite the small imports in recent weeks. At Genoa, American steam coal is selling this week at from 305 to 320 lire per gross ton, free on truck, compared with as high as 370 lire early in May.

Bunker Prices—F.O.B.—Gross Tons

(By cable to Coal Age, July 8)

Welsh coal at:	
Gibraltar	70s.
Port Said	84s.
Singapore	95s.
Rio Janeiro	100s.
Genoa	73s. trimmed
Antwerp	150@160 fr. trimmed
American coal at:	
New York	$5 65@$6 00

United States May Exports of Coal and Coke by Customs Districts

Exports of coal and coke by customs districts from the United States in May, 1921, as reported by the Bureau of Foreign and Domestic Commerce, were as follows, in gross tons:

Customs Districts	Coal: Anthracite, Tons	Coal: Bituminous, Tons	Coke Tons
Vermont	2,081	435	403
Massachusetts	3	.....	.....
St. Lawrence	120,951	118,504	885
Rochester	84,303	37,117	215
Buffalo	192,638	189,629	5,132
New York	10,939	6,724	302
Philadelphia	9,910	42,855	.....
Maryland	.....	234,884	1,529
Virginia	2,264	1,056,601	.....
South Carolina	.....	19,745	.....
Georgia	.....	100	.....
Florida	.....	5,206	156
Mobile	.....	537	.....
New Orleans	.....	1,666	39
Galveston	.....	.....	25
San Antonio	5,001	237	690
El Paso	.....	4,285	2
San Diego	1	19	.....
Arizona	.....	3,269	.....
San Francisco	.....	.....	18
Washington	.....	306	.....
Dakota	248	7,212	139
Duluth and Superior	211	1,744	167
Michigan	400	100,411	5,634
Ohio	5,358	668,888	305
Total for May	434,308	2,500,374	15,641
Total for April	368,534	1,453,027	18,863

Bunker Coal Supplied to Steamers in the Foreign Trade

Customs Districts	Tons
New York	273,944
Philadelphia	33,857
Maryland	40,846
Virginia	335,189

Spanish Production in 1919 was 5,920,491 metric tons. Of this amount 263,338 tons were anthracite, 552,866 tons lignite, and 5,104,287 tons pit coal. It is pointed out that the total production falls about 1,000,000 tons short of the amount required for Spanish industry.

Reports From the Market Centers

New England

BOSTON

Dearth of Inquiry—Operators Hard Pressed to Find Orders—Accumulations at Hampton Roads—Anthracite Retail Trade Extremely Dull.

Bituminous—Inquiry is almost nil. There are a few scattering requests for spot coal but these are from ultra conservative mill buyers who wish to carry into the winter their usual reserve. For the most part, however, steam coal is at a standstill.

An increased number of Shipping Board bottoms actually in use has been mentioned recently as a favorable sign, but general business in New England shows no perceptible reaction. A few special lines in textiles and in shoes are making fair showing, but industries here in general seen no light ahead.

Operators in all districts find it extremely hard to move coal. The few who are so fortunate as to have export orders are able to run from two to four days per week. Strenuous efforts are made on behalf of July coal but the response is in no way encouraging.

In some instances, producers are scaling down prices to meet special situations. At the utmost not more than a few thousand tons have been placed in this way, although one would gather from comment in the trade that the practice is widespread. Receipts as yet do not show any increased movement, however, and are not likely to for weeks to come.

Inquiry for Pocahontas and New River shares the same slackness that prevails on coal from other districts. Spot inquiry coastwise amounts to nothing, and off-shore there is only light request.

Anthracite—Retail dealers throughout New England complain of extremely dull business. Householders generally have not the money for their usual purchases and there is besides a certain warm weather indifference as to next winter's needs. A result is that dealers are getting stocked to the limit and practically all shippers are looking for orders. Chestnut, particularly, is getting increasingly hard to move.

Tidewater—East

NEW YORK

Demand for Anthracite Lower—Independents Hustle for Business—Bituminous Moves Slowly, But Quotations Show Little Change.

Anthracite—There has been no improvement in the market. Demand is easier if anything, and there have been many cancellations of orders. Under existing conditions, the market has not suffered because of the many local labor troubles and suspensions which have taken place in the coal fields during the past few weeks. Demand along the line is reported as being in better shape.

The independents are selling at slight premiums for the most part and considerably below their announced schedules for July. While the average price quoted for stove was around $8.25, there were orders received as high as $8.50 by some middle houses.

Pea is the hardest of the domestic sizes to move and is being quoted at considerably below the stated schedules of the independents. The steam sizes are unchanged so far as demand goes. Barley is extremely slow and some sent to this market brought less than the freight charges.

Bituminous—The present condition of the market is likened to the cleaning up of a wreck. Some dealers call attention to market conditions of the past several weeks with scarcely any buying except in emergency, although the prices have been and are low, and now because of this so-called buyers' strike with surplus stocks almost out of the way, claim that the turn in the market is about due and should be here about Sept. 1. Then there is the less optimistic dealer who refuses to see a change in prospect unless industrial conditions improve.

Locally, conditions are quiet. Demand is slow but prices have been maintained at about last week's level because production has not been unloaded at this Tidewater. On July 8 there were in the local pools 286 cars and outside of the pools 1,444 cars, as compared with 1,730 cars and 2,433 cars respectively on June 8.

Quotations f.o.b. piers differ slightly from last week. Pool 1 was quoted $6@$6.25; Pool 9, $5.75@$6.10; Pool 10, $5.45@$5.75 and Pool 11, $5.15@$5.40. Mine quotations appear in the Weekly Review.

PHILADELPHIA

Anthracite Continues to Ease Off—Mines Likely to Curtail Work—Steam Coals Duller, with Occasional Price Reductions—Bituminous Unchanged—Light Buying—No Early Revival Seen.

Anthracite—Further easing off in buying by the consumer is the feature of the market and the point is fast being reached where the retail trade will be as quiet as it has ever been in the most normal of years.

Most retailers have done their best to keep the mines going by withholding cancellations until the last possible moment. However, the saturation point is close to being reached and the holding of orders is growing. Stocks of nut and pea are close to the record, at least for this time of the year.

There is no question but what the companies will stand firm on their price schedules, and the only chance of a reduction is by the independents, the ones who have always shaded prices in the summer. Due to changed conditions, though, it can be said that this is not at all probable. To be sure there are certain few of the lesser individuals who this week have tried the effect of cut prices. These are mostly the concerns who took the extreme top of the market in the days of shortage, and as today finds them with practically no regular customers they are forced to this expedient to keep going at all.

Some dealers are becoming skeptical of a particularly heavy fall and winter trade, despite the number who have not taken coal in during the summer. Those of long experience reason that the buying power has been so greatly curtailed that the householder will economize this winter as he has never done before.

Steam coals became particularly heavy recently and cuts as much as 75c. a ton have been heard on buckwheat, rice and barley, and while this moved some tonnage it has made very little impression on the amount that has been produced.

Bituminous—The market is unchanged and very little coal is being moved. Sales recently have been close to the minimum, the consumer displaying more reluctance than ever to buy. As there were some recessions in spot prices over a week ago the buyer seems to think that further cuts may come.

Inasmuch as there has been no definite appeal for a reduction in freight rates, the buyer is beginning to believe that no effect from this source will be felt for months, possibly not during the present year. The present market is so close to a normal summer of six or seven years ago, that those most interested are coming to the belief that the summer will be more than spent before anything like a revival will come and they will be glad if it actually does happen then, of which quite a few have some doubts.

BALTIMORE

Another Bad Break in Soft Coal—Export Movement Holds Up—Political Play to the Galleries on Hard Coal "Combine" Inquiry.

Bituminous—There has been a general break in offerings in the spot market. Some producers are refusing to sell at the lowest figures, preferring to lose a portion of business rather than fall to the level of some competitive operations.

The home demand is extremely flat and even at the ridiculously low figures of the present there is no rush to buy and store. Best grade steam coals have actually passed hands on the spot market here within the past few days as low as $2.25. Pool 10 has sold as low as $2 and Pool 11 has been offered $1.70@$1.75. High-grade gas lump is offering around $2.25 in some cases, and West Virginia mine run has appeared here at $1.35@$1.50.

The export movement, which continues fairly heavy despite some cancellations of charters, is the only bright feature. During June, due to a big spurt at the end of the month, the movement from Baltimore reached a total of 332,419 tons cargo and 37,844 tons bunker. The July movement so far is running up well.

Anthracite—Following up the "campaign" started by a Maryland congressman in which retail coal merchants were charged with a combination of illegal nature to fix prices, policemen all over Baltimore are making a block canvas to find out just how much coal purchasers have paid for anthracite for several years back. The state's attorney says he does this to prove that the prices are always the same and will show a combine. All of which is entirely unnecessary except as a play to the gallery. The official records of the Maryland Fuel Administration would give the attorney all this information. And meanwhile some thinking men in the public are beginning to realize how much more the public may have to pay if all restrictions of a high-grade association of coal men for fair dealing are removed.

The majority of the dealers have added 25c. to the retail cost of all sizes with the exception of pea and buckwheat. This was done as an individual matter, the dealers apparently feeling that because of failure to advance retail costs in Baltimore in May or June, while wholesale prices advanced May 1, June 1 and July 1, that action was necessary.

BUFFALO

Conditions Continue Unfavorable—No Indication of a Trade Stir—Slack Coal Offering at Any Price—Anthracite Moving Slowly.

Bituminous—Movement is still slow, with no promise of improvement right away. All that the coal trade can do is to wait. It is merely an echo of the state of business generally and it will come back to its own when other things move as they should.

The operator still complains of an output that is greater than the state of trade will warrant and he is easily able to show that when the demand does begin to increase the output will go right along ahead of it and keep the prices down. Still that is the only way out and if there is profit now there will be more then.

Prices continue unsteady at about $3 for Youghiogheny gas lump, $2.75 for Pittsburgh and No. 8 steam lump, $2.45 for Allegheny Valley mine run and $1 for slack, to which add $2.36 to Allegheny Valley and $2.51 to other coals, to cover freight.

Anthracite—A city coal man remarks that it is a rarity to see a coal wagon on the street at delivery work and it is a fact that the movement is decidedly small.

The various changes in prices have upset calculations somewhat. Some independents advanced as far as they felt it safe to do so. Some of them have made a price of $8 on furnace sizes. In any case the demand is so light that there is prospect of considerable shutting down unless orders increase, which is not likely. Local retail prices have advanced but slightly, one circular making them at the curb $12.70 for grate and egg, $12.95 for stove and chestnut, $10.85 for pea and $8.75 for buckwheat. It is hard to sell chestnut at any price.

Lake loading is falling off a trifle and it will decline more if the sales from the Upper Lake docks do not improve soon. The season movement has kept up well, being 1,200,288 net tons to July, as against 1,013,542 tons to the same date last season. For the week ended July 2 the amount was 107,500 tons, of which 30,200 cleared for Duluth, 24,400 for Milwaukee, 15,000 for Chicago, 10,500 for Fort William, 7,500 for Port Arthur, 6,800 for Waukegan, 7,500 for Sheboygan and 5,600 for the Soo.

HAMPTON ROADS

Trading Less Active—Prices Soften—June Dumpings Heaviest on Record.

Business at the piers for the week ended July 7 was somewhat less active, a total of approximately 100,000 tons less than the week before being dumped. Dealers attribute the slump in business to the settlement of the British strike.

Prices also dropped. Pools 1 and 2 could be bought at the end of the week for $5.75@$6. Other pools were being quoted at $5.25 for the lowest bids, with many buyers at this price. The high-volatile grades were more in demand at the end of the week.

Only about 145,000 tons of vessel tonnage awaited cargoes at the end of the week, as against approximately 350,000 tons the week before. Accumulations at Tidewater, however, remain at approximately the same figure.

Dumpings for the month of June, reaching a total of 2,200,000 gross tons broke all previous records for coal dumpings at this port, the high point of July, 1920, even being exceeded. The N. & W. piers lead with approximately 844,000 tons, the C. & O. following with 833,000 tons, and the Virginian piers with approximately 533,000 tons.

A comparison of the situation at the piers is as follows:

	Week Ended June 30	Week Ended July 7
N. & W. Piers, Lamberts Point—		
Cars on hand	4,035	3,568
Tons on hand	197,470	180,532
Tons dumped	175,680	206,228
Tonnage waiting	113,800	38,207
Virginian R. R. Piers, SewallsPoint—		
Cars on hand	1,818	2,105
Tons on hand	90,900	105,250
Tons dumped	144,196	106,842
Tonnage waiting	28,453	8,989
C. & O. Piers, Newport News—		
Cars on hand	2,042	2,136
Tons on hand	102,100	106,760
Tons dumped	230,418	167,944
Tonnage waiting	224,055	100,375

Northwest

MINNEAPOLIS

No Buying, Even in Face of Rising Costs—Dock Stocks Growing Troublesome—Freight Revisions Are Disappointment.

People in the coal trade are exerting every persuasion they know to induce earlier buying, but so far without much success. The Pennsylvania State Tax is expected to add 30@50c. a ton to the cost of hard coal,

but apparently people refuse to believe it possible for costs to go up, and are holding off. Some of the trade are about disgusted with the whole situation, and are inclined to simply let things go until consumers are ready to talk business, and then simply quote the going price, whatever it may be, for taking or leaving.

All the while, soft coal stocks are piling up at the docks, but very little is moving to the interior. Unless there is a quick change for a heavier tonnage to the interior, the docks will be loaded to their limit by Aug. 1, and their capacity is far from sufficient to run the Northwest through a normal winter. The docks should be emptied once and filled a second time in a season, to give a reasonable supply to the Northwest. This in turn must be augmented by the tonnage which comes all-rail.

The dock trade has been working hard to secure contracts for the winter, but aside from some railroad business and a little public service supply, does not seem to have accomplished much. The prices which have been made have been very close. Some very low all-rail prices have also been made for certain classes of business. But buyers generally have simply refused to listen.

Revised coal freights on interstate business from the docks to points in Minnesota and the Dakotas, have proved to be a general disappointment. According to figures compiled by the Minnesota Railroad and Warehouse Commission, of 187 stations, there are 176 which will have increases on soft coal ranging 13½@67½c., and 11 which will have no change. On hard coal, there are 130 increases, 37 decreases and 20 without change. Hard coal increases are 6c.@47c. The state commission is opposing the rates and will join the fight planned by the civic associations of Minneapolis and St. Paul.

Northwestern railroads are reported to be about to place orders for coal, as a result of the saving accruing under the revised wage scale, which became effective July 1.

MILWAUKEE

Buying at a Standstill—Anthracite Advance Looked for—Supply by Lake Continues Good.

There is absolutely nothing doing at the present time in the way of marketing coal. Demand has ceased almost entirely, and loaded coal trucks have become a rarity on the streets.

June prices still prevail. No reason has been assigned for the deviation from the customary practice of advancing anthracite 10c. per ton until September. However, representatives of mines forecast a slight increase in price in the near future, as the result of the Pennsylvania tax on hard coal.

Bids on 85,000 tons of bituminous for state use have been rejected by the State Engineer who claimed that the bids were made up on May 18, and that since that time the market has taken such a slump that it would be unwise to accept them. It is understood that the bids averaged $6 per ton.

A comparison of receipts by Lake during April, May and June for the last four years, is as follows (in net tons):

Year	Hard	Soft	Total
1921	400,481	1,134,515	1,534,996
1920	265,871	354,035	619,906
1919	263,572	1,269,892	1,533,464
1918	164,889	827,438	992,327

Receipts for July thus far have averaged over 16,000 tons per day.

DULUTH

Dock Congestion Growing—Prices Unchanged—June Shipments Heavier—Anthracite Receipts Continue Light.

While coal congestion continues to grow steadily worse, a ray of hope for some relief has appeared in the report that coal shipments from Duluth-Superior docks during June were larger than during any similar period this year, amounting to 9,557 cars, against 7,883 cars during May, and 10,401 cars in June last year. For the six months to June 30, however, shipments were only 47,288 cars, against 116,632 cars during the same period last year.

Docks operating at Duluth are counting on a substantial pick-up in demand from country dealers if the present bright prospects for crops in the Northwest are maintained. Virtually no change has been recorded in prices.

Falling off in anthracite shipments has characterized the dock receipts for the past week. This is due to the inability of dealers to finance purchases from dock men and the unwillingness of the consumer to buy. Last week forty-nine cargoes arrived, of which only two were anthracite. Twenty-four cargoes are reported on the way with the same number of anthracite as was received last week.

Tonnage unloaded at the docks this season up to June 30 aggregated 4,243,623 net tons, 3,794,545 of bituminous and 499,078 tons of anthracite. Soft coal receipts were 2,829,808 tons in excess of last year and hard coal receipts were 25,798 tons more than in 1921, up to the same period. Receipts during June aggregated 2,318,283 tons, including 192,830 tons of hard and 2,125,453 tons of soft coal.

Inland West

DETROIT

All Demands Continue Dull—Little Distress Coal—Stocking Program Avoided.

Offerings of bituminous seem to have no attraction for consumers of either steam or domestic sizes. The interest of domestic buyers has reached the vanishing point with the continuance of temperature conditions severely oppressive in their torridity.

The very limited demand for steam coal is conceded to be primarily the outgrowth of the generally unsatisfactory condition of business in manufacturing and industrial lines. With daily consumption greatly curtailed by the operation of factories and industrial plants on a reduced production basis, buyers find it possible to work along for some time on small orders.

A tendency is observed among some of the steam plants to avoid stocking in the belief that whenever more fuel is needed they will be able to obtain it in the spot market at favorable prices.

West Virginia lump is quoted $3.25@$3.50, mine run is $2@$2.50 and nut and slack $1.90@$2. Lump from Ohio mines is $3@$3.25, mine run $2@$2.25 and nut and slack $1.15@$1.25. Smokeless lump and egg is $5.25@$5.50, mine run $3.25@$3.50, nut and slack $2 to $2.25.

CINCINNATI

Market Is Demoralized—No Price Stability—Screenings Stronger—Retail Prices Off.

Holiday dullness seemed to have little effect on conditions following the Fourth. There is little coal in distress, but there are operating companies who use a reduction in price to sell their coal, and with these forced reductions, all signs of stability seem to have been lost. Slack was still low in some spots but gained a bit of strength.

Some Kentucky mine run is in distress at Latonia, otherwise the mine prices generally obtain. Slack is quoted 90c.@$1.50, depending upon quality and mine orders for lump; mine run $1.75@$2.25, and block $3@$3.50.

Logan, Kanawha and Kenova groups are asking $1@$1.50 for nut and slack and are getting $1.75@$2.25 for mine run, some in distress selling as low as $1.60, and $3 and upward is being asked for lump with some actual sales down to $2.75.

Smokeless has shown little change. Lump is still $5.50, but some of the smaller companies report sales down to $5 and nut and egg is also off, ranging $4.75@$5. Slack has all sorts of prices, smaller companies, it is said, taking $1.75@$2.25, while the larger operations are still quoting $3.

Retail prices on smokeless have dropped, lump being quoted $9.75@$10, mine run $7.25@$7.50 and slack $6.75; best bituminous block is held at $9, lump $7.25@$7.50, mine run $6.75@$7 and slack $5@$6.

COLUMBUS

Domestic Trade Shows No Life—Screenings Stronger—Steam Demand Is Still Quiet—Lake Market the Best Feature.

No appreciable increase in domestic demand is reported in the central Ohio territory. Dealers are only placing a few orders to fill in broken stocks

while consumers are still playing a waiting game. The feeling that freight rates will soon be reduced has not been dispelled and consequently householders are waiting for lower prices. The retail price list is well maintained at former levels.

Little activity has developed in the steam trade. While some plants resume others are curtailing and the net result is about the same as formerly. There is no increase in the demand for railroad fuel. About the best customers are public utilities. One of the features of the steam trade is more strength in screenings. This is not caused by increased demand but rather by a still further curtailment of lump production.

The output in Ohio fields is still low. In the Hocking Valley the output is less than 25 per cent and nearer to 20 per cent of normal. Crooksville and Cambridge fields report about the same ratio of production.

A steady flow of coal to the lower ports for shipment to the Northwest is reported. The T. & O. C. docks during the week ended July 2, loaded 58,049 tons as compared with 55,811 the previous week, making a total of 445,923 for the season. During the same week the H. V. docks loaded 176,762 tons as compared with 189,072 the previous week, making 1,739,401 tons for the season. This is far in excess of the tonnage moved up to July 3, 1920.

CLEVELAND

Lake Movement Slowing Down—R.R. Outlook Better—Retailers Raise Anthracite Prices—Industrial Demand Quiet.

Bituminous—The decrease of about 12 per cent in employment in Cleveland during the last month, as reported by the Department of Labor helps explain some of the increased dullness which the coal trade has been experiencing. Industrial buying is extremely low and there are no present indications of improvement, during the summer months at least.

Agreement on a program for financial relief for the railroads at Washington, whereby they likely will get around $500,000,000 from the Government in the next few months on account of obligations due, is regarded as a constructive development in the trade here. Railroads not only should be enabled to buy a little more freely themselves, but repairs and purchases of equipment should stimulate, in some degree, at least, the steel and allied industries in this district.

Prices have undergone little change in recent weeks, although slack, which was at an extremely low level, is showing some signs of stiffening. It is now quoted $1.20@$1.30, compared with a low of around $1.10 recently. The recovery is due to the smaller supplies of slack occasioned by the reduction in production of prepared sizes for the Lake trade.

Anthracite and Pocahontas—Retailers have followed the wholesale market in the prices of anthracite, an increase effective this week being 25c. a ton. Egg is now quoted at $14 and stove and chestnut at $14.25. The demand for both anthracite and Pocahontas is unprecedently dull, reflecting the hope for lower prices, unemployment and reduced purchasing power of consumers.

Receipts of bituminous coal, consigned to Cleveland industries and retail dealers, for the week ended July 2, amounted to 943 cars, divided: Industrial 747 and retail 196; as compared with 933 cars the preceding week.

Lake—Although the dumpings during June averaged about 1,000,000 tons weekly, which was in excess of the May movement, all indications point to a slowing down. This is due to the congestion at the upper docks. At the height of the Lake shipments in May, operations of the No. 8 district reached nearly 70 per cent of capacity. For the last few weeks production has been around 63 per cent.

ST. LOUIS

Domestic at Standstill—No Improvement in Steam—Prices Below Cost.

There is no improvement in the local situation. Domestic buying has stopped. With thousands out of employment the dealer is beginning to realize that with cold weather the demand will come, mostly from people without ready money. That is one reason now why many dealers are not urging early buying.

Carterville is easy at buyers' prices from either shipper or dealer. The Mt. Olive price is stiff, but no tonnage. Standard has come to a dead stop.

There are no deliveries to speak of in either anthracite or smokeless, although a little local coke is being put in. Steam is about as bad as domestic locally. In the country there is a little dealer coal moving.

Oil is replacing coal in all of the territory in southern Missouri and Arkansas. In other places central power plants are reaching out and getting away with the business.

Southwest

KANSAS CITY

Howat's Trial Closes Kansas Mines—Low Demand Still Exists—Prices Firm.

Very few of the Kansas mines worked last week on account of miners waiting for the verdict of the court in the trial of Alexander Howat, president of the Kansas District, U. M. W. of A. On Friday, July 8, the court sentenced Howat to six months in jail and a $500 fine.

While the mines have not worked since June 25, enough coal has accumulated to carry things over. Some of this coal still being held at the mines. Little or no change in the demand is apparent and operators feel they will have a hard tine to take care of the call when it starts, as everybody will want coal at once and it will be a physical impossibility to supply them. Quotations on all grades are the same as last week.

South

LOUISVILLE

Lack of Domestic Orders—Smaller Burden of Screenings—Market Quiet.

Hard driving for business is not getting much result at this time, as large consumers are not using half of their normal requirements, while refusal of domestic consumers to stock early is resulting in low orders from retailers.

Lowered production of prepared has resulted in a smaller excess of screenings. Last week some screenings were quoted at 80c., but this week the market is firm at around $1.

Quotations received show Hazard and Harlan well together on prepared coal, with Hazard quoting most of the low prices on steam.

While production is light and movement slow, it is held by a number of operators that the output as a whole this season has been surprisingly good, considering conditions in the industrial and commercial markets. Over 10,000 employees of the L. & N. R.R. at Louisville received reductions effective July 1.

BIRMINGHAM

Dull Market Conditions Prevail—Steam Prices Very Unstable—Production Further Curtailed.

Demand for commercial coal is very light and there is a surplus of steam being thrown on the market by the smaller producers who have no contracts. This has resulted in price-slashing and sharp competition for the small volume of spot business offering. Consumers are taking coal only as needed and are refraining from making contracts.

Steam prices have been materially reduced on basis of wage reductions put into effect at the mines July 1 by practically all commercial and domestic operators and a majority of the furnace companies. Quotations on mine run are about as follows: Pratt $2.40@$2.55, Big Seam $2@2.25, Carbon Hill $2@$2.50, Cahaba $3, Black Creek 2.75@$3.25, Corona $2.75.

Domestic movement on contract is not as heavy as recently, due to the fact that dealers are well stocked and are moving little coal to the consumer.

On account of the gloomy outlook in the iron trade, several furnace stacks which have been in operation have blown out during the past week, and several mines of furnace companies have been closed down. Operations are on a basis of about two days per week at commercial mines.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Steam Sales Impossible—Gas Coal Holding—Slack Weaker—Lake Tonnage Lighter.

With further decreases in mine operations there are few sellers and it is a question whether one can say there is a regular market at all. Such market as can be found is quotable higher than formerly, but this is due to absence of sellers rather than any pressure to buy. Odd lots on track have been well cleaned up. Such consumptive demand as develops is being supplied chiefly from non-union districts, where costs are much lower.

In the trade at large doubt is expressed whether the mines are operating, by a strict accounting, at the rates reported, reports having shown above 60 per cent early in May, decreasing to 42 per cent at the middle of June. There is very little contract business being carried out and Lake shipments have dropped to relatively small proportions. Pittsburgh gas coal is selling right along as consumers' requirements cannot well be filled from non-union districts.

With the competition of Connellsville and West Virginia, Pittsburgh steam coal is hardly salable at all and prices given, which are the lowest that can be done, are largely nominal.

CONNELLSVILLE

Odd Lots of Coke Cleaned Up—Market Stiffer—Coal Prices Relatively Better Than Coke—Production Very Light.

A sale of about 3,500 tons of furnace coke for immediate shipment has cleaned up one operator's visible supply. The price was $3 flat, and the coke was taken because a furnace wished to run a week longer than its contract supply would take care of. The disposition of other operators to shade $3 in an effort to create business seems to have disappeared. Brokers who a fortnight ago felt free to sell to miscellaneous consumers at $3 and then peddle the orders around to operators at prices under $3, have changed their tactics and charge $3.10 @$3.15 to the consumer.

For the best grades of byproduct coal $1.80@$2 is obtainable whenever there is any real demand, while Connellsville coal for steam purposes generally brings $1.75. With such prices ruling for coal it is considered strange that coke should sell at even as low as $3.

Foundry coke is easier by about 25c., ordinary brands being obtainable without difficulty at $4, while some choice brands are at $4.25 to the dealer and $4.50 to the consumer. We quote the spot market $3@$3.25 for furnace and $4@$4.50 for foundry.

The *Courier* reports production in the week ended July 2, at 10,430 tons by the furnace ovens, and 13,210 tons by the merchant ovens, a total of 23,640 tons, a decrease of 4,540 tons.

UNIONTOWN

Another Independent Wage Cut—Some Plant Resumption—Market Still Quiet.

Another revision downward of wages averaging about 10 per cent by the W. J. Rainey, Inc. and the Washington Coal and Coke Co. became effective last week. The new scale, which probably will be followed by other independent operators, is lower than the present scale of the H. C. Frick Coke Co., established May 6.

One independent has now closed a coal contract for 40 cars per day through the Great Lakes. In addition, 140 of its 700 ovens are making foundry coke.

Announcement of the resumption of the Isabella plants of the Hillman Coal & Coke Co. was followed by a rush of unemployed to the plants but none other than furloughed employees living there, about 600 in number, were given work.

While this plant resumption is an encouraging indication, both the coal and coke markets continue inactive, with quotations nominal. Optimistic observers are pointing to the plant resumption as an indication that the turn in readjustment has been passed while those of the more conservative type point to the dull market with predictions that the resumption cannot be sustained.

EASTERN OHIO

Production Holding — All Demands Weak and Lake Tonnage Declines—Prices Unchanged.

Despite continued sluggishness in the trade, production for the week ended July 2 kept pace pretty well with that of previous weeks, output amounting to 398,000 tons. Total production for the year to date is estimated at 8,500,000 tons or about 54 per cent of the capacity of the field for the period.

At the present rate of production the railroads are taking about 28 per cent of the total output for fuel, and about 40 per cent of capacity is being lost on account of "no market."

It is the consensus of opinion that production for Lake and the minimum requirements of railroads for fuel continue to be the mainstay in supporting mining operations, as both contract and spot inquiries from industrial consumers and the retail trade are negligible. On the one hand, it is expected that shipments of Lake cargo coal must necessarily be diminished because of lethargy in the Northwest, but there is some hope that additional support will be forthcoming from the carriers in the direction of laying aside some storage coal during the remaining summer months.

The City of Barberton has advertised for some 3,000 tons of Ohio steam coal and it is reported that the City of Painesville recently closed for 5,000 tons of mine run and ¾-in. lump at around $3@$3.25, to be delivered during the next twelve months.

There are rumors from reliable sources that a big slack deal has been consummated with a large consumer in Cleveland involving 100,000 tons spot sale for storage, delivery to be made within the next four months. Spot prices on slack have stiffened during the week by reason of smaller quantities now in the market. Other prices are steady at former levels and are shown in the Weekly Review.

FAIRMONT AND PANHANDLE

Export Cancellations Follow British Strike Settlement — Lake Tonnage Slumps—Mine Idleness Increases.

FAIRMONT

Although June production was almost equal to that of June, 1920, there was a perceptible drop early in July. Cancellation of Tidewater orders followed the settlement of the British strike and there was not so heavy a movement to the Lake, as the month opened. These two outlets practically constituted the only available spot markets, and mine idleness is increasing very rapidly.

NORTHERN PANHANDLE

As in other fields, Lake tonnage is declining and the spot market is very poor. There was no contract activity and no coal was being exported early in July, production not being over 10,000 tons daily. The only market to be found was for limited amounts of screened coal.

UPPER POTOMAC

More Mines Closed—Sales Possible Only on Best Coals.

Production was at a very low ebb during the week ended July 2. No mines found it possible to operate along the upper reaches of the Potomac and but few in the Georges Creek field were running. There was scarcely any call except for the highest grades of coal, and few buyers were to be found even for these.

CENTRAL PENNSYLVANIA

June Production Exceeds May—Business Going to Lower Wage, Non-Union Mines.

Production figures for June show a slight increase over May, being 55,964 cars for June as compared with 55,255 cars in May. According to reports,

business is going largely to the mines where adjustments have been made to the 1917 wage scale. Under normal conditions, the non-union mines produce about 25 per cent of the coal in the district but during June 50 per cent was from the non-union mines.

Business is very dull in the unionized districts and the operators contend that they are unable to go on producing when they cannot compete with those using the 1917 scale.

Middle Western

WESTERN KENTUCKY

Contract Business Appears—Prices Well Maintained—Feeling Is Rather Optimistic.

Operators report that while business is scattered over a large territory, there have been some fair steam contracts closed, and shipment of prepared sizes has been better. Movement of domestic sizes South is somewhat heavier than it has been, while shipments to Louisville, Nashville, Memphis and other Southern markets have held up surprisingly well, and there is a fair tonnage moving into Indiana and Illinois.

Operations continue at around two days a week, although some of the larger operators with several mines, are operating a part of their chain full time, with the other mines laid up for the time being.

INDIANA

Steam and Domestic Markets Lag—Price Concessions Fail to Stimulate Buying.

At the present time there is a general stagnation in both the steam and domestic markets. Hints that there is likely to be a coal shortage are denied by many coal men, though the public is being urged to buy its coal early. Some coal is being sold, but the volume is way below normal. Because of the chaotic condition of the market, it is nearly impossible to quote prices. Coal is being sold for just about what it will bring.

Few contracts are being made. Gas companies continue to pile up coke with no market. After some reductions until the price was brought around $9 a ton, the companies have shown no further inclination to reduce prices. However, there is no demand at any price.

Because of the dull demand, jobbers are doing virtually nothing. Retailers report some trade, but it is of a desultory nature and cannot be called indicative of a normal demand.

SOUTHERN ILLINOIS

Business Continues to Slow Up—Steam and Domestic Both Sluggish—Better Prospects Ahead.

Over the Fourth there was a lighter Carterville movement than at any time this season. The public still has it that coal will come down, that the miners will take a cut, and rates topple. The steam situation is worst. Screenings are at a standstill. It is understood that the larger operators pooled an order for several thousand tons for a large industrial or public utility plant and that the price was $1.25@$1.35. This is the price today although the circular hangs out at near $3.

There promises to be within 45 to 60 days a scarcity of equipment in the Middle West. Right now the carriers are up against the greatest shortage of cars in history in the Kansas wheat belt. It will be almost a parallel when coal begins to move.

Very little coal is selling at circular prices. It is reported that the "Big Six" are holding pretty well in line, but the little fellows are dropping along the way and meeting the Independents' prices of from $3 up for domestic, $1.25 for screenings and $2.75 for mine run, with No. 1 and No. 2 nut as low as $2.35.

In the Duquoin field, it is with one exception, a case of independent prices. Two days a week and a hard time at that, with little, if any, railroad tonnage moving tells the tale. Mt. Olive field continues unruffled with its two days average per week and more than half its mines idle. Some railroad coal is moving and the bulk of steam and domestic is going North and West on contract.

The Standard field shows no improvement. One mine resumed, or tried to, and a couple more went idle last week. It is hard to move anything. But very little domestic is moving to St. Louis. Considerable dissatisfaction exists among miners and railroad tonnage continues light.

Middle Appalachian

HIGH-VOLATILE FIELDS

Lake and Tide Movement Declines—Spot Buying at Standstill — Prices Very Soft.

KANAWHA

Production declined slowly through the week ended July 2 as there were no new contracts being made to replace those which expired on July 1. No coal could be disposed of at Tide and the Lake movement was slowing further. In many instances, production was being maintained more to keep organizations together and to absorb overhead than anything else.

LOGAN AND THACKER

Not less than 50,000 tons daily was being mined in the Logan region. However, this was limited to comparatively few companies, those with dock facilities up the Lakes and on the Ohio. Buying was largely at a standstill and prices as a result were very soft.

Williamson mines continued to produce at the rate of about 60 per cent of capacity. A very large proportion of the coal was moving on contract, general markets being unimproved.

NORTHEASTERN KENTUCKY

Less coal was produced during the opening days of July, with few mines operating two days a week. Lake shipments were further curtailed and both steam and prepared were in the doldrums.

VIRGINIA

Despite heavy losses because of "no market," mines were producing at mainly going on contract. Prices were about on a par with those in the Pocahontas field.

LOW-VOLATILE FIELDS

Tidewater Demand Holds—All Other Markets Inactive — Production Still Low.

NEW RIVER AND THE GULF

A better Tidewater demand during the week ended July 2 stimulated New River production to some extent. However, all other markets were rather inactive. The tonnage going to Lakes was not heavy and there was little spot buying and even less contracting.

During the latter part of June the Virginian suffered some severe freight wrecks which made it hard to furnish empties to those few mines which actually needed equipment. With a better Tidewater demand production reached about 60 per cent of capacity although there was no general improvement in market conditions or in prices.

POCAHONTAS AND TUG RIVER

Pocahontas production declined slightly during the week. Very little spot coal was moved and only contract business enabled production to hold up to the 300,000-ton mark. Prepared sizes held their own but slack coal weakened to $2@$2.50.

Conditions in Tug River were similar to those in the Pocahontas regions. There was a slight production curtailment because of the slowly dwindling demand, yet so much of the output was under contract, that 100,000 tons represented the week's output, much of the coal going to Tide.

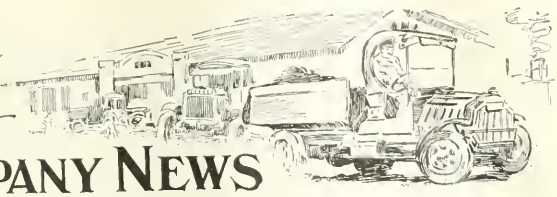
West

UTAH

Market Unchanged — Active Demand Inevitable—R.Rs. Prepare for Rush.

It is felt that the buyers' strike cannot last much longer and railroads are getting ready to take care of the rush of business that is expected during the next few months. One of the two mines belonging to the Utah Fuel Co. at Sunnyside in Carbon County is now running full time. Comparatively few of the miners have left as a result of the shortage of work and when operations are resumed on the big scale which is expected shortly there will be plenty of men willing to work.

MINE And COMPANY NEWS



COLORADO

The Moffat Coal Co., of Denver has contracted with Roberts and Schaefer Co., Chicago, for the installation of the tipple equipment for the new mine at Oak Hill. This tipple will be of fireproof construction throughout and one of the most modern in the Colorado field.

ILLINOIS

The Peabody Mine, one of the largest in the United States, which has been closed for several months, opened recently and it is the plan to work it to capacity during the next few months to prepare for the winter orders already on hand and those anticipated. With the Peabody mine running, all of the mines in the Springfield territory are in operation. Some are laying off for a day or two from week to week, but the flow of coal to the railroads is well maintained. The mine is on the Chicago & Alton and a large tonnage is being applied to that road.

The Sangamon Coal Co., Springfield, has received a set of Nolan automatic cagers for the bottom, and a set of Nolan block stops for their cages.

INDIANA

The Consolidated Indiana Coal Co., incorporated under the laws of Maine, has filed notice of a decrease in capital stock to $100,000.

A report from Oakland City states that the George A. Enos interests of Cleveland, have bought the coal mines and properties of the **C. R. Cummings Co.** and plan installation of two miles of track, and improvements costing close to a million dollars.

What is expected to be the most modern free washhouse at any coal mine in the country is under construction at the **Oliphant-Johnson Mine** near Bruceville. The building, which is being equipped at a cost of more than $20,000, was designed by J. A. Schellenger, mine superintendent and W. E. Buss, mine engineer. It will be fireproof, of reinforced concrete, 117 x 60 feet, in dimensions and one story in height. Shower baths will be operated with an automatic release, water to be supplied from the mine lake. The building will accommodate 600 men at one time.

The Indiana Creek Coal Co., has bought 2,000 acres of coal land five miles from Petersburg, and will start sinking a new shaft for a railroad mine early this fall.

The Gould Coal Washing and Mining Co., at Sullivan, has filed a final decree of dissolution with the secretary of state. **The Coalmont Coal Co.**, also of Sullivan, has filed a preliminary notice that the corporation will be dissolved.

KENTUCKY

River movement slumped a little in May, as compared with last year, and was far below April of this year. Retailers stocked river coal in April, but movement was slow and there has not been much buying since. Records of the year as compared with last year on River coal shows, in net tons:

	1921	1920
January....	1,400	3,022
February...	970	7,800
March.....	1,035	4,040
April.....	14,533	7,520
May.....	5,168	7,374
Total...	23,106	29,756

Milwaukeeans have purchased four additional coal mines in the Kentucky fields, making six in all, owned by the **Standard Harlan Coal Co.**, which has just been organized with $550,000 capital stock. The bulk of the coal mined will be marketed in the south, one of the officers being a prominent coal dealer in Atlanta.

The St. Bernard Mining Co., Earlington, has received a set of Nolan automatic cagers.

The F. B. S. Coal Co., of Island, recently organized with a capital of $250,000, is perfecting plans for the development of extensive coal properties. The company has a tract of about 1,500 acres of land, and will install considerable equipment. W. C. Mortenson is general manager.

Government engineers recently created an artificial wave in the upper Ohio River by manipulation of the lock and dam system, to enable 50,000 tons of coal to come south toward Cincinnati and Louisville. There were nine towboats and between 100 and 125 barges and coal boats waiting for a boating stage.

NEW YORK

The Pattison & Bowns Division of William Farrell & Son, Inc., formed a few years ago by the consolidation of several retail coal yards in Manhattan and the Bronx and the wholesale firm of Pattison & Bowns, and the wholesale firm of Pattison & Bowns, has been sold to a new corporation to be known as **Pattison & Bowns, Inc.** Gardiner Pattison, who was head of the former firm of Pattison & Bowns, is to be president of the new concern which will be located in the Cunard Building, New York City. The announcement of the separation is contained in a statement issued jointly by Thomas F. Farrell, president of William Farrell & Son, Inc., and George F. Getz, president of the United States Distributing Corporation, with which Mr. Pattison is also connected. The new corporation has been organized for the purpose of carrying on a wholesale coal sales business. This step has been taken to definitely segregate the wholesale business from the retail and will permit William Farrell & Son, Inc., to give its entire attention to retail operations. The officers will be: Gardiner Pattison, president; L. J. Hunter, vice-president and treasurer; Clarence P. Morrell and Preston Davie, vice-presidents; W. L. Whittlesey, secretary and J. R. Edwards, assistant treasurer. The Board of Directors will include the following: Geo. F. Getz, president of the United States Distributing Corporation and of the Globe Coal Co., Chicago; Harvey D. Gibson, president of The New York Trust Co.; Francis S. Peabody, chairman of the board of Peabody Coal Co.; Acosta Nichol of Spencer Trask & Co., Moritz Rosenthal of Ladenburg Thalmann & Co., John T. Sproull, president, Coal & Iron National Bank; Mervin W. Bricker of the Coal & Iron National Bank; Hon. Alfred E. Smith, chairman of the board of the United States Trucking Corporation; Gardner Pattison, Louis J. Hunter, Preston Davie and C. P. Morrell.

OHIO

The Middle States Coal Co., chartered several weeks ago with a capital of $50,000 has taken over two large operating mines at Jacksonville in Athens County, formerly controlled by the **Northern and Southern Coal Co.** The combined output of the mines is about 2,000 tons daily. The product will be sold through the Central West Coal & Lumber Co., of Columbus of which concern the Middle States Coal Co is a subsidiary. A. R. Jones is president and R. B. Hurst, secretary and treasurer of the company.

PENNSYLVANIA

Mine Inspectors in fifty-five districts of the bituminous and anthracite fields of Pennsylvania were apointed by Governor Sproul recently. The anthracite region inspectors serve four years in the districts, according to the order named, as follows: Benj. Maxey, Forest City; P. J. Moore, Carbondale; L. M. Evans, Scranton; Jenkin T. Reese, Scranton; S. J. Phillips, Scranton; David T. Williams, Scranton; Augustus McDade, Taylor; Robert Johnson, Pittston; Edwin C. Curtis, West Pittston; John B. Corgan, Kingston; Thomas J. Williams, Kingston; D. T. Davis, Wilkes-Barre; Frank Kettle, Nanticoke; Joseph J. Walsh, Wilkes-Barre; David J. Roderick, Hazleton; J. J. Stickler, Hazleton; Isaac M. Davies, Lansford; Evan G. Evans, Coaldale; Michael J. Brennan, Pottsville; P. C. Fenton, Mahanoy City; Archibald B. Lamb, Shenandoah; William Reid, Centralia; Benjamin I. Evans, Mt. Carmel; P. J. Frier, Shamokin; Charles J. Price, Lykens. Inspectors who serve from May 15, in the bituminous districts are as follows: District 5, Richard Maize, Uniontown; District 9, Silas S. Hall, Connellsville, Fayette; District 11, John J. McDonald, Greensburg; District 12, T. J. Lewis, Punxsutawney; District 13, John Ira Thomas, Johnstown; District 19, James J. Stoker, Irwin; Districts 27, 28, 29 and 30, Harry Phythyon, Belle Vernon; Thomas H. Thompson, Kittanning; Patrick S. King, Pittsburg, and Charles H. Crocker, Johnstown.

The Philadelphia and Reading Coal and Iron Co. is taking the lead in opening new coal developments near Pottsville and is preparing in several places to mine coal above the water level. At the **Rausch Creek Colliery** new openings are being made whereby coal may be mined for fifteen years above water level and 100 years below water level. At Middle Creek extensive developments are in progress, and soon there will be seven drifts supplying coal above water level.

WEST VIRGINIA

The Pittsburgh Coal Washer Co. has secured a contract from the **Borderland Coal Co.** for improvements to their No. 1 plant at Borderland, consisting of a modern steel tipple with a conveyor about 800 ft. long. The coal will be brought from Kentucky across the Tug River to West Virginia side.

Recently, the Pittsburgh Coal Washer Co. closed a contract with the **Booth-Bowen Coal & Coke Co.** at Bramwell, for a large modern steel tipple. When completed, this tipple will be one of the most modern in the Pocahontas Field.

The Puritan Coal Corporation has awarded a contract for the erection of 100 miners' homes. This company has a big lease near Burch.

Much damage was done by a mine fire at the Phoenix mine of the **Alpha-Portland Cement Co.**, near Clarksburg recently. A trap door was ignited by a short-circuit, the flames finally becoming communicated to the coal.

Fire believed to be of incendiary origin destroyed the head-house of the **Fort Pitt Coal Co.** at Wilsonburg. Not only was the structure burned to the ground but the machinery was badly disabled.

It is learned in connection with the organization of the **William Dempster Coal Co.**, only recently organized, that a lease of 250 acres on Blue Creek in the Kanawha district will be developed. Plans are being matured to drive entries for the purpose of mining coal in the No. 5 block seam. What is known as the Shrader Mine was included in the purchase. Offices will be established in Charleston, with Duncan Reed of Bay City, Mich., having personal supervision of development work. The company is headed by William Dempster, of Bay City.

Four West Virginia coal companies discontinued business about the middle of June and terminated their corporate existence. They were the **Lyons Coal Co.**, of Fairmont, of which A. J. McDaniel was president; **Auto Coal Co.**, of Wheeling, of which Nick Valentine was president; **Lick Branch Coa Co.**, of Charleston, of which J. D. Wygal was president; **Wheeling's Center Coal Co.** of Uniontown, Pa., of which John T. Robinson of Uniontown, was president. Two companies increased their capital stock about the same time. They were: **Gilbert-Davis Coal Co.**, of Morgantown, of which Ernest H. Gilbert is president, from $500,000 to $1,500,000; **Northland Coal Co.**, of Columbus, of which T. J. Hoffman is president, from $25,000 to $300,000.

Traffic News

The Morton Salt Co., of Chicago, has complained against unreasonable rates on coal from West Virginia mines to Lake ports for trans-shipment by vessel beyond. It asks for a readjustment of rates to all Lake ports in order that Ludington and Port Huron, Mich., shall be protected in the application of the net rates to the ports.

An examiner recommends that rates on smithing coal from Douglas, W. Va., to Iowa, Nebraska and Wisconsin and on coke from Jamison, Pa., to Iowa and Wyoming were not unreasonable.

An examiner recommends that rates during Federal control on intrastate shipments of bituminous coal from mines in the Clinton district and from Ehrmandale, Ind., to Mt. Silica, Ind., were unreasonable.

Complaint has been filed, as of Feb. 26, with the I. C. C., by the **Delaware, Lackawanna & Western R.R. Co.** against Director General Payne, as agent, Docket No. 12854. It is directed against unjust and unreasonable rates on anthracite from Avondale mine to Woodward breaker, a distance of 4.4 miles, during Federal control. The rate challenged was 60c. and exacted from the railroad company as shipper. Reparation is asked.

In a complaint to the I. C. C. the **Seneca Iron & Steel Co.**, and others of Buffalo, allege as unreasonable the rates on coal from the Connellsville, Pa., district to Buffalo and other destinations in New York, because they exceed the rates from the Pittsburgh district.

The Commerce Club of St. Joseph, Mo., complains against unreasonable rates on coal from points in Illinois to St. Joseph.

John A. Merritt & Co., of Pensacola, Fla., alleges unreasonable rates on coal from Acmar, Fla., to Pensacola when compared with rates from Acmar to Mobile and New Orleans; and also complains of discriminatory wharfage and handling charges of 40c. a ton.

The Detroit Coal Exchange alleges unreasonable rates on hard coal from originating points in Pennsylvania to Detroit and Wyandotte, Mich.

Cincinnati shippers intend to continue their fight against the new L. & N. coal rates, from eastern Kentucky fields to Cincinnati despite the fact that the I. C. C. has refused to suspend the new rates. On coal from the mine fields touched by the L. & N. the new rates will mean an increase of 25c. a ton to the Cincinnati consumer.

Personals

Carl A. Wendell, of New York, has been appointed consulting engineer of the Bureau of Mines in matters relating to coal washing and coal preparation. Mr. Wendell will visit several Eastern stations of the bureau, and subsequently will advise with bureau officials as to a program for further development work in investigation and improvement of coal preparation methods.

Arthur Appleyard, superintendent of the mines of the Logan Coal Co. and president of the People's Bank at Beaverdale, Cambria County, Pa., has gone to Mt. Clemens, Mich., where he will remain a month in the hope of benefitting his health, which has not been good for some time.

Paul T. Bearer, comptroller of Cosgrove & Co., Johnstown, Pa., has been elected a director of the Columbia National Fire Insurance Co., whose home office is located in Lansing, Mich. Mr. Bearer succeeds the late **Judge Francis J. O'Connor** of Cambria County.

A. S. Learoyd, assistant to the president, and **E. M. Reynolds**, comptroller, have been elected vice presidents of the Lehigh Coal & Navigation Co.

Percy E. Barbour, assistant secretary of the American Institute of Mining and Metallurgical Engineers, is temporarily incapacitated for duty by sickness.

R. C. Hoard, secretary of the Hazard Coal Operators' Association, is now a married man. He has returned to headquarters in Lexington after spending a honeymoon at Niagara Falls.

T. B. Bryan, general manager of the Elkhorn Steam Collieries Co. at Bramwell, W. Va., spent several days in Cincinnati, going over the trade situation.

J. B. Yates, of Eleanora Mines, Pa., with the Rochester & Pittsburgh Coal & Iron Co., has resigned to accept a position as general superintendent with the Lumsted Mining Co., at Echo, Pa.

A. H. Bannister, mining engineer of Pittsburgh, has been appointed manager of the Northern West Virginia District by the Mancha Storage Battery Locomotive Co.

Arthur McCune has been appointed general superintendent of the Henderson Coal Co. at Canonsburg, Pa.

Paul Weir has recently been appointed chief engineer for the Bell & Zoller Mining Co. at Ziegler, Ill.

Carl Scholz, vice-president and general manager of the Raleigh-Wyoming Coal Co., with headquarters at Charleston, W. Va., was a recent visitor at Parkersburg.

Kuper Hood, sales manager for the Houston Coal Co., has left Cincinnati for a trip abroad. Mrs. Hood accompanied him.

Patterson Schoff, of the Johnstown office of W. A. Marshall & Co., visited the New York office of Marshall & Co. recently.

Howard W. Showalter, of the Diamond Coal Co., accompanied by his wife, has gone to the Trough Club in Hampshire County, W. Va. In the same party was **E. A. Russell** of the Fairmont & Cleveland Coal Co.

A. W. Patton, of the Patton Coal Co. of Fairmont was in Parkersburg for a few days in June visiting his mother.

A party of officials of the Jamison Coal & Coke Co. from Greensburg, Pa., inspected the properties of the company in the Fairmont region about the middle of June. Members of the party included **George B. Taylor**, general manager; **R. E. Jamison**, assistant sales manager; **J. C. Jamison**, general superintendent; **C. E. Cowan**, chief engineer.

Association Activities

Morgantown Coal Club

Members of the coal club at their last meeting held in Morgantown signified their intention of becoming members of the Morgantown Chamber of Commerce and of taking an active part in that organization, such action being taken as the result of any appeal made by Mr. Lyons of the Fuel Corporation of America, who had been asked by the Chamber of Commerce to enlist the cooperation of all coal men in building up the Chamber of Commerce.

A report on what had happened at the meeting of the American Wholesale Coal Association at Washington and what the association was doing to protect the industry from harmful legislation was made by M. L. Taylor of the Morgantown Coal Co., who had been elected a director of the national organization. Mr. Taylor laid stress on the fact that whatever affected the industry also affected other lines of business linked with the industry and he appealed for full cooperation of business men in resisting legislation which sought to single out the coal industry for government regulation.

Upper Potomac Coal Association

An effort is being made by the Coal Association to secure the opening of a road along the Potomac River from Bloomington, Garrett County, Md., to Thomas, W. Va., and with that object in view members held a conference with the county commissioners of Garrett County. If such a road were to be constructed it would prove to be a great developer, it is said. Inasmuch as it would be necessary, in building such a road to bridge the Potomac at several points and enter West Virginia, it is also hoped to enlist the aid of the county authorities in West Virginia. Prior to the meeting with the Garrett County commissioners, directors of the association held a conference at Cumberland with the representatives of the association.

Northeast Kentucky Coal Operators' Association

A meeting of the board of directors of the association was held at Ashland recently, routine business occupying much of the attention of the directors, although a number of executive matters were also taken up for consideration by them. President Cadwalader Jones of Betsey Lane, Ky., presided at the meeting.

Alabama Coal Operators' Association

Frank H. Crockard, president of the Woodward Iron Co., has been elected president of the Alabama Coal Operators' Association for the ensuing term, and Frank Nelson, president of the Bryan Coal Corporation and owner and operator of other coal properties, will serve as vice president. The activities of the association are restricted to matters of efficiency and improvement of facilities for mining coal, safety and first-aid work, and it takes no official cognizance of wage matters or selling prices, this being left to be dealt with by the members as individuals.

Industrial News

Buffalo, N. Y.—The Lake City Coal Co., of Cleveland has opened a branch office here, with J. H. Stacy from the home city as agent. Offices are located in the Prudential Building.

Pittsburgh, Pa.—**A. E. Strouse**, formerly electrical engineer and mine superintendent with the H. C. Frick Coke Co., afterwards in the Government service, has recently opened a consulting office at 1603 Commonwealth Bldg.

Washington, D. C. — The United States Civil Service Commission will hold an open competitive examination on Aug. 3, for coal inspector and sampler, to fill vacancies in the Bureau of Mines, Department of the Interior, for duty in Washington, D. C., or elsewhere, at entrance salaries ranging from $1,200 to $1,800 per year and vacancies in position requiring similar qualifications may be filled from this examination. Applicants should apply at once for Form 1312, to the Civil Service Commission, Washington, D. C., or to the Secretary of the United States Civil Service in principal cities.

Obituary

Benjamin Nicoll, head of the firm of B. Nicoll, & Co., New York City, died suddenly after his return from the Dempsey-Carpentier fight. The death, presumably due to apoplexy, was entirely unexpected.

John Barnes, Jr., prominent coal operator of Philipsburg, Centre County, Pa., died recently. He was 42 years of age and was a member of the firm of Atherton & Barnes, coal operators, and treasurer of the Williams Grove Brick Co. of Bigler. His father and uncle were prominent pioneer coal operators in central Pennsylvania.

Caleb E. Long, of Philipsburg, Pa., and an extensive coal operator and prospector, died recently, death being caused by paralysis with which he was stricken a short time before. He was born in England and came to America when a child and settled in Philipsburg.

Denis Mortfield, a member of the commission appointed by Governor Frank O. Lowden of Illinois, to investigate mining conditions, died recently at a DuQuoin hospital. He was well known in mining circles.

Coming Meetings

The Huntington Coal and Industrial Exposition will be held in the Chamber of Commerce Building, Huntington, W. Va., Sept. 19 to 24 incl. Chairman of committee, Thomas A. Palmer, Huntington Chamber of Commerce, Huntington.

American Institute of Mining and Metallurgical Engineers will meet at Wilkes-Barre, Pa., Sept. 12 to 17. Secretary Bradley Stoughton, 29 West 39th St., New York City.

National Association of Cost Accountants will hold its annual convention at Cleveland, Ohio, Sept. 14, 15 and 16. Secretary, S. C. McLeod, 130 West 42d St., New York.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The twenty-fourth annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

The West Virginia-Kentucky Association of Mine, Mechanical, and Electrical Engineers will hold its annual meeting at Huntington, W. Va., on Sept. 20 to 23. Secretary-treasurer, Herbert Smith, Huntington, W. Va.

The following first-aid meets will be held during August: The Davis Coal & Coke Co., first-aid and mine rescue meet at Thomas, W. Va., on the 3rd. The State of Iowa will hold its annual first-aid and mine-rescue meet on the 6th at Albia. At Birmingham, Ala., state first-aid and mine-rescue meet on the 6th. On the 20th a state first-aid and mine-rescue meet will be held at Charleston, W. Va. Under the auspices of the Colorado Fuel & Iron Co. a local first-aid and mine-rescue meet will be held at Pueblo, Col., on the 20th.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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Omens of Summer

DISCUSSION in the trade has veered from prospects of regulation to prospects for business. Nothing is doing in coal—no orders, mines idle—yet production of soft coal is better than 7,000,000 net tons per week and hard coal is crowding past high records. Somebody is buying coal—that 7,000,000 tons a week is not being dumped by the roadside. A business that is producing each week 55 per cent of the highest single week of its history and nearly 70 per cent of the average for 1920 is not dead by any manner of means. It has much for which to be thankful.

Everyone is theorizing and prophesying, and though we are inclined to dodge both because both are somewhat in disrepute with the practical man, the weather is hot and our venture here will be lazily read and soon forgotten. It is, of course, essential to resort to statistics; everyone does and they are hardy. Production of bituminous coal is behind schedule, as measured by the performance of recent years; in fact, we must go back to 1914 and 1915 to find as poor a showing for the first six months. With but 196,000,000 tons in the first six months of this year we find 205,000,000 tons in the same period of 1914 and 193,000,000 tons in 1915. Compared with these figures are 226,000,000 in 1913, 214,000,000 in 1919 (a poor year in the early months) and 258,000,000 tons last year. All of which means that if we do not pick up speed, some 400,000,000 tons will be the year's total, than which the country has used more every year since 1909.

It does not seem possible that the country has backslid so far, that the United States is in such a comatose condition that the showers of another spring are needed to revive it. Most people prefer not to so believe. On every hand we are told by eminent authorities that the country has "turned the corner," "business is again on the upgrade," "liquidation has practically been completed." Because before long the railroads are to have $500,000,000 to spend (or pay their debts) some say orders for steel and hence orders for coal will blossom out in August. Others point to the seasonal fall and winter demand for coal as an inevitable harbinger of better prices, and in the meantime twiddle their thumbs.

Some consumers are loading up their storage piles with coal that some producers are selling them at less than cost of production, other consumers are burning up last year's high-priced coal pile and playing a waiting game for lower-cost coal this year, which assuredly will not come unless union miners' wages come down. The country over, stocks of coal, both soft and hard, are not less than three months ago, and in some sections, particularly New England and the Northwest, the stocks are greater by considerable than earlier this year or than at this time last year. In view of this can there be a coal shortage?—and fancy prices? By defining shortage as a condition under which the consumer demands more coal than the railroads can currently transport and the evidence of a shortage the offering by the consumer of prices well above that for which the shipper is now willing to sell coal, we find that there can—and will—be a shortage of bituminous coal if and when business revives sufficiently to call forth an output greater than 10,000,000 tons a week.

It does not appear that the months of July and August will bring the total output for the calendar year to more than 270,000,000 tons. Prophets are all stuck when it comes to guessing what will be required to round out the year, but it may be observed that with 270,000,000 tons behind, 10,000,000 tons a week for the eighteen weeks after Labor Day would raise the figure to but 450,000,00 tons. The coal industry has been sitting on one leg so long that when it starts to walk briskly again that sleepy leg will make it limp for a while. The railroads have so many rusty joints from enforced idleness that there will be much grief before the record movements of a year ago can be approached. Business in coal will be good when we get to 10,000,000 tons a week.

How Alabama Coal Meets the Public

LAST year, when coal was in short supply and prices high, regulation was in the air. At almost every turn there were demands that laws be passed taking control of prices and regulating distribution. These ideas were not confined to Washington and the national Congress and administration but were rampant in state Legislatures and with state officials. Indiana passed a law that caused much grief both to those who sought to administer it and to the coal men in that state.

What happened in Alabama has been chronicled in these columns before and we would now but recall that by co-operating with the Governor the coal producers in that state found a way to meet the public clamor, to satisfy the state officials and to save the local coal industry from regulation.

There is every reason to believe that both sides were fully satisfied with the arrangement of last year because it is being continued this year. The coal industry of Alabama is in no danger of local regulation because the industry is maintaining proper public relations. The largest element in such a program of proper public relations is to recognize that what stirs public clamor is not high prices of coal *per se* but the belief that the prices are extortionate. Conditions in Alabama this year have operated to make the prices on many grades of domestic coal very high by comparison with previous years and by comparison with prices of steam coals from the same field now. It may readily be appreciated that such a condition tends to produce unrest among household buyers of coal.

Recognizing the public interest in the question and the fairness of public opinion when fully informed, the

coal operators of Alabama this year took a leaf from last year's experience and have again gone before the people with their story. A year ago they met the situation by working with the Governor and State Fuel Administrator, giving facts as to costs and full publicity to the prices they were charging at the mines. They went further and provided a means of taking care of all emergency demands for coal, thus answering questions both as to prices and as to supply. They have recently put before the Governor the facts of conditions this year. That official has been shown that the slack demand for steam coal this season has prevented operation at more than about 40 per cent of normal and that this has had a corresponding effect on the output of domestic sizes, because steam and domestic coals are produced and must be shipped simultaneously.

It also has been explained to the Governor and, through him, to the people of Alabama, that the producers of domestic sizes must necessarily sell the resultant steam coal from their mines in competition with the product of mines that is all steam coal and that the steam-coal mines have a very much lower cost of operation. Because of this the prices of domestic coals cannot be lowered as much in comparison with last year as have the prices of steam coals. This is all elementary arithmetic to the coal man everywhere and part of the a b c of the business, but to the ordinary household buyer and consumer it needs considerable elucidation.

To meet the situation the Governor has announced that the state will compile and publish official data showing the prices of coal f.o.b. cars at the mines, freight rates to all the important towns and cities and, furthermore, what in the opinion of the state constitutes a reasonable margin for the retail dealer. Even in the matter of the retailer's margin the Governor is proceeding on figures given him by the trade, for he has a volume of reports from the retail dealers submitted last year and accepted by the state.

Thus each householder in the state who buys Alabama coal may satisfy himself as to whether he is being charged a proper price for coal. Furthermore, he will learn that coal can be had at prices ranging from $3 to $7 per ton. He will learn that, as in purchasing meat or cloths, he can buy coal of varying grades and qualities at prices to suit his family purse. The $3 and $4 coal will keep him warm, but is of ordinary grade; for $6 or $7 a ton he can have a fancy grade, a "luxury" brand, that is higher priced because it costs so much more to mine. The schedule of prices, freight rates and retailers' margins to be published by the state will do something else, for it will give mine prices as scheduled ahead. The prices established by the operators are higher for each succeeding month in much the same way as anthracite prices are graduated to encourage early buying. The widespread publication of present and future prices will do much to assist the householder in making up his mind to buy early and avoid the fall rush.

Perhaps the reader who has followed us this far has seen the similarity of the Alabama plan of forestalling public criticism of coal and of meeting a tangled situation by a fair statement of facts with that of Mr. Hoover for aiding the coal industry in a national way. Senator Frelinghuysen had the same intent and so expressed himself at the second of the conferences with the coal trade in Washington early in June. In Washington, however, there was not such a "meeting of the minds" as it is evident has taken place in Birmingham. Nevertheless we believe that a majority of the men in the coal industry have no desire to deny the public the information about coal that it wishes and that sooner or later this majority will find expression to their desire to co-operate with the Government and the public in meeting the demand for such facts as there can be no warrant for withholding. The straightforward, commendable policy of the Alabama operators is evidence that in the end a policy of reasonableness will triumph over the bitter enders so far in the ascendant in the trade during the recent Frelinghuysen episode. Signs are not lacking that the reaction has already set in.

Breakage of Coal in Mine

MUCH attention is being paid to breakage of coal above ground and but little to breakage below. No one seems to be studying the matter of degradation of coal underground. No figures have been published —perhaps none have been obtained—as to the quantities of each size of coal derivable from wide or narrow rooms or headings, from wide pillars or narrow. Yet surely this subject is worthy of consideration.

One of the principal reasons why cutting machines have been installed is that they reduce breakage and so decrease the production of the smaller sizes. Wage differentials rarely are sufficient to encourage their use without this further incentive. However, attention might be paid to the loading machine, which, by being able to lift larger lumps and by dropping the coal only from the end of the conveyor into the car, saves the mine-loader from having to break up the coal to load it and averts the necessity for casting it across the room into the distant car. Some day we may find some way of gently lowering the coal into the car from the conveyor end.

The abolition of the room and pillar, the use of longwall undercutting, the complete control of shot-placing and shotfiring, the utilization of the roof weight to bring down the coal, the general introduction of the loading machine will combine in the future to reduce the amount of slack formed.

Another waste of large coal is on the roadways. The cars are now topped with the bigger coal so as to permit of loading the car above the level of the sides. The result is that when the car is bumped in being coupled or switched it is the lumps that fall off and not the small coal, which is invariably placed in the middle of the car, where it cannot be dislodged. Our roads become filled with the most marketable of our coal. It does not remain of that quality for long, for it is soon broken to the finest slack. Nevertheless at the time it fell to the ground it was the best kind of coal in the car.

Doing away with the uncoupling of cars underground would end much of this loss. Replacing gathering by through locomotives also would help. The use of solid cars would do little, as the bottom-dump car and the end-gate car, in the main, spill only slack through many openings. However, stiffer cars will mean less breakage in transit. There is a certain amount of degradation arising from car distortion and from the consequent movement of lump on lump. This probably is small, however, as compared with the loss due to spillage of the larger coal.

NATALIE CLUBHOUSE, BUILT BY MADEIRA-HILL INTERESTS FOR THE EMPLOYEES OF THEIR ANTHRACITE MINES

Madeira-Hill Interests Open a Community Club House For Employees and Public at the Natalie Mine

Basing Their Plan on the Fact That You Can't Appreciate People You Don't Know, the Colonial Colliery Co. Has Erected a Handsome Building as a Community Center for Men, Women and Children

By Dever C. Ashmead
Kingston, Pa.

IN EVERY business, no matter of what nature, two essentials must be met if it is to be successfully operated. The more important of the two is loyalty on the part of employees, but the square deal on the part of officials which, in large part, creates that loyalty, must never be overlooked. The square deal means more than a strict compliance with even the most elaborate of agreements as to wages and working conditions. The management must show a keen personal interest in the welfare of its men. The rate of pay often has less effect on the attitude of the employed than do other considerations not so direct and tangible.

To obtain the desired results at the mines the living conditions and the environment can never be neglected with safety, for contentment is the chief ally of loyalty. To this end dwellings must be fit to live in and not such as to serve for a bare existence. Though luxury may not be necessary in the construction of the homes, comfort at least is essential.

Comfortable living quarters, however, cover only one phase of the situation, for unless the miners, particularly those of foreign extraction, are taught how to utilize the advantages provided, the expenditure incurred by the company in providing them is wasted. This element in Americanization, as a rule, must be accomplished imperceptibly, so that the recipient will not realize that his tastes and habits are being schooled.

Next to comfortable living quarters probably comes the opportunity for agreeable social life. Without suitable social relations aversion and distrust are likely to take root, and these suspicions may soon turn to hatred. A dislike which begins with the neighbors may end by being visited on the company itself. The miner cannot of himself provide any place where social functions may be held, except, of course, in his own home, and he entertains a natural diffidence about including or attempting to include within his circle of friends those in authority in the company. Furthermore, local officials feel that they should not become overly familiar with their employees, as this may undermine discipline.

As a result various social strata become perceptible at a coal operation. The members of one stratum do not feel at liberty to associate, at least intimately, with those of any others. The opportunity, therefore, of

SOCIAL ROOM—A LARGE APARTMENT, FITTED WITH MISSION FURNITURE AND A LARGE OPEN GRATE
The piano was furnished by the profits of the canteen which has been established by the committee in charge of the club.

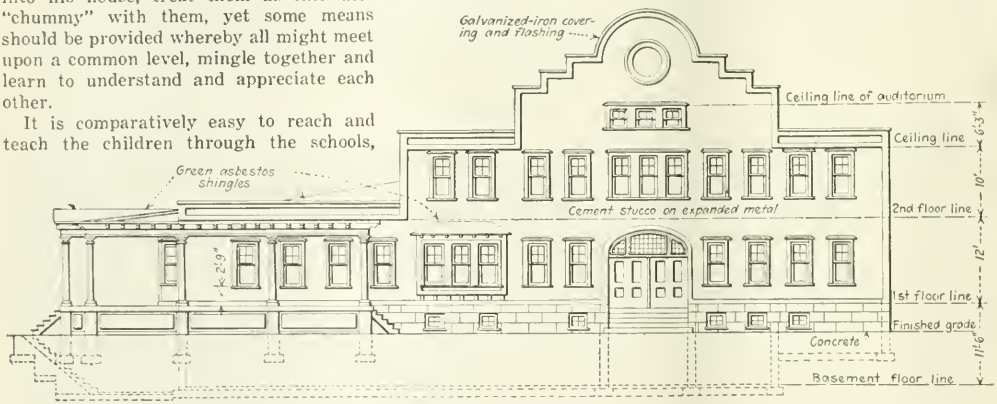
VERANDA WILL BE COVERED BY CLIMBING VINES
The veranda extends down one side and partly across both ends. The walls of the main building are mainly of steel lath covered by stucco.

fully understanding each other is lost or is never presented. While no one would advocate that the superintendent of an operation bring his miners and laborers into his house, treat them as intimates and become "chummy" with them, yet some means should be provided whereby all might meet upon a common level, mingle together and learn to understand and appreciate each other.

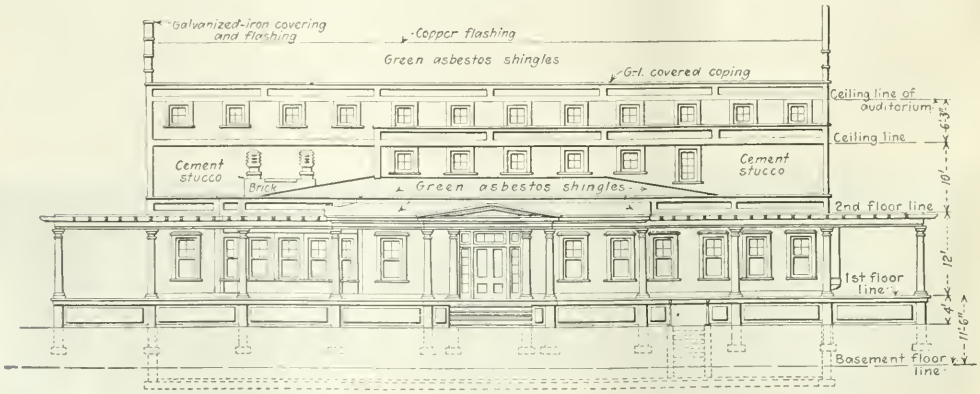
It is comparatively easy to reach and teach the children through the schools, provided the Boards of Education are selected with judgment, which, unfortunately, is not always the case, but the hardest problem is the education of the parents. Many of these were born in foreign lands, their understanding of our language is limited, and they resent direct approach. Thus the best way to bring about a mutual understanding is through a commingling of all elements in some public place where all are in quest of diversion. Various means are available for providing a suitable place for social gatherings. That adopted by the Madeira-Hill Co. at the plant of its subsidiary, the Colonial Colliery Co., at Natalie, Pa., has proved highly efficacious and accordingly will be described.

Women Workers Source of Community Spirit

Soon after the close of the war this company obtained the services of Miss Colby, who had served in France and been decorated with the Croix de Guerre. She was assisted by Miss Francis, who had likewise seen foreign service. Miss Francis has returned to the Foreign Service and is now with the American troops in Germany, and a Miss Howard who has also seen foreign service, is taking up her work. At first the work of these women consisted in gaining the confidence

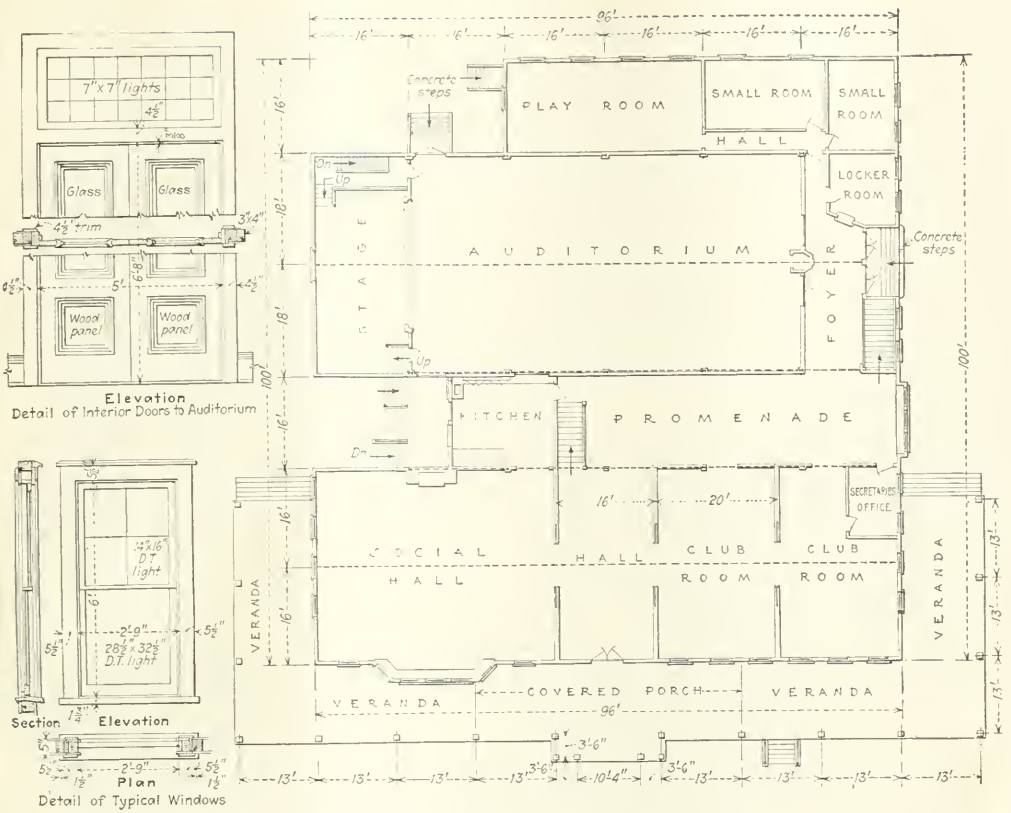


Auditorium Front Elevation



Veranda Front Elevation

TWO VIEWS OF THE CLUB HOUSE—ONE FROM THE FRONT AND ONE FROM THE VERANDA SIDE
The auditorium goes from the main floor through the second floor to a point more than six feet higher, making a high room which will be fresh and airy even on a hot day. It is to accommodate this lofty room that the building reaches its highest point to the right of the center.



MAIN FLOOR PLAN, NATALIE CLUB HOUSE

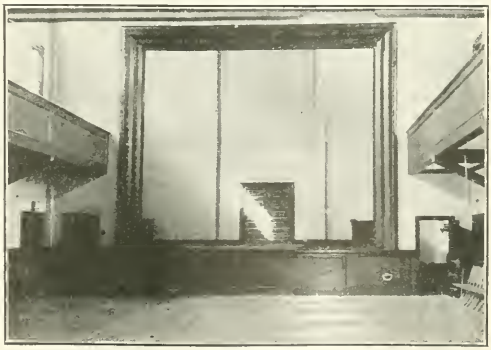
The building measures 96 x 100 ft., not including the spacious porch which runs down one whole side and part of the front and rear and, being 12 ft. wide, adds considerably to the floor space of the building. The small room in the upper right-hand corner is at present used as a library.

and friendship of the people and studying their needs. It was then decided that a club should be formed consisting mainly of the people of Natalie. A club house was designed and redesigned several times before work upon it was finally begun. The work is being done under the auspices of the Pottsville branch of the Young Men's Christian Association.

This building is of simple architectural style but of highly attractive design and was erected at much expense. It is constructed chiefly of steel with walls of Hyrib lath covered with stucco. The main entrance opens into a wide hall on the left of which is a coat room. Directly beyond the entrance is an auditorium capable of seating 600 people. A balcony traverses three sides of this room and at one end a large stage is provided where entertainments may be held. The auditorium is so arranged that basket- and volley-ball may be played in it. The main floor as well as all others is of hardwood, varnished and waxed.

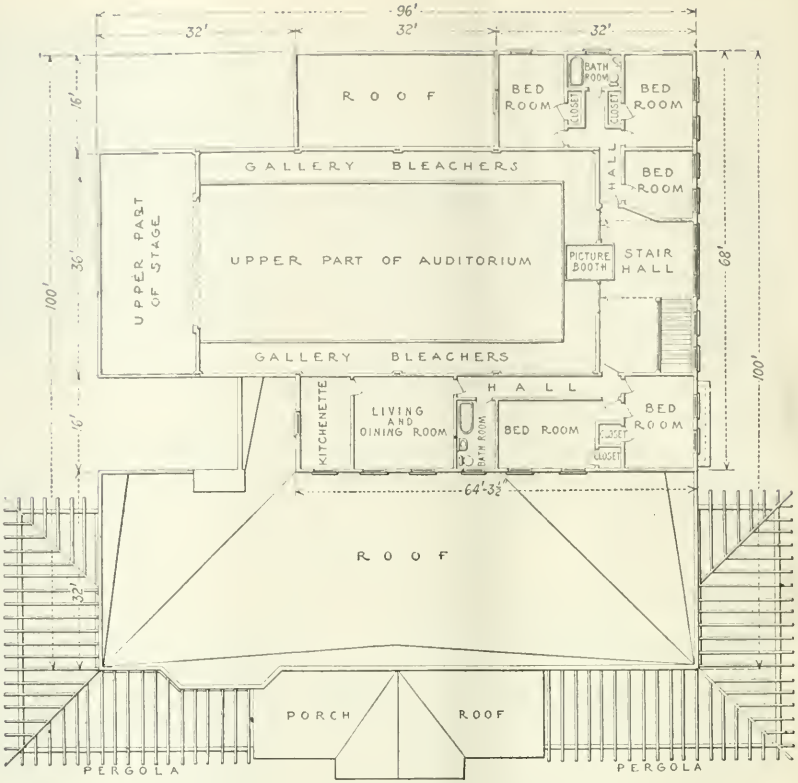
To the left of the cloak room is a library containing about 1,000 volumes, in the rear of which, alongside the building, is the reading room, which is furnished with current magazines. These, by the way, are selected by the men themselves and embrace such well-known popular and technical publications as *Scribner's, Harper's, The Outlook, Saturday Evening Post, The New Republic, Coal Age, Power, Electrical World, American Machinist,* and the like.

In the rear of the reading room is a children's playroom, which will be fitted up next autumn as a kindergarten. At present it is used as a canteen. This is



AUDITORIUM WILL SEAT SIX HUNDRED PERSONS

This includes, of course, the number that the balcony, which is on three sides of the hall, will accommodate. This room will be used also for basket and volley ball.



Second Floor Plan

This floor consists mainly of the auditorium and flies of the stage and of the rooms occupied by the managing staff of the building. The gallery bleachers afford seats to those who wish, as on the opening day, to view games of volley ball given in the auditorium below. The accommodation for the staff includes five bedrooms, one living and dining room and two bathrooms. Note the pergola which covers most of the porch in the lower story, giving it light and, when furnished with vines, beauty also. However, a small part of the porch is roofed and thus available in stormy weather.

run by the men. On the opposite side of the main entrance is the office, in rear of which is the boys' gameroom, where all sorts of games are provided. In the rear of the office also is the men's gameroom. The main hall passes from the front entrance alongside the auditorium, past the men's gameroom and leads to the side entrance. Across the hall from the men's gameroom is the large social parlor with its immense fireplace. On the balcony floor is a sewing room and on the right side of the auditorium upstairs is the apartment for the secretaries, while on the opposite side are located several rooms for the accommodation of visitors.

Between the social parlor and the auditorium is a large and complete kitchen equipped with a hotel range. The arrangements are such that it is possible to pass eatables and beverages directly from the kitchen to the auditorium. A billiard room is located in the basement. This is now provided with four tables for pocket billiards. Space in this room is also provided for bowling alleys. It occupies about one-half the basement, the remainder being taken up by a children's playroom and by shower baths and locker rooms for both men and women. The children's room will later be furnished with some gymnasium apparatus, at least with that portion of this equipment that can be fastened to the wall. The larger pieces of this apparatus will be so arranged in the auditorium that they can be quickly removed.

Throughout, the building interior is artistically decorated and substantially but plainly furnished. As a whole this structure is of better design and is better equipped than many country clubs to be found near large cities. A wide veranda extends down one side of the building and partly across both ends. The grounds have not as yet been finished, but the work so far completed indicates that they will be highly attractive. Tennis courts soon will be provided, so that both outdoor and indoor recreation may be indulged in by club members.

As the official opening in this building did not take place until June 4 it is somewhat early to predict the exact nature and scope of the results to be attained. What has already transpired, however, seems to point unmistakably in the right direction. Thus in the first three days of the campaign for membership every family in Natalie with the exception of three put in its application to join the club, and a large majority had paid their dues for the coming year. Not only are the people of Natalie joining the organization but also those residing in Marion Heights, a mile away, are seeking admission. The men in a spirit of good fellowship that shows that they are "good sportsmen" are determined to do their part in making a success of the new development in which the company has expended so much money.

The major part of the effort to teach the foreigners will be through the children. By teaching the children and young people, cleanliness, neatness, their duties to their neighbors, love of country and sportsmanship,

these children will carry home these thoughts to their parents who cannot but see the advantages to be gained by adopting them and thereby becoming better members of the community and country.

The vehicles by which the children will be reached will be clubs of various kinds. Some of these clubs are already national in their scope such as the Girl Scouts, and the Boy Scouts, the Brownies for the little tots, the Natalie Marines for the boys; sewing societies, and musical clubs.

The club house will also be used as a meeting place for general organization meetings for the company and the house and surrounding grounds will be used for first-aid contests and company outings.

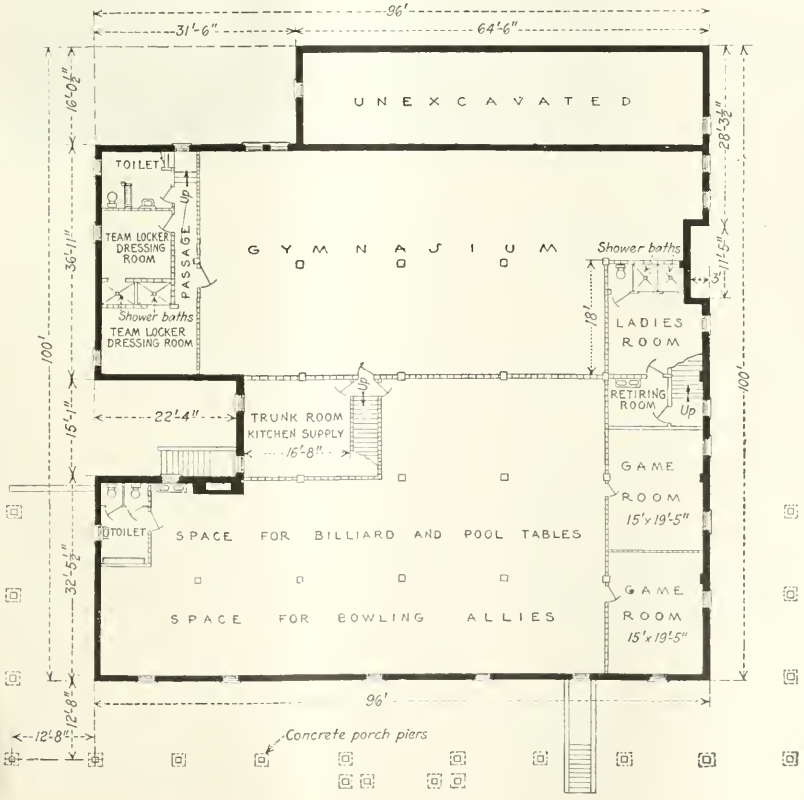
Efforts to establish this club are not altogether one-sided. Thus far the men themselves have purchased and paid for, or agreed to pay for, equipment costing $1,400. This covers the piano, which was purchased outright, as well as various minor items procured in the same manner. The only pieces of equipment that have not been paid for in cash are the pool tables. To purchase these, money was borrowed by the committee, and in order to repay it the men have established the canteen already referred to. This is open every evening and dispenses ice cream, candy, cigars, cigarettes and the like. The profit obtained from the sale of these items goes into the fund for the tables.

Although the club is hardly under way yet a difference in the relations existing between the men has already been noticed. In the younger generation also a marked change for the better is perceptible. The boys at play are much less prone to wrangle over their games and more frequently accept without question the decision of the umpire. No lesson is harder to learn than that no one can win all the time and that to accept without bitterness a verdict or outcome that is unfavorable is to acquit oneself as a good citizen. This is the training of a well-conducted gameroom and one of the assets which the Natalie club house should afford.

Town Has Macadam Walks, Street Lighting

At Natalie can be seen the evolution of the mining village. In the beginning there was the old-time house which now, fortunately, in most mining communities is chiefly a memory. It was nothing more than a one-story shack with two or three rooms but housing a family of ten or twelve people.

The next step in house construction was a rough-boarded two-story building with extremely meager yard room. No conveniences, as we now understand that term, were to be found in these houses. Today the main street of the town lies between dwellings of two general types. The first is a small clapboarded single house of attractive design. The other is double with a small front and large back yard. All are provided with electric lights, well-equipped kitchen, a bathroom and running water, while some are heated by steam. All in all these dwellings, which are kept well painted,



Basement Plan

Showing gymnasium, bowling-alley and pool-table space. As the building is on a somewhat steep side hill, the basement is not set much below the ground. The gymnasium occupies about the same space as the auditorium above it. The auditorium is to be used for motion pictures, the booth being placed at the rear of the gallery which is located on either side and in the rear of the big room.

show a decided contrast to those first mentioned. Not only have better dwellings been built but a sewer system has been installed, the streets have been macadamized, sidewalks built, electric lights placed at every corner, and the fences and houses alike are kept in good repair.

And what does all this mean? By rendering life in a mining community worth while, by teaching the aliens there resident not accustomed to our manners and usages the use and enjoyment of our conveniences; by providing means for social intercourse between all grades of society, not only is loyalty for the company encouraged but the employee of foreign birth or extraction acquires a love and respect for the country of his adoption.

Few indeed are the individuals who really dislike or who can long harbor an insurmountable antipathy to a person they know well and understand thoroughly. Many of the discords of the past, regardless of whether they have been industrial, national or international, can be traced directly or indirectly to a lack of understanding. When employees and company officials mingle together in the field of sport they learn to understand and respect each other. The industrial imbroglios that have characterized the past will thus be lacking in the future.

The Colonial Colliery Co. has been unusually successful in creating the right spirit between employer and employee. In three years it has had only one case before the Board of Conciliation. This is a testimony to the presence at its collieries of that square deal which is the basis of good management and that loyalty which flows from an adherence to this principle.

Natalie as It Was

An unredeemed stony batter with slab and stump fences, huts and two-story shacks rough-boarded and unpainted. The roads are trails and enough stone lies on the top of the ground to put foundations under a whole village. The three-room huts represent the early construction.

The New Natalie

Main Street of village. On the left are two of the most recent houses, which are clapboarded, painted, electrically lighted and furnished with baths. Some are steam heated. All have picket fences. The road is being macadamized and an electric lamp lights the street.

Doubt Thrown on Protection Coal Dust Affords Against Tuberculosis

DR. R. M. WILSON, addressing the "Industrial Welfare Society" of Great Britain, an association of doctors engaged in industry representing 6,000 or 7,000 firms, said that Dr. Haldane had suggested that as coal dust was an immunizer against tuberculosis why not take some coal dust and dust it over the rock dust in mines that contain siliceous material. The plan thus advocated had been tried and found successful. With the coal dust in the lungs of the workers they were protected against the irritating siliceous dust. Dr. E. L. Collis, of Cardiff, in discussing the paper, said that investigations did not justify that opinion. These investigations have not yet been made public, but they showed that miners at the face were the men who were afflicted by tuberculosis and that they were as unfortunate in this respect as other men. Silica had been found, he said, to be an actual poison and its action was chemical and not mechanical.

PRESIDENT HARDING'S APPROVAL of the army bill carrying appropriations for the year which began July 1 made those funds available. Under the law the army is limited this year to $5,250,000 for the purchase of fuel, but in addition the West Point Military Academy is given $85,000 for fuel. The bill also authorizes contracts for fuel in advance of the appropriation for a single year in the following proviso: "That hereafter when in the opinion of the Secretary of War it is in the interest of the United States so to do, he is authorized to enter into contracts and to incur obligations for fuel in sufficient quantities to meet the requirements for one year without regard to the current fiscal year, and payments for supplies delivered under such contracts may be made from funds appropriated for the fiscal year in which the contract is made or from funds appropriated or which may be appropriated for such supplies for the ensuing fiscal year."

Origin and Nature of the White Partings in Coal Seams As Illustrated by the Coals of Lancashire, England*

Most of the Iron in American Coal Is Combined with Pyrite — What Little Ash Is Found in Lancashire Coals Consists Largely of Knifeblades of Soluble Carbonates Termed Ankerites—These Oxidize and Break Up the Coal

By F. S. Sinnatt, A. Grounds and F. Bayley†

THE coals of Lancashire, England, usually contain a low percentage of inherent ash. Of the coal in twenty distinct seams recently examined none contained more than 6 per cent of ash, and many had less than 3 per cent. The Bickershaw Yard coal shows as little as 0.8 per cent. The coals greatly vary in their properties, some being practically non-caking and others having varied degrees of coking quality. One, that from the Mountain Mine, probably possesses the highest caking power of any known coal. It yields a perfect metallurgical coke. In distinguishing the coals the names in most common use have been adopted, but it must be recognized that other terms may be applied to the same seams in different localities.

In this paper only the natural inorganic constituents of the seams have been considered. In obtaining the samples every care was taken to have them truly representative. A solid columnar section was taken of the whole seam, the cross-section of which was from 6 to 18 in., according to the ease with which the coal could be handled. The piece of coal was packed in a box and carried to the laboratory for examination.

The present investigation was conducted with the following intent: (1) To determine whether any relationship could be established between the composition of the white partings (ankerites) and the ash produced when the coal is incinerated; (2) to trace, if possible, the source of the carbon dioxide which is evolved when coal is treated with mineral acids, and (3) to investigate the manner in which iron is combined in the coal substance.

American Iron Pyritic; This Iron Ferrous

The last subject is of interest in view of the fact that according to the work of Powell and Parr (Bulletin III., University of Illinois) most of the iron present in certain American coals occurs in the form of pyrites. From the experiments described in the present paper it would appear that a proportion of the iron in Lancashire coals exists in the ferrous state, either in the white partings (or ankerites) or in some other form of combination.

Most coal seams contain a proportion of white inorganic partings, of which no study has been made as far as we can find in the records. It will be seen later that the material may be considered either as substituted calcium carbonate or as dolomitized siderite. The term ankerite, which is the one generally accepted in mineralogy for compounds having a similar constitution, has been used to designate the substance of the white partings.

*Article entitled "The Inorganic Constituents of Coal with Special Reference to Lancashire Seams," published as Bulletin 8 by the Lancashire and Cheshire Coal Research Association.

†Lancashire and Cheshire Coal Research Association.

The ankerites occur in the form of sheets varying in thickness from $\frac{1}{8}$-in. to a mere film, at right angles to the bedding plane and on the face of the coal, but also frequently on the end of the coal. The layer of material may be so thin as to be transparent, and its presence can be detected only by the fact that after being allowed to stand in the air the coal becomes covered with an opalescent film, consisting of oxidized ankerite. When ankerite occurs adjacent to a band of vitrain it is frequently perfectly white in color, though portions which are in contact with clarain or durain are comparatively dark and impregnated with fine coal.

It has been observed that a band of ankerite frequently terminates at a point where a layer of fusain begins. The latter material is of a highly porous nature, and it would appear that the ankerites were deposited from a liquid medium which travelled horizontally along the layer of fusain.

The ankerites form a distinct line of weakness in the coal, and if the latter is treated with dilute mineral acids the lumps disintegrate markedly, owing to the decomposition of these compounds. All the specimens examined contained varying percentages of iron, which were almost entirely in the ferrous condition, and it will be seen from the analyses that certain examples contained a distinct percentage of manganese. Average specimens of the ankerites from a number of seams have been analyzed, and the results are given in Table I.

TABLE I. PERCENTAGE COMPOSITION OF THE WHITE PARTINGS (ANKERITES)

	Lower Mountain Mine	Arley	Ravine Mine	Sapling Mine	Hoo Cannel	Rushy Park	King Mine
Calcium oxide	27 40	28 56	29 94	42 79	30 08	28 76	30 84
Magnesium oxide	13 33	11 51	16 15	0 41	11 18	8 74	5 76
Ferrous oxide	14 56	9 81	4 80	13 07	14 16	16 23	18 42
Manganese oxide		0 82	1 11			0 59	0 31
Carbon dioxide	45 21	41 52	44 35	41 88	44 58	42 46	42 03
Silica		6 05	2 25	1 70		2 45	
Ferric oxide		0 60	0 25	0 17		0 63	
Pyrites		1 11				0 09	2 47
Equivalent to:							
Calcium carbonate	48 93	51 00	53 14	76 41	53 70	51 36	55 08
Magnesium carbonate	28 30	24 07	33 65	0 66	23 48	18 28	12 10
Ferrous carbonate	23 46	15 81	8 40	21 68	22 82	26 18	29 68
Magnesium carbonate		1 35	1 80			0 96	0 50
Calcium sulphate			0 44				
Silica		6 05	2 25	1 70		2 45	
Ferric oxide		0 60	0 25	0 17		0 63	
Pyrites		1 11				0 09	2 47

Specimens of ankerite obtained from the different layers in certain seams differ considerably in composition, the analyses in Table II showing the greatest variation yet encountered.

TABLE II. ANKERITE FROM SEAM 8 FT. THICK

	Top 15 In., per cent	Bottom 7 In., per cent
Silica	0 91	2 25
Calcium carbonate	52 09	53 14
Magnesium carbonate	29 74	33 65
Ferrous carbonate	16 15	8 40
Manganese carbonate	1 41	1 80
Ferric oxide	0 33	0 25
Calcium sulphate	nil	0 44

The compounds undergo oxidation on exposure to air and become covered with reddish-colored ferric compounds. The analyses in Table III show the change in composition which occurred when a specimen of ankerite was exposed to the air in contact with the coal. It should be pointed out that the two specimens of ankerite were of necessity obtained at a slight distance from each other, and some small difference in chemical composition was detected.

TABLE III. SHOWING CHANGE IN ANKERITE AFTER THREE MONTHS

	Sample Freshly Mined, Color White	Sample After Exposure to Air for 12 Weeks, Color—Red
Ferric iron	0 33	0 91
Silica	0 91	0 17
Ferrous oxide	9 29	10 58
Manganese oxide	0 87	1 08
Calcium oxide	29 17	29 31
Magnesium oxide	14 22	13 32
Carbon dioxide	44 67	44 74

As might be expected, the ankerites dissolve freely in water in the presence of carbon dioxide, and the resulting solution rapidly undergoes oxidization in the presence of air, with the precipitation of basic ferric compounds.

Four-Tenths of Ash Was from Ankerite

No accurate method of determining the percentage of ankerites in coal has been elaborated, but an approximate value was obtained for one sample of coal by crushing about 1,000 g. until it would pass through a 4-mesh screen, and by picking out with forceps all the ankerites visible. The coal contained 4.2 per cent of total ash and 3 per cent of ankerite. The equivalent weight of ignited ankerite was 1.7 per cent—i.e., 40.5 per cent of the ash was derived from the ankerite present.

Samples of the coals from which the ankerites described above were obtained were incinerated at a temperature of 900 deg. C., and the ash resulting was analyzed, with the results shown in Table IV.

TABLE IV. PERCENTAGE COMPOSITION OF COAL ASH

	Lower Mountain Mine	Arley	Ravine Mine	Sapling Mine	Hoo Cannel	Rushy Park	King Mine
Silica	40 20	43 21	35 00	38 92	32 98	25 49	29 45
Ferric oxide	25 66	12 38	9 99	48 40	23 34	38 80	26 32
Alumina	25 41	28 47	31 58	3 66	26 86	20 61	29 53
Calcium oxide	3 52	7 12	11 63	5 04	6 88	7 08	5 96
Magnesium oxide	1 98	2 36	2 45	0 50	3 10	3 22	0 11
Sulphur trioxide	2 02	4 30	7 68	0 16	3 04	1 25	1 98
Alkalis and loss	1 21	2 16	1 67	3 30	3 80	3 55	6 65
Percentage of ash in the coal	3.03	3 20	5 20	4 00	24 40	2 40	4 60

A comparison of the results in Table IV shows that the proportion of the various constituents occurring in the ash is not by any means parallel with that found in the ankerites.

The percentage of carbon dioxide evolved when the coals were treated with mineral acids was determined by a method described in Bulletin No. 7 of the Lancashire and Cheshire Coal Research Association, from which the following results are extracted: Mountain Mine, 0.57 per cent carbon dioxide; Arley, 0.18 per cent; Ravine 0.32 per cent; abnormal sample I., 6.85 per cent; Pemberton Two Foot Seam, 0.72 per cent; Garswood Nine Foot Seam, 0.44 per cent; Hoo Cannel, 1.85 per cent; Rushy Park, 0.76 per cent; Lower King, 0.77 per cent; Bickershaw Yard, 0.40 per cent.

It was thought that it might be possible to calculate approximately the proportion of the ankerites in a particular seam by the above determination, but it was found that the percentage of carbon dioxide evolved was in excess of that required to combine with the whole of the bases occurring in the coal as ankerites.

Table V shows the result obtained if the carbon dioxide evolved is assumed to be derived solely from ankerites.

TABLE V. COAL FROM LOWER MOUNTAIN MINE
(Ash = 3.03 per cent. Carbon dioxide = 0 57 per cent)

	Coal Ash Original Analysis (100 g.)	Gross Constituents of Coal Ash in 100 g. of Coal	Ankerite Analysis	Ignited Ankerite Equivalent to CO in 100 g. of Coal g
Silica	40 20	1 218		
Ferrous oxide			14 56	
Ferric oxide	25 66	0 779		0 314
Alumina	25 41	0 770		
Manganese oxide (MnO)				
Calcium oxide	3 52	0 106	27 40	0 533
Magnesium oxide	1 98	0 059	13.33	0 263
Carbon dioxide			45 20	
Sulphur trioxide	2 02	0 061		
Pyrites				
Alkalis and loss	1 21	0 036		

From the consideration of Table V it will be clear that the amount of carbon dioxide evolved when coal is treated with mineral acids is more than sufficient to combine with the bases found in the inorganic constituents of the coal, and must be derived from other sources than ankerites.

Carbon-Dioxide Carbon Should Be Deducted

The source of the carbon dioxide has not been traced with accuracy, but it will be shown later that not only does some of the iron in the ankerites recur as ferrous carbonate but some of the iron in the coal itself is of that nature. The percentage of carbon dioxide, however, is of some interest from an analytical point of view. Unless the amount of carbon occurring as carbon dioxide is deducted from that found by combustion of the coal, the percentage of organic carbon will be too high. The percentage of carbon dioxide should be deducted from the percentage of volatile organic matter, as presumably the whole of the carbon dioxide is evolved at a temperature of about 900 deg. C. In the case of the abnormal sample, the volatile organic matter determined was too high by 6.8 per cent.

N. Simpkin, in collaboration with one of us, is continuing certain phases of the work, and has treated the coals with dilute hydrochloric acid and determined the amount of iron which passes into solution; the total amount of iron present also was found.

It appeared desirable to ascertain what proportion of this iron occurred in the ferrous state, and specimens of the fresh coal were treated with hydrochloric acid (10 per cent) in an atmosphere of carbon dioxide. The excess of coal was removed by filtration in an atmosphere of carbon dioxide, and the amount of iron in the filtrate determined. It was found that the liquid contained a neglibible quantity of iron in the ferric condition. The iron in the ferrous condition was determined by oxidation and subsequent titration with a standardized solution of titanous chloride. As this examination had to be performed on other samples of coal, the results are not exactly parallel with those previously quoted. The preliminary results are, however, strictly comparative, and are given in Table VI.

TABLE VI. FERROUS IRON IN LANCASHIRE COALS

Coal	Total Iron per Cent	Ferrous Iron Extracted by 11 Cl, per Cent	Percentage of Total Iron
Rushy Park	0 494	0 176	35 6
Lower Mountain Mine	1 779	0 535	29 7
Arley	0 612	0 047	7 7
Ravine	1.379	0 205	14 9

The results of the inquiries set forth in the paper are of interest because they show that in coal a distinct percentage of iron is found in the ankerites, the iron being in the ferrous condition and in some other form of combination. It does not necessarily follow that the iron extracted by means of hydrochloric acid is present in the coal in the ferrous condition, as it may have been produced by the action of coal upon ferric compounds. In certain cases distinct oxidation of the ankerites could be detected within a month from the day when the coal was brought from the mine.

From a chemical standpoint it will be of interest to obtain information as to the relative rates of oxidation of ankerites of different compositions, and the effect of this oxidation upon the oxidation of the coal substance and of pyrites. It is not obvious which type will most readily oxidize.

Oxidation obviously produces a change in volume or thickness of the sheets of ankerites, and consequently is a factor contributing toward the disintegration of masses of coal. When coal has been allowed to stand for extended periods, it has been noted that the oxidation of the ankerite sheets extends to a considerable distance into the coal. To the present no direct evidence has been obtained that will show whether the primary heating of coal can be attributed to the presence of ankerites, nor has the effect of manganese, etc., upon the general action of the ankerites been ascertained. However, seeing that ferrous and manganese carbonates have a clearly recognized catalytic action the examination of this subject in the light of the information contained in this paper would appear to be of much interest. It also would appear that carbon dioxide may be an active agent in the oxidation of the compounds.

We have found that ankerites are freely soluble in water containing carbon dioxide and that the resulting solution rapidly undergoes oxidation, with precipitation of the iron in the form of ferric compounds. It is known that coal in the mass evolves carbon dioxide and in the presence of any excess of moisture the conditions are such as to bring about the oxidation of the compounds, with carbon dioxide and water taking part in the reaction.

When coal containing ankerites is burned, bands of residue from the ankerites will remain separate from the inherent ash of the coal, unless the temperature is sufficiently high to fuse the whole mass. The residual material from the ankerites will consist of highly infusible oxides. It would follow that coal which has been broken to a small size will contain the ankerites and siliceous coal ash in more intimate contact than when larger sizes are used.

Analysts make a practice of quoting the color of coal ashes, and it is well known that such ashes consist of a mixture of particles widely different in color. We therefore make it a rule to pulverize coal ashes to a fine powder (200 mesh), so as to obtain an impression of the color as a whole.

Elements of Design for Anchor Bolts of Machines*—II

Devices to Increase Holding Power of Anchor Bolts—Relative Value of Neat Cement, Sulphur and Lead—Air Holes in Cement Make Small Deformations of Bolts Useless—Lengthening Anchors When Raising Foundations

By Terrell Croft
St. Louis, Mo.

An angle-iron anchor plate into which two or more bolts pass or some similar arrangement greatly increases the equivalent adhesion of bolts when they are solidly embedded in concrete. Such an arrangement is shown in Fig. 1. In this illustration one of the holding-down units is a threaded rod and the other a standard machine bolt. While in this case a steel angle constitutes the anchor at their lower ends, any piece of metal long enough to engage the lower extremities of two or more bolts and of sufficient transverse strength could be used instead. This method is particularly useful when foundations cannot be made deep. It can be applied to either concrete, brick or stone masonry, and is used to a considerable extent in structural-steel mill buildings for anchoring columns to their footings.

Cemented-in bolts, Fig. 2, are used where anchor bolts must be set in an existing foundation. To place such a bolt, a round hole, about three times the diameter of the bolt that it receives, is drilled in the masonry at the proper position. Then the bolt is inserted centrally in the hole, and lead, sulphur or cement grout is poured around it. As shown in Table I, cement is the best material for this purpose. Such a bolt, placed in cement grout, should be embedded to a depth equal to at least twenty-five and preferably thirty times its own diameter.

Experiments to determine the relative effectiveness of sulphur, lead and cement in holding a bolt in place in a drillhole were conducted (*American Architect*, p. 105, Vol. XXIV) as follows: Fourteen holes were drilled in a ledge of solid limestone. Seven were $1\frac{3}{8}$ in. in diameter and seven were $1\frac{5}{8}$ in. in diameter. All were $3\frac{1}{2}$ ft. deep. Fourteen bolts, plain at their lower ends and bearing a nut at the upper end, were fastened in the holes as indicated in the table. All the bolts were "ragged" for $3\frac{1}{2}$ ft. at their lower ends. All were permitted to stand until the holding material was two weeks old.

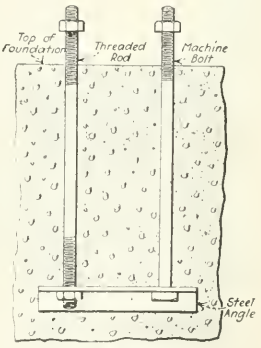


FIG. 1. EMBEDDED ANGLE PLATE INCREASES RESISTANCE TO TENSION

Threaded rods or machine bolts can be used which are passed through holes made in a steel angle.

*Previous article appeared in issue of July 14, pp. 45-51. Copyrighted; all rights reserved by author.

FIG. 2. BOLT EMBEDDED IN COMPLETED FOUNDATION

Lead, sulphur or cement can be used to fill the hole, but cement gives the best results.

They were then pulled with a lever. The results are shown below in Table I.

Although these experiments do not indicate the adhesive strengths of the various materials employed in pounds per square inch, they show conclusively that cement is the best of the three. It is the most reliable and strongest and therefore should be used wherever possible.

It is not necessary that an anchor bolt which is cemented into place shall have a head as has the one shown in Fig. 2. The head greatly increases the resistance that the bolt offers to being pulled out, but, if the bolt be inserted into the concrete a distance of thirty diameters, more than its full safe strength will be developed.

Anchor-bolt holes sometimes are drilled after the machine is in position on the foundation. In some of the mining plants in the West it is the practice to build foundations for machines without anchor bolts or any provision for their insertion. When the machine is received it is mounted on the foundation. The holes for the bolts are then put down with an air drill, the machine bedplate being used for a templet. The holes having been drilled, the bolts are inserted and grouted into place with portland-cement mortar. It is asserted that where power drills are available this is a highly economical and satisfactory method of anchoring a machine.

Threading the end of a plain rod bolt embedded in concrete does not appreciably increase its resistance to withdrawal, the grooves of the threads apparently retaining air, and preventing the concrete or cement from filling them. In fact, it seems altogether possible that a slight deformation of a bolt may decrease its resistance to withdrawal rather than increase it unless the bolt can be deformed. A slight roughening of its surface does not appear to increase its holding power. Cutting "jags" or gashes in the lower end of a bolt, or pounding depressions in it with a hammer apparently have little effect one way or the other.

Cotter anchor bolts sometimes are used, particularly where the diameters involved are large. With such bolts it is sometimes cheaper to cut a slot for a cotter in the end of a rod, as shown in Fig. 3, and make the cotter, than it is to thread the rod and provide the necessary nut. Fig. 4 shows an anchor bolt of this kind complete in position in a foundation with its anchor plate and cotter in place. The proportions of a line of bolts and cotters that have given satisfactory service in practice are shown in Table II.

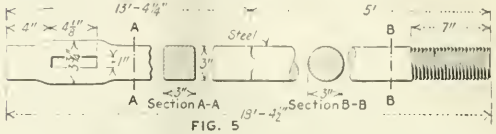


FIG. 5

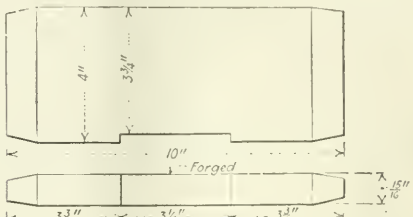


FIG. 6

FIGS. 5 AND 6. SQUARE-ROD BOLT FOR LARGE ENGINE

The head is rounded to receive thread, and the lower end is expanded and slotted for the reception of a cotter.

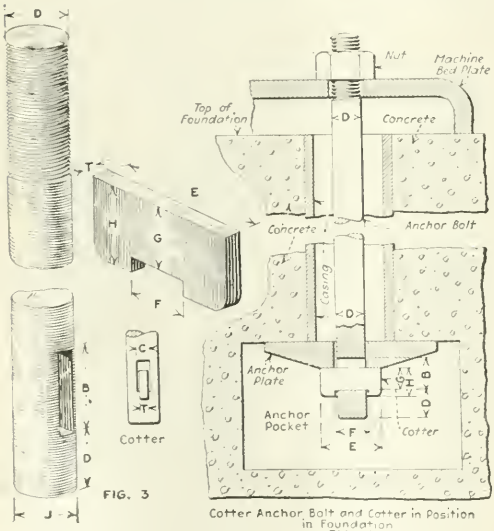


FIG. 3

Cotter Anchor Bolt and Cotter in Position in Foundation

FIG. 4

FIGS. 3 AND 4. ILLUSTRATING TABLE OF SIZES OF COTTER BOLTS

Preferable sizes for all lettered parts are given in Table II.

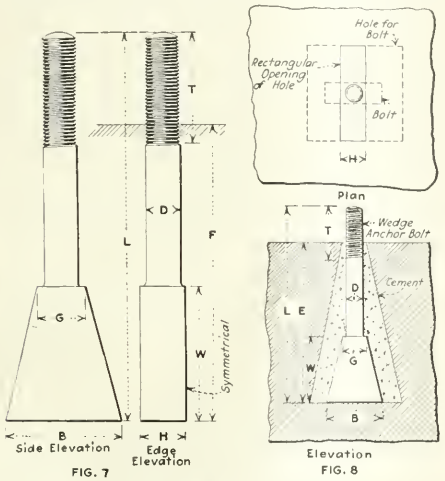
As to the strength, the cottered extremities of the bolts (not having upset ends) proportioned as indicated in Table II up to 2 in. in diameter will have a tensile strength practically equal to that of the bolt itself. For diameters larger than 2 in., cottered ends will have strengths from 10 to 20 per cent less than those of the bolts. If the strength of the cottered end

TABLE I. RESISTANCE TO WITHDRAWAL OFFERED BY BOLTS SET IN SULPHUR, LEAD AND PORTLAND CEMENT

Bolts set in	¾-in. Bolts in 1¼-in. holes	1-in. Bolts in 1½-in holes
Sulphur		
1	Developed full strength, 16,000 lb.	
2	Developed full strength, 16,000 lb.	
3		Pulled out under 12,000 lb.
4		Developed full strength, 31,000 lb.
Lead		
1	Developed full strength, 16,000 lb	
2	Developed full strength, 16,000 lb.	
3		Pulled out under 13,000 lb.
4		Developed full strength, 31,000 lb.
Neat Cement		
1	Broke without pulling out.	
2	Broke without pulling out.	
3	Broke without pulling out.	
4		Broke without pulling out.
5		Broke without pulling out.
6		Commenced to yield at 26,000 lb. but sustained load a few seconds and then broke.

of large bolts must be equal to that of the bolt, the end must be upset accordingly. The reason that the cottered ends of small-diameter bolts have practically the same tensile strengths as the bolts themselves is that the amount of metal removed from the cotter slot is just about equivalent to that removed in cutting threads at the top.

Cotter anchor bolts of square rod can be made as shown in Fig. 5. Anchor bolts of this type have been used extensively in steel mills where only rods of square section are rolled. A cotter like that shown in Fig. 6 is used in the lower end of the bolt to bear against the anchor plate. The original square section of the rod is retained for the major diameter of the bolt at its lower end, but a part of the upper end of the



FIGS. 7 AND 8. WEDGE ANCHOR BOLTS

After the bolt has been lowered into the hole with the greater width of the wedge parallel to the greater length of the opening, it is turned so as to rest in a position athwart the lesser dimension of the top of the hole. It is then grouted into place.

rod is forged to a round section so that it will pass through the circular holes in the machine bedplate and so that it can be threaded.

Wedge anchor bolts have been used to some extent for fastening small machines to existing foundations where no provision was originally made for anchoring. These are applied only where the foundation is shallow, and where sufficient strength cannot be obtained by grouting a bolt in place as shown at Fig. 2. Fig. 7 shows one of these bolts, the dimensions for which are given in Table III. In Fig. 8 is indicated the method of installation.

These bolts are particularly useful where they must be set in a capstone of granite or hard limestone. The hole for each is cut wedgeshaped in the masonry, as shown in Fig. 8, with a stone-mason's chisel. It has a rectangular opening at the top which will admit the flared end of the bolt when this is turned to the proper position. After the bolt is inserted in the hole it is turned until the diverging surfaces of its enlarged end are parallel with the slanting sides of the hole. Then cement or sulphur is poured into the hole around the bolt, completely filling it. It is asserted that when a bolt is installed in this way, provided its proportions are about those indicated in Table III, it will develop its full strength before it can be withdrawn.

Expanding end or "fox tail" bolts are sometimes used as anchors. These are similar in action to the wedged end bolts but may be set in a circular hole. They consist of an ordinary rod threaded at its upper and slit for several inches at its lower end. Into the slit end the point or tip of a suitable wedge is inserted. The bolt thus formed is now placed in the hole that has been drilled for it until the end of the wedge strikes the bottom. It is then driven on down over the wedge by means of a hammer and block of wood or with a club, maul or mallet either of wood, leather, rubber, lead, copper or other soft material. After it has been driven down to place cement grout, lead or sulphur is poured around it and allowed to harden or set. This

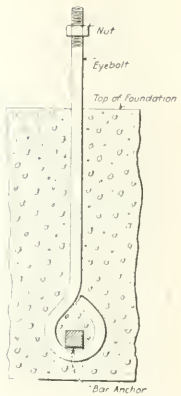


FIG. 9. EYE OR STIRRUP BOLT

A bar passed from eye to eye of adjacent bolts adds to their holding power.

TABLE II. DIMENSIONS OF COTTER ANCHOR BOLTS AND COTTERS

	Bolt		Cotter				
D Diameter of Bolt, Inches	C Width of Slot, Inches	B Length of Slot, Inches	E Length of Cotter, Inches	F Length of Niche, Inches	G Effective Width, Inches	H Overall Width, Inches	*T Thickness of Cotter, Inches
⅝	⅛	2	1½	1/16	⅜	1 1/16	⅛
¾	3/16	1	1⅛	1/16	½	1⅛	1/16
⅞	3/16	1⅛	2⅛	1/16			3/16
1	¼	1½	2½	1/16	1	1 1/16	¼
					1⅛	1⅛	
1	¼	1⅝	3	1/16	1¼	1 5/16	¼
1⅛	5/16	1⅝	3⅛	1½	1⅜	1⅜	5/16
1¼	5/16	1¾	3½	1⅝	1½	1½	5/16
1⅜	⅜	2	4	1¾	1⅝	1⅝	⅜
1½	⅜	2⅛	4⅛	1⅝	1¾	1¾	⅜
1⅝	7/16	2⅛	4⅜	1⅞	2	2	7/16
1¾	7/16	2⅜	4½	1⅞	2	2⅛	7/16
1⅞	7/16	2½	5⅛	1⅞	2⅛	2⅛	7/16
2	½	2⅝	5⅜	2	2⅛	2⅜	½
2	½	2⅝	6	2⅛	2⅜	2⅜	½
2⅛	9/16	3⅛	6⅛	2⅛	2⅜	3	9/16
2	½	3⅛	7⅛	2⅛	3⅛	3⅛	½
2⅜	11/16	3⅜	8⅛	2⅛	3⅜	3⅜	11/16
3	¾	4	9	3⅛	3½	3½	¾
3⅛	13/16	4⅛	9⅛	3⅜	4	4⅛	13/16
3⅜	¾	4⅛	10⅛	3⅜	4⅛	4⅛	¾
3¾	15/16	5	11⅛	3⅜	4⅛	4⅜	15/16
4	1	5⅛	12	4⅛	5	5⅛	1
4⅛	1 1/16	5⅛	12⅛	4⅛	5⅛	5⅜	1 1/16
4⅜	1⅛	6	13⅛	4⅜	5⅛	5⅜	1⅛
4½	1 3/16	6⅛	14⅛	4⅛	6	6⅛	1 3/16
5	1¼	6⅛	15	5⅛	6⅛	6⅜	1¼
5⅛	1 5/16	7	15⅛	5⅛	6⅛	6⅛	1 5/16
5⅛	1⅜	7⅛	16⅛	5⅛	6⅛	7⅛	1⅜
5⅜	1 7/16	7⅛	17⅛	5⅛	7⅛	7⅛	1 7/16
6	1½	7⅛	18	6⅛	7⅛	7⅛	1½

*The cotter must actually be a trifle thinner than the dimensions shown in this column, so that it will fit into the slot C.

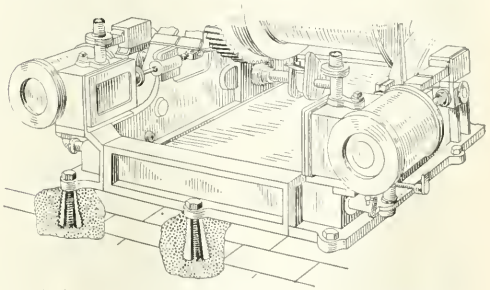


FIG. 10. EXPANSION ANCHORS ON HOIST BED

The lag screws turn into expansion anchors, spreading them so as to give a wedge grip. See Fig. 11.

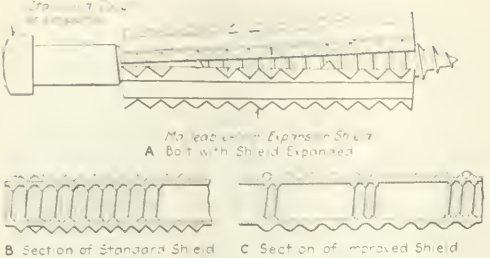


FIG. 11. MALLEABLE-IRON EXPANSION SHIELD
The improved shield (C) permits lag screws of slightly varying pitch to be used satisfactorily.

type of bolt makes an anchor of great holding power that may be inserted directly through the bedplate if necessary.

Stirrup anchor bolts, Fig. 9, are in reality merely a type of deformed bolts. They can be used to good advantage under the same conditions as those to which deformed bolts are suited. However, a bar anchor can be placed through the eyes of a series of stirrup bolts that are set in line. This increases the resistance to withdrawal of every bolt in the series. Furthermore, the bar lying in the eyes of the bolts maintains their lower ends in proper alignment and tends to keep them all in a vertical position while the concrete is being poured. The bar running through the eyes may be of round or square iron, or it may be a length of wrought iron pipe, a small T-rail or some other shape.

Expansion anchors, as shown in Fig. 10, are sometimes used where the bolts will not be subjected to severe stresses. These are applied where it is necessary to secure a machine bedplate to existing masonry. An expansion anchor consists, as shown in Fig. 11, of two shell-shaped castings with threads on their inner surfaces so proportioned that a lag screw, when turned down into the shells which previously have been placed in the hole, will push them apart and cause them to grip the sides of the hole. These anchors take a firm grip on soft masonry like brick work, but for concrete or hard stone the expansion bolts described later are preferable.

Two kinds of expansion shields are on the market, as shown in Fig. 11 at *B* and *C*. That of *B* will engage accurately coach or lag screws of only one pitch. Inasmuch as the various manufacturers of such screws have adopted pitches somewhat different (that is, number of threads per inch) for the same diameter of screw, shields made like that of Fig. 11B cannot be depended upon to fit any lag screws that may be purchased. If shields like those shown at *C* are used, however, lag screws of any pitch ordinarily employed will engage them. It is desirable, of course, when purchasing expansion shields, to obtain those that any lag screw will actuate.

Expansion bolts (Figs. 12 and 13) are used to meet

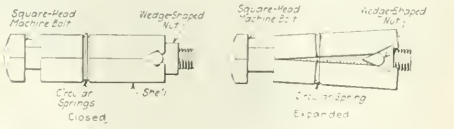


FIG. 12. SINGLE-SPREAD TYPE OF EXPANSION BOLT
The wedge-shaped nut opens up the jaws at one end of the shield, being resisted by circular springs.

TABLE III. DIMENSIONS OF WEDGE ANCHOR BOLTS

D Nominal Diameter of Bolts, Inches	E Minimum Length in Foundation, Inches	T Length of Thread, Inches	W Length of Wedge, Inches	B Base of Wedge, Inches	G Top of Wedge, Inches	H Thickness of Wedge, Inches
½	5	1½	2½	1½	⅜	⅜
⅝	6	1½	2½	1½	⅜	⅜
¾	7	2½	3	2¼	½	½
⅞	8	2½	3½	2½	1	1
1	9	3	3½	3	1⅛	1⅛
1¼	12	3½	5	4	1½	1½
1½	13½	4½	5½	4½	1⅝	1⅝

conditions similar to those for which expansion anchors may be applied. Such bolts, however, appear to hold better in hard masonry. If they are of sufficient length and properly installed, they effectively sustain static loads. They cannot, as a rule, be depended upon to resist vibrating or reversing stresses. Fig. 14 illustrates the principle and the method of installation of expansion bolts. A hole of a diameter just sufficient to admit the anchor is drilled in existing masonry, and into this the anchor is inserted. The bedplate of the machine is next put in place, so that the hole in the bedplate and the hole in the anchor already in the masonry are in line. The bolt is next turned down into the anchor, and as it is revolved a wedge-shaped nut is drawn along the bolt. As the nut is moved it thrusts the two shields of the anchor apart, as shown at *B*, Fig. 14. A small circular spring normally holds the two shields of the anchor loosely together.

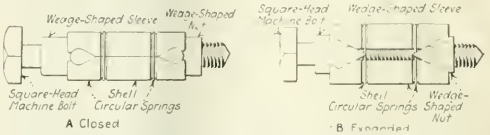


FIG. 13. DOUBLE-SPREAD TYPE OF EXPANSION BOLT
By having two wedges which approach each on turning the bolt, the shield is spread so as to give it a large diameter such as will afford a big shearing area to resist removal.

Two types of expansion bolts similar to that just described are procurable: The single-expansion (Fig. 12), and the double-expansion types (Fig. 13). In the single-expansion type only the lower ends of the anchor shields are thrust outward by the bolt. With the double-expansion type, however (Fig. 13), the two shields are thrust apart equally at both top and bottom. They thus always lie approximately parallel with each other and secure a better and more even grip. The double bolts are used particularly for brick and cement work and are approved by government engineers.

The wedge used on all these expansion bolts is pear-shaped and bears notches into which projections on the shields fit. This device prevents the parts of the shields from becoming separated and lost, and maintains the nut in position while the bolt is catching its thread. The diameter of an expansion bolt is understood to be the diameter of the bolt itself and not that of the outside of the shield or of the expanding parts.

The length of a bolt of this kind required for any particular installation may be ascertained by adding together (1) the thickness of the bedplate, (2) the thickness of the grout, (3) the length of the shield. The standard lengths of these shields for the different diameter bolts may be found in manufacturers' catalogs.

The holding power of expansion anchors and expansion shields is a quantity difficult to determine accurately, because to a great extent the method of installation determines this quantity. If maximum

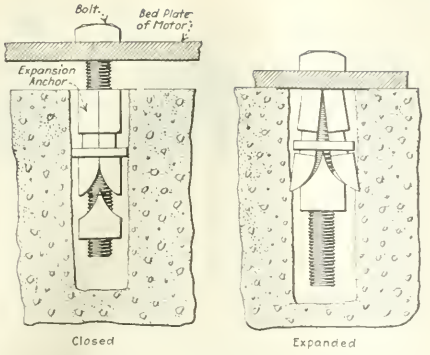


FIG. 14. SINGLE-SPREAD ANCHOR BOLT IN POSITION

The lag screw can be turned till the shield grips the sides of the hole tightly. When the grouting sets a firm hold is assured.

strength is to be attained, the hole for an anchor or shield should always be of such a diameter that it will just receive the shield. Furthermore, if possible, the hole should be slightly greater in diameter at the lower end than at the orifice. Under these circumstances if a bolt of the proper length is employed and is screwed up tight, experience has indicated that the masonry if of the nature of brickwork will fail before the bolt will break or be withdrawn.

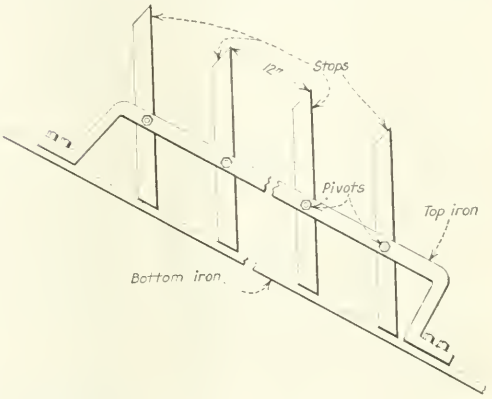
In ordinary rubble such as that built from field stone, the shield being set in the stone and not in the mortar or cement and properly embedded as above suggested, the weak member probably will be the nut on the bolt. The threads on the nuts are apt to strip if extreme tension be applied to the head of the bolt. The same conditions, of course, obtain in the case of any hard stone, such as granite. It frequently occurs, however, that such an expansion bolt, anchor and all, will pull out of a hole in hard stone before the threads strip. This condition arises from an improper setting of the bolt.

Pivoted Iron Bars Protect Cars on Grade

MANY have been the devices to arrest or stop the movement of runaway cars upon inclined pieces of track. The drag on the end of the car and the beam heavier at one end than at the other and so pivoted as to be depressed by the car passing over it, to return to normal position after its passage, are familiar forms.

The Diamond Coal & Coke Co. at its Diamond mine, near Brownsville, on a short but steep grade up which cars are drawn by a chain haul has installed a modification of the pivoted-beam stop. The grade is here so steep that should a car slip from the grip of the dog it might cause appreciable damage if its movement were not promptly arrested. A series of slanting iron bars each ½ x 2 in. in section are pivoted in a frame made by strap iron of the same size of stock. This frame, as may be seen in the accompanying illustration, is D-shaped, the front member of the D being bolted to the floor. The bars are so set that when standing in normal position their tops will engage the car axles.

Cars moving up the slope depress these bars in succession, returning to normal or operating position after



MODIFIED PIVOTED-BEAM STOP FOR RUNAWAY CARS

the car axle has gone by. As these hinged bars are placed one foot apart the greatest distance that a car could travel backward, should it break away from the chain dog, would be small. The safety of the equipment and the men working around it is thus assured.

Would It Pay to Stock Screenings at the Mine Until Market Improves?

THERE is much interesting discussion just now relative to a need for a better method of mining and marketing coal in eastern Kentucky. In producing prepared sizes, the operators frequently have trouble in disposing of screenings, especially when the industrial demand for steam coal is poor.

During recent weeks Hazard screenings have been quoted down to 80c. a ton at the mines, the producers having to dispose of them at any price to keep demurrage from eating up the value of the coal. Such conditions naturally force down the market on all screenings in that and neighboring fields, even when the latter have no excess production of screenings, and it also makes for a weak market on mine-run.

It has been suggested that the producers, instead of loading their screenings out on a weak market when there is no demand to speak of for steam coal, put in conveyors and concrete bins with chutes, so that the fine coal be conveyed from tipple directly to these bins, from which it could be later chuted into cars when there was a demand for steam coal.

There are, of course, several objections to the idea—first, that it would take a good deal of money, to install the concrete work necessary, or if the coal was just dumped above ground, it would mean an outlay of $15,000 to $20,000 for a locomotive crane to again pick it up and load it, and additional expense for conveyors. Of course, this would be offset by a better market at time of selling, but another drawback is that when there is a good market for coal, there generally is a shortage of cars in which to load it, and the mine has trouble enough in obtaining cars for its daily output of higher grades or straight mine run.

Screenings sold for $8 to $9 a ton a year ago, and, while there is not much prospect of another high market like that of last year, there should be some more good markets for screenings, when the present slump is past. It would seem, therefore, that the larger producing companies could afford to put in the necessary equipment for stocking screenings as it would eventually yield paying returns on the investment.

Problems of Operating Men

Edited by James T. Beard

What a Mine Superintendent Should Be and Know

The Mine Superintendent Should Be Four-Square, Know Himself as Others Know Him; Take Inventory of His Qualities and Measure Himself by Others' Standards

WE HAVE been reading much in *Coal Age* on the question of what constitutes an efficient mine foreman. It goes without saying that if ever a mine foreman is found who possesses the multifarious qualifications that have been described as his requirements he would make a good subject for a dime museum.

Be that as it may, I have come to think that the honest, hard working mine foreman has had his share of the limelight and that the subject might now well be changed and the question asked, What constitutes an efficient mine superintendent?

My appeal is to mine foremen, whose weaknesses and shortcomings have been so profusely displayed and whose aptness to imitate rather than to initiate, ruthlessly held up to view, giving these as reasons for the assumed failures of foremen to make good; speak up now, men, and let it be known what is your estimate of a worthwhile mine superintendent.

The Foreman Knows His Superintendent

No one knows the superintendent of a mine better than the foreman who is in daily touch with his qualities and achievements. He has come to understand where the superintendent is weak and what are his shortcomings. It is not strange, therefore, that the picture many a mine foreman can draw of his superintendent would cause the latter to sit up and take notice.

A wise superintendent would at once measure himself by the standards of others, take inventory of his qualities and put them to the highest possible use. It is well known, if frankly admitted, that the efficiency or inefficiency of a foreman is the exact counterpart of the same qualities in his superintendent.

After all, we must admit that our state mining laws are largely at fault. They compel a mine foreman to hold a certificate of competency obtained by passing an examination before a competent board of examiners. At the same time, the law makes no such requirement regarding the mine superintendent, who directs and to a large extent controls the work in charge of the foreman.

This being true, it is clear that if any man, other than the mine foreman and fireboss in charge of mining operations, needs efficient training and education in the science and art of mining surely it is the mine superintendent. In my opinion, every mine superintendent should be a certified man who is able and willing to share the burdens of his foremen.

The Superintendent "Four-Square"

To insure successful operation, the mine superintendent must be "four-square," so to speak, facing as he does the requirements of the management and the men and handling as he must the problems of the business as well as the operating end of the organization. His qualities must be such that he will gain and hold the confidence of all associated with him.

It is unnecessary to repeat here what has been so often said by writers in *Coal Age*, that a superintendent must refrain from making promises that he may be unable to keep. He must use plain practical common sense in his arguments and decisions. He must trust his men, that they may come to have a like trust in him. What Pope, in his "Essay on Man," has said let us all remember:

"Work Makes the Man, the Want of it, the Fellow."

Let me sum up by repeating with emphasis that the worth while mine superintendent is the man who, in obedience to the ancient mandate, "Study to Know Thyself," takes daily inventory of his qualities as viewed with the other fellow's eyes.

EDWIN HUSBAND.

Carbonado, Wash.

Smoking and the Duty of the Safety Committee

Authority of the Safety Committee to search fellow workers in the mine, under suspicion that they have in their possession articles for smoking.

THAT it should be necessary to debate the question of smoking pipes or cigarettes in a mine generating gas, shows how lightly this important matter is regarded by many miners who should consider such an act as a grave crime against their fellow workers, their employers and the mining laws of the state.

When one reflects on the awful toll of human life demanded by a gas or dust explosion in a mine the very thought of men taking the chance of smoking where gas is given off appears as foolhardy. The fact that miners will take these chances, however, makes it important to adopt effective measures to stop them.

In most gaseous mines it is the practice to search every man going into the mine, to see that they have no matches, pipes, tobacco or other like articles. At some of these mines, the rule is not put in force every day; but the men are searched, from time to time, as the management may consider necessary.

Where the custom of search is thus irregular men who are given to the smoking habit are prone to take many chances and carry with them into the mine what they need for smoking, days that they have reason to believe they will not be searched. A man may carry a supply of tobacco into the mine one day, matches another day, and keep a pipe safely stowed away in his working place.

Increase of Smoking Habit Calls for Effective Measures

Careful observation shows that the smoking of cigarettes has been on the increase since the return of our soldiers from the war. It would seem that nine out of every ten men who went over have gained this habit, besides becoming case-hardened to danger. In addition to such, there is the class of old miners who are wedded to their pipe and tobacco. Under these conditions, eternal vigilance must be practiced by all concerned.

The mine law on this subject is plain and all that is required is its enforcement. In order to secure greater immunity from possible explosions due to the practice of smoking in mines, my thought is that Mine-Safety Committees should take this matter in hand. For what purpose are these committees appointed if it is not to eliminate all unsafe practices among the men.

Allow me to suggest that, in every gaseous mine, the safety committee should be given authority to thoroughly search any person in the mine whom they may suspect of having about him articles for smoking. If their suspicion is proved correct they should be empowered to conduct the man at once out of the mine and report him to the mine superintendent or other authority.

My belief is that this would be a more effective means of putting a stop to the practice of smoking among the men, while they are in the mine, than any other measure it is possible to adopt. The smoker may succeed in smuggling into the mine what he needs to satisfy his purpose; but it will seldom happen that he will be like successful in eluding the watchful eyes of members of the safety committee.

The prosecution of violators of the law in this respect would be greatly assisted if men on the safety committee were called to witness against the violator. R. W. LIGHTBURN.

Gans, Pa.

Surrender to Discipline

A hopeful characteristic of the unskilled miner is his ready surrender to discipline. It explains largely why accidents more frequently befall the skilled miner.

DISCUSSING the question of skill in mining coal, W. M. Chambers emphasizes the value of the "years of experience," which he seems to regard as the particular safeguard of the skilled miner, *Coal Age*, May 19, p. 912.

It is quite true, as Mr. Chambers has remarked at the close of his letter, that "practical skill in the mining of coal is fast disappearing from our mines." The reason for this is not hard to find. In my opinion, it is due chiefly to the increase of machine mining, which requires only unskilled labor to load the coal after it has been shot down by the shotfirer.

In stating that "the chief, if not the only qualification of a miner, is strength of back that will enable him to wield the shovel all day," Mr. Chambers bears mute testimony to the rapid growth of machine mining.

My purpose in writing, however, is to draw attention to that characteristic of the so-called "unskilled miner," that causes him to surrender to discipline and makes him much less the victim of accident than the man whose experience in mines leads him to disregard all instructions and often omit to take the simplest precaution for his own safety.

The Man Who Gets Caught

In response to the foreman's request to set a post under a doubtful piece of top, the experienced man will generally reply, "Yes, I'll do that when I finish loading this wagon. I would have had that post up some time ago had not the driver set me in a car."

This is the type of man whom, we all know, is the one who most frequently gets caught. He considers himself as good a judge of the condition of the roof in his place as the foreman and, indeed, better because he is there all the time and the foreman visits the place seldom more than once a day.

My own experience has convinced me that the willingness of the unskilled miner to do as he is told and to do it without delay, is a most hopeful characteristic. In the loading of coal, this type of miner gives more evidence of being mindful of his own safety and is more careful to follow the instructions given him than the experienced miner.

In preparing a charge of powder, the unskilled man does as he has been directed, taking every precaution without a thought of doing it his own way. In other words, he surrenders himself to discipline and is a better subject for training, giving more promise of making a safe miner.

I much prefer to take the unskilled man and teach him the safest and best methods of doing his work, than to attempt to look after the miner whose long experience makes him a law unto himself. In his letter, Mr. Chambers asked, "will a green man be able in a short time to discern these conditions that surround him in his work and to know when he is in danger and must take precaution to safeguard himself?" My answer is, he will.

Observation shows that the miner who submits to discipline seldom fails to prove himself a safer man and will, in time, become skillful in the work of mining coal safely and economically. The fact that this type of miner is less subject to accident speaks volumes for the careful supervision and instruction given him by his foreman. On the other hand, too often the foreman is unjustly blamed when a skilled miner is injured or killed.

These facts prove my contention that the chief element of safety, in the mining of coal, is the miner's surrender to discipline, which is more characteristic of the man who has everything to learn than the one who knows it all and can be told nothing. R. W. LIGHTBURN.

Gans, Pa.

Safe Practice in Gaseous Mines

Commenting on numerous practices relating to safety in the use of lamps, manner of conducting air currents, character of mine gases and duties of mine officials in matters not specified in the mine law.

SPEAKING of safety requirements in Tennessee coal mines, *Coal Age*, May 26, p. 956, Oscar H. James makes certain references to which exception may well be taken. One point that attracted my attention was the preference he expresses for the use of locked safety lamps, in a mine generating gas, instead of choosing to equip the mine with electric cap lamps, giving as his reason that the electric lamp gives no indication of the presence of noxious gases.

Mr. James states that he has seen men working to the dip overcome by blackdamp before they were aware of its presence, as their electric lamps gave no warning of the danger. To my mind, any experienced miner will know when the air he is breathing contains a dangerous amount of blackdamp.

It is well known that blackdamp is a mixture of carbon dioxide, nitrogen and a percentage of oxygen below the normal. Men can work without serious difficulty when from 4 to 6 per cent of carbon dioxide is present in the air, which reduces the oxygen content from 20.9 to 19.6 per cent.

When air is passing through a mine, it is rare for the oxygen content to fall below this point. If the air becomes stagnant in a poorly ventilated place, however, the oxygen content may fall to 18 per cent; but the miners working there would know the bad condition of the air and get out. An oil lamp is completely extinguished in otherwise pure air containing but little more than 16 per cent of oxygen; but if carbon dioxide is present the lamp goes out with but 18 per cent of oxygen.

If the mining laws of Tennessee require the circulation of 100 cu.ft. of air per minute, for each man, and 600 cu.ft. per min., for each mule in the mine, I fail to see how a dangerous condition can exist in those mines that would argue against the use of the electric cap lamp.

Electric Cap Lamps Superior to Locked Safety Lamps

On the other hand, many mining men in Colorado can name numerous conditions that occur in these mines and render a locked safety lamp far more dangerous for use than the electric lamp. Many instances can be named in which the lives of our men have been saved by the use of the cap lamp, where they would have been fatally burned had they been working with a locked safety lamp.

We all know that the safety lamp is easily extinguished by being set down too hard on the floor, or turned over on its side; and the man must travel in the dark until he can find a light. While not questioning Mr. James' experience in gaseous mines, I feel that a trip through some of our Colorado mines would change his opinion in respect to the use of these lamps.

In the course of his remarks, Mr. James refers to a previous writer who discussed the question of whether a fireboss violated the mine law when he permitted the air returning from a pair of entries generating gas and requiring the use of safety lamps, to pass out through five rooms where open lights were in use.

My own opinion expressed in that discussion, was that the law was not violated, *Coal Age*, Vol. 18, p. 1192, inasmuch as the reading of the law apparently allowed the use of open lights in the rooms mentioned, notwithstanding the recognized danger of so doing.

My belief is that, in this particular case, the gas generated at the head of the entries was not sufficient to render the air current explosive or dangerous; but safety lamps were used at the faces of those headings to prevent the men from being burned by the ignition of the gas before it was sufficiently diffused in the current.

Mr. James takes exception to the idea suggested by another writer, in the same connection, Jan. 6, p. 22, that it would have been better to have carried the air by an overcast, across the return entry, directly into the five rooms

mentioned, thus giving them a fresh supply of air and making them safe.

Let me say this is a wholly practical idea. The amount of air taken from the main intake current will not materially affect the condition at the head of the two entries. Neither will the building of the overcast weaken the pillars. In such a case a temporary box is carried through the stopping and extended across the return airway into the last room inby.

If Mr. James has reference to mines generating noxious gases that are not inflammable, the use of open lights would be found preferable. But, for use in explosive gas, the Bureau of Mines has approved the electric cap lamp as a safe means of lighting, basing this conclusion on the analyses of mine air taken from a hundred different coal mines in this country.

In commenting on the uncertain meaning of the bitumious mine law relating to the use of open lights on an air current returning from a section where locked safety lamps are in use, Mr. James expresses the belief that "where the state mining law does not clearly specify the requirements necessary to make a mine safe, it is the duty of the mine officials, the superintendent, foreman and fireboss, to make and enforce regulations that will accomplish this end."

Let me say, that procedure has been tried for fifty years past, in this country, with the result that it became necessary to have our mining laws specify clearly every requirement necessary to make the mine safe. In my opinion, where the law does not clearly so specify, no rules or regulations made by mine officials will be effective.

The state enacts the mining laws for the protection of its miners. Mining companies expect their officials to get out the coal with due regard to safety, but get it, they must. My comment is, Don't ask any mine official to go beyond what is required in the law, which is thought to be complete and clear.

Farr, Col. ROBERT A. MARSHALL.

Safe Refuge Holes

Mouths of rooms do not make safe refuge holes, though permitted to be used as such by some state mining laws. Need of shelter holes between rooms turned off haulage roads.

SPECIAL interest attaches to the matter of safe shelter holes on haulage roads, discussed by Joseph Northover, *Coal Age*, May 5, p. 825, since it relates to an item that stands second in the classification of mine accidents.

The monthly statement of the U. S. Bureau of Mines shows that mine cars and locomotives stand second only to falls of roof in the classification of the causes of accidents occurring in coal mines. Considering the tendency to use larger cars and employ mechanical haulage, in the movement of coal from the working face to the shaft bottom, the matter of shelter holes on haulage roads grows in importance each year.

Even assuming that accidents due to the movement of cars are not increasing at the present time, it must be admitted that there is room for improvement in prevailing conditions. The mining laws of some states (Illinois and Pennsylvania, bituminous) require no refuge holes on haulage roads from which rooms are turned at regular intervals.

As stated by Mr. Northover, there is considerable danger to a man standing in a room mouth to escape being run down by a trip passing on the roadway. It may chance that the cars may turn into the room where he is standing or a loaded car may get loose at the face and run down to the entry.

I agree fully with the statement that it would be a big step toward safety to have a regular refuge hole cut in the rib between each two successive rooms, and not depend on the mouths of the rooms being safe and unobstructed. It is by giving attention to little things like these, that the number of accidents on haulage roads will be reduced.

One point that has not been mentioned in this connection, is the possibility of bad roof conditions in refuge holes. This is particularly apt to be the case where it has been necessary to brush the roof on the road to secure the required headroom. Taking down the roof on the road leaves the roof in the refuge holes weak. I have known some operators to require a post set in every refuge hole to make the roof secure.

Before closing, let me say, there should be a manhole cut in the rib of every branch entry switch, particularly if the practice of making a flying switch is permitted. Also, a manhole should be cut at every trapdoor. Every refuge or manhole should be kept clear of all obstruction and whitewashed so that they can be readily found.

Pikeville, Ky. GEORGE EDWARDS.

Inquiries Of General Interest

Calculation of Corrected Course

Saving of Time and Effort, in This Case, by Calculating the Deflection of Each Separate Course, from an Assumed Meridian That Approximates the Average Direction of the Given Course

BEING desirous of a check on a disputed course in a survey, may I ask for its calculation and publication in the Inquiry Department of *Coal Age?* Following is a survey or random line run between two corners, A and B, and it is desired to calculate the corrected course from the first corner to the second.

The notes as taken from the surveyor's book are: A-1, azimuth 69° 33′, distance 192.3 ft.; 1-2, 71° 25′, 206.0 ft.; 2-3, 70° 43′, 352.6 ft.; 3-4, 70° 48′, 168.1 ft.; 4-5, 70° 53′, 470.9 ft.; 5-6, 71° 57′, 476.2 ft.; 6-7, 70° 43′, 386.2 ft.; 7-8, 70° 40′, 717.1 ft.; 8-B, 70° 16′, 1,108.3 ft. The total length or distance of this random line is 4,077.7 ft. What is desired is the azimuth of a single course joining the two corners A and B.

———, W. Va. MINE SURVEYOR.

The regular method of calculation would be to find the latitude and departure of each of the several courses given. Then, the sum of the departures divided by the sum of the latitudes, these being all positive, will give the tangent of the bearing, or the azimuth of the line joining the two corners. Then, dividing the sum of the departures by the sign of this bearing will give the length of the line. The azimuth and distance thus found are those of the required corrected course.

In this particular case, however, it is observed that the azimuths of the several courses vary very little from each other. In other words, the random line run between the corners approximates more or less closely the desired course. That being the case, the work is much simplified and shortened by basing the calculation on an assumed meridian whose azimuth is, say 70 deg.

The following table shows the given courses, azimuths and distances, together with the deflection of each course to the left or right of the assumed meridian.

Course	Azimuth	Distance	Left	Right
A-1	69° 33′	192 3	1 509	
1-2	71° 25′	206 0		5 092
2-3	70° 43′	352 6		4 411
3-4	70° 48′	168 1		2 347
4-5	70° 53′	470 9		7 261
5-6	71° 57′	476 2		16 205
6-7	70° 43′	386 2		4 831
7-8	70° 40′	717 1		8 347
8-B	70° 16′	1,108 3		5 154
		4,077 7		53 648
				1 509
				52 139

Subtracting the single deflection to the left of the assumed meridian, from the sum of the deflections to the right, gives the net deflection to the right of that meridian, for the corrected course, viz., 52.139 ft. The angle this line makes with the assumed meridian is found, with close approximation, by dividing the net deflection by the sum of the several courses.

Thus, 52.139 ÷ 4,077.7 = 0.01258, which is the sign of the required angle.

Therefore, the angle that the line joining the two corners bears to the right of the assumed meridian is 0° 44', and the azimuth of the corrected course is therefore 70° 44'. The length of this course, within the allowable error of measurement in surveying, is given by the sum of the lengths of the several courses, 4,077.7 ft.

Evaporative Power of Coal

Power of coal to evaporate water at given temperatures estimated by the heat units absorbed by the water in passing into steam at the required pressure.

KINDLY inform me through the columns of *Coal Age* the possible evaporative ability of coal, per pound, when the water has a temperature of 212 deg., if the same coal will evaporate seven pounds of water having a temperature of 170 deg. F. STUDENT.

Chattanoogo, Tenn.

We understand this question as asking how many pounds of water will be evaporated or steam generated, from and at 212 deg. F., using a coal that will evaporate seven pounds of water, per pound of coal, at atmospheric pressure, sea level, the temperature of the water being 170 deg. F.

The heat required to raise the temperature of a pound of water from 170 deg. to 212 deg. F. is 212 − 170 = 42 B.t.u. Also, the heat absorbed, per pound of water, in generating steam from and at 212 deg. is 970.4 B.t.u. This makes the total heat absorbed in converting a pound of water at 170 deg. F., into steam at atmospheric pressure (sea level) 42 + 970.4 = 1,012.4 B.t.u.

Since the coal in question evaporates seven pounds of water per pound of coal, under these conditions, the heat absorbed, which is the heating capacity of this coal, is 7 × 1,012.4 = 7,086.8 B.t.u., per pound; and the weight of water the coal will evaporate, from and at 212 deg. F., is 7,086.8 ÷ 970.4 = 7.3 lb., per pound of coal.

It is assumed that all conditions relating to the burning of the coal and the distribution of the heat remain unchanged.

Examination Questions Answered

Examination, Foremen and Assistant Foremen, Fifteenth Anthracite District

(*Hazelton, Pa., April* 19 *and* 20, 1921).

QUESTION—*What observations should a fireboss make on his second examination of the mine?*

ANSWER—The fireboss should see that a place is properly ventilated, drained and timbered, the coal spragged and any loaded or empty cars standing in the place safely blocked. He should see that the miner is performing his work in the best and safest manner. He should see that no toolboxes or other obstructions are placed in the breakthroughs in rooms and entries. When traveling the roads he should observe that there is a proper clearance space at the side of the track and that this space and all refuge holes are kept clear and unobstructed. He should ascertain where a miner has stored his powder and caps, and note what supplies of props and caps are on hand ready for use when needed.

QUESTION—*How many square feet of rubbing surface would there be in an airway 5 x 9 ft. and 1,200 ft. long? If, having 15,000 cu.ft. of air in circulation, the lamp shows 1½ per cent of marsh gas in the return of this airway, how many cubic feet of gas is given off?*

ANSWER—The rubbing surface of this airway is 2(5 + 9)1,200 = 33,600 sq.ft.

Since the return current contains one-half of one per cent of gas or five parts of gas in one thousand parts of gas and air, there are 995 parts of air to five parts of gas. The proportion of gas to air is therefore 5 : 995, or 1 : 199. Therefore, the volume of gas given off, in this case, is 15 000 ÷ 199 = 75 + cu.ft. per min.

QUESTION—*What instructions would you give a miner to secure him from falls of roof, drawslate and coal?*

ANSWER—Instruct him to examine his working place before beginning work in the morning and especially on returning to his place after firing a shot. Also, to make no delay in taking down any loose top or setting the necessary timbers to make it secure. Also, caution him to frequently sound the roof above where he is working. When working under drawslate, a miner must not fail to keep this well supported with posts. In mining his coal, he must set sprags to support the coal, at distances not greater than 5 or 6 ft. apart, depending on the nature of the coal. Each miner should be instructed to keep on hand a good supply of props and caps, in his place, ready for use when needed. He should be told that he must not work his place if the timber needed is not on hand. Make him understand that he must obey strictly and promptly any orders given him by an assistant foreman or fireboss.

QUESTION—*What should your report contain after completing your inspection of a mine?*

ANSWER—A fireboss' report must show the date of the examination and describe the character and location of any dangers that may have been found. The report must state clearly that every working place in his section has been examined and complies fully with the requirements of the law. The report must be signed by the fireboss making the examination and later countersigned by the foreman after the latter has read same.

QUESTION—*How would you render first-aid to a sufferer from electric shock, powder burns, or leg fracture?*

ANSWER—For electric shock, having released the person from contact with the wire, lay him down in a safe place, putting a coat or other garment under his shoulders, to elevate the chest and lower the head. Proceed at once to give artificial respiration if the person is unconscious. Keep the body warm while awaiting the coming of the doctor, who should be summoned at once. Continue artificial respiration without cessation until the return of life is manifest. As soon as breathing is restored and the patient is able to swallow, a slight stimulant or a sup of hot coffee should be given him. On recovering from shock the person will be nervous and should be kept quiet and given absolute rest, until his recovery is complete. On his return to life, the patient's limbs should be well rubbed to induce circulation, rubbing both arms and legs toward the heart, keeping them covered with blankets for warmth.

For powder burns, apply picric-acid gauze, in the form of a compress, bandaging it over the burned surface. If this material is not available, apply a paste of bicarbonate of soda made in clean water. Starch or flour will answer the same purpose. Vaseline, either carbolized or pure, olive or castor oil, fresh lard or cream are all good for protecting the burned surface from the air. The application should be covered over with a light cloth to exclude the air and dirt. For severe burns a doctor should be summoned.

To treat a broken leg, hold the foot carefully and make an effort to place the leg in as comfortable a position as possible. Be careful to avoid any quick movement or rough handling of the injured member. The bones on both sides of the fracture should be supported by placing the hand beneath the leg as it is moved. Two well-padded splints, reaching from the middle of the thigh to the sole of the foot should be bound one on either side of the leg.

In all cases of serious injury to workmen there should be no delay in sending for a physician. First-aid treatment is only intended to afford temporary relief and protection from further harm or danger.

Explosives Used in Mining During 1920

ACCORDING to preliminary reports made by the U. S. Bureau of Mines on the amount of explosives used in the United States during 1920, with mining specially classified, the totals for all purposes are:

Black powder, 10,195 193 kegs of 25 lb. each; permissible explosives, 53,962,841 lb.; other high explosives, 229,112,-084 lb.

In coal mining alone the consumption was: Black powder, 8,790,505 kegs; permissibles, 45,222,130 lb.; other high explosives, 37,273,255 lb.

In anthracite mining alone the consumption was: Black powder, 923,423 kegs; permissibles, 8,558,690 lb.; other high explosives, 19,278,375 lb.

Based on the official anthracite production of 89,100 000 net tons for 1920, this meant a consumption of 0.5714 lb. of explosives per net ton, equivalent to 10.24 oz. of explosive per gross ton of coal produced.

Based on the official records, the total production of bituminous coal in 1920 was 556,563,000 net tons, in the mining of which there was used 251,335,370 lb. of explosives of all sorts, equivalent to 0.4514 lb. per net ton, or 8.667 oz. per gross ton.

According to the tonnage figures used by the Bureau of Mines, anthracite constituted 13.8 per cent of the total American coal output in 1920. In the same year the anthracite industry consumed 10½ per cent of all the black powder used in coal mining, 18.04 per cent of the permissible explosives, and 51.7 per cent of the other high explosives.

Based on quantity alone, without any weight being allowed for the variation in prices per pound for different explosives, this single item in the cost of producing anthracite is more than 15 per cent greater per ton than it is in producing bituminous coal. This difference would be much greater if accurate calculation were made of the varying prices of different classes of explosives.

Mine Fatalities Lower in March; Ratio of Deaths to Output Higher Than Last Year

ACCORDING to reports received by the U. S. Bureau of Mines from the various state mine inspectors, 127 men were killed during March, 1921, in and about the coal mines of the United States, as compared with 181 killed in March, 1920. Thus the 1921 figures show a decrease of 54 fatalities, or about 30 per cent, from the record of the corresponding month of last year. The output of coal fell from 54,689,000 tons in March, 1920, to 37,342,000 tons during the corresponding month this year, a decrease of 17,347,000 tons, or 32 per cent; attributable almost entirely to lack of demand. Based upon the production for March of last year, 3.31 lives were lost for each million tons of coal produced, whereas for March, 1921, the fatality rate was 3.40 per million tons mined.

On March 9, 1921, five men were killed by a gas explosion due to open light, at the Rahn mine No. 11, at Seek, Pa. The largest number of fatalities occurring in any state was in Pennsylvania, where there were 47 fatal accidents in the anthracite field and 8 in the bituminous districts. There were 17 fatalities in West Virginia, 10 in Illinois, 10 in Ohio, 9 in Alabama and 7 in Kentucky.

The average number of lives lost during March of each year from 1913 to 1920 has been 209. The production of coal has averaged 49,324,125 tons, showing a fatality rate of 4.24 per million tons as representative of the month of March for the past eight years.

A Meeting and Exposition for Mining Men

A FEW years ago a number of sellers of equipment arranged a meeting in Charleston, W. Va., at which a number of engineer salesmen delivered addresses. The meeting was exceptionally successful. The salesmen knew which men could be depended on to talk on the subject without commending their own particular wares. A high standard of addresses was maintained.

Since then each year a convention has been held with an exposition for the sellers of coal-mine equipment. The occasion is getting to be of interest beyond the State of West Virginia, as it has extended its scope already beyond the Kanawha and Logan valleys. This year it has received the endorsement of twelve coal operators' associations in West Virginia, Kentucky and Virginia. The event, which is known this year as the Huntington Coal and Industrial Exposition, will be held in the Chamber of Commerce Building, Huntington, W. Va., during the week of Sept. 19 to 24.

The exposition has been placed in the hands of H. F. Campbell, of the Chester I. Campbell organization of Boston, to manage for the Chamber of Commerce. The Coal-Mining Electricians and Mechanics Institute, which reorganized and changed its name to the West Virginia-Kentucky Association of Mine Mechanical and Electrical Engineers, April 23, 1921, will as usual hold its meeting concurrently with the exposition on Sept. 20 to 23. Herbert Smith is secretary-treasurer of the technical association mentioned.

New Inspectors in Northern West Virginia

PRELIMINARY steps were taken by the West Virginia Department of Mines to carry out the provisions of a recently enacted law increasing the mine-inspection force of the state and the number of inspection districts when on Thursday, June 11, a conference was held at Clarksburg, W. Va., between R. M. Lambie, head of the department, mine inspectors and operators of northern West Virginia.

There are to be seven mining districts in northern West Virginia as against six under the old law. Territory to constitute the new district will be taken from territory now in the districts which have headquarters at Grafton, Charleston, Clarksburg and Thomas. M. E. Quenon, who has heretofore been located at Charleston, has been placed in charge of the new district and will have his headquarters at Weston, W. Va., the division headquarters of the Charleston division of the Baltimore & Ohio. Of course the addition of a new district has necessitated an entire rearrangement of territory in northern West Virginia, some inspectors being relieved of some mines and taking on others.

Hereafter the following cities will be the headquarters for the various district inspectors: Thomas, Grafton, Clarksburg, Morgantown, Fairmont, Moundsville and Weston. Inasmuch as one additional inspector has been allotted to northern West Virginia, it is assumed that the other two new inspectors will be added in southern West Virginia territory. Districts in that part of the state have not so far been rearranged. Owing to the growth of the mining industry between 1919 and 1921, the number of inspectors, fixed at nineteen by the Legislature of 1919, was increased last winter to twenty-two. One of the twenty-two inspectors will inspect sand mines and quarries, most of which are in the Eastern Panhandle.

Since the act of the Legislature increasing the inspection force by three it is said that Chief Lambie of the Mine Department has received fully 500 applications for appointment as mine inspectors. It will be several weeks before he will make any appointment. The head of the department will not only be called upon to fill the positions created by the Legislature but also the vacancy created by the resignation of William M. Chapman, of London, Kanawha County, inspector of the 11th district, which is composed of parts of Boone, Fayette, Kanawha and Nicholas counties.

THE EXPORT TRADE DIRECTORY 1921-1922, the publication of the *American Exporter* (Johnstown Export Publishing Co., Penn Terminal Bldg., New York City, $10, 1,036 pp.) is disappointing to one looking for information on companies and corporations engaged in the export of coal. In all, three pages of this book are devoted to coal exporters in New York. For the most part, the names are unfamiliar, and the list is decidedly incomplete. It is interesting to note that of the twenty-two firms listed six were established in 1919, six in 1920, and but seven prior to 1914. What this book lacks in completeness of detail it appears to have in the wideness of the range of information of value to exporters. It is well arranged, well printed and indexed, and the information is classified in almost every conceivable manner.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

THE recovery of business, for which everybody has been hoping and waiting, according to the July review of business conditions by the National City Bank of New York, has not yet materialized. "No one's interest, the bulletin continues, will be furthered by an ostrich-like attitude which buries its head in undue optimism, and makes glowing predictions for the immediate future, predicated wholly on a magnifying of the favorable symptoms. It is easy enough, and pleasant enough, to lull anxiety by such a process of reasoning, but what is wanted now is a general realization of the obstacles that must be met and overcome, more than a light-hearted prevalence of optimism founded only on half truths.

"On the other hand, an attitude of unwarranted pessimism can be just as harmful, if not even more so. We know that our banking system is intrinsically sound, and that it has already proven its capability to withstand the shock of a period of extraordinary strain, and to emerge unscathed from the most difficult test imposed in many years. We know that our ability, as a nation, to produce the raw materials which our people need, and which the world must buy from us, has been in no wise dwarfed. We know, finally, that our industrial and business organization is geared for production not only ample for our own needs, but on sufficiently large proportions to make export on a considerable scale a vital necessity. . . .

"Recovery is certain to be slow. . . . It is primarily a question of adjustment between the various component parts in our economic structure. . . .

"Although the process of bringing the price of farm products and manufactured articles into equilibrium must be slow and even painful, the fact does not mean that everyone can sit down, fold their hands, and wait for some mysterious set of economic forces to make things normal again. The result will come most quickly through the combined efforts of everyone, and the sooner every man and woman in this country who either receives wages or pays wages realizes and operates on the basis that the unbalanced state of industry as regards compensations received by important bodies of people must be overcome, the sooner will the real, sound revival of business begin in earnest. It is important to *think* about the proposition, but it is utterly essential to *act* upon it."

Car Loadings Recede Slightly

A decrease of 253 in the number of cars loaded with revenue freight on American railroads during the week which ended on July 2, compared with the previous week, was shown by reports received by the Car Service Division of the American Railway Association from the rail carriers of the country. The total for the week was 774,808 cars, which was a decrease of 116,813 cars, compared with the corresponding week last year, but an increase of 31,582 cars, compared with the corresponding week in 1919. Comparisons with tabulations for the preceding week showed increases in the number of cars loaded during the week of July 2 with grain and grain products, coal, ore and merchandise and miscellaneous freight, but decreases in livestock, coke and forest products.

Silk Hosiery Plant to Start

The Durham Hosiery Mills, Inc., Durham, N. C., today officially announced that the company will put its silk hosiery mill recently erected in operation before the end of this month.

Locomotive Works Perking Up

The Baldwin Locomotive Works, according to information received from Philadelphia, has resumed operations on a three-day-a-week schedule. This is similar to the schedule which prevailed in the latter part of June, when the plant closed down. About 7,500 men are now employed and new business is coming in at the rate of $3,000,000 a month.

The Brooks plant of the American Locomotive Co. is about to resume part-time operation to fill an order for engines for the Mexican National railroads.

Norfolk Navy Yard on Half Time

Lack of funds has made it necessary that the Norfolk Navy Yard operate on half time, beginning Monday, July 11. Two thousand men were laid off for nine days, but the lay off may be made indefinite unless the deficit at the navy yard is made up within that period.

Rolling Mills Close; 750 Idle

Officials of the American Rolling Mills Co., Middletown, Ohio, announce that they have shut down their sheet hand jobbing mill department due to the failure of the sheet and tin plate manufacturers and the Amalgamated Association of Iron, Steel and Tin Workers to agree at their wage conferences which have been in progress at Atlantic City and Columbus. Seven hundred and fifty men were thrown out of work.

Erie Shops Reopen, 3,000 Go Back

Erie R.R. shops in Buffalo and Hornell, which had been closed for several months, reopened Monday, July 11, on an order from the New York headquarters of the road. The Buffalo shops resumed with eight hundred men and the Hornell shops with one thousand. The road's shops at Meadville, Pa.; Galion, Cleveland and Kent, Ohio, also resumed the same day, about 1,200 men being affected.

Lancaster Cotton Mills Running

The Lancaster Cotton Mills, Lancaster, S. C., which closed several weeks ago, resumed work Monday, July 11, according to John Dean, organizer of the United Textile Workers of America. Mr. Dean said that a committee representing the employees of the mills had come to him with a proposition from the mill officials, which he advised them to accept. The mill officials announced a few days ago that they would start operation as soon as a sufficient number of operatives applied for work on the basis of working conditions, wages, etc., existing at the time of the shutdown.

Rocky Mountain Mine Chiefs Temper Their Technical Sessions with Gayety

By F. W. Whiteside*
Denver, Col.

MONDAY evening, June 27, twenty-four members of the Rocky Mountain Coal Mining Institute from Colorado and New Mexico left Denver on the Union Pacific R.R. for Rock Springs, Wyo., arriving there Tuesday morning, June 28. The party was met by the local committee and the Rock Springs members and were conveyed in automobiles to the central power plant of the Union Pacific Coal Co. and to various coal mines in the district. During the noon hour a delightful luncheon was served to the entire party at the Reliance Mine of the Union Pacific Coal Co. In the evening the members and friends of the institute visited Rock Springs' leading movie house, after which the evening was brought to a delightful conclusion with a dance at the Masonic Temple. At 12:35 a.m. the party, augmented by the Wyoming members, were en route for Salt Lake City, arriving there at 8:25 a.m., Wednesday, June 29.

The first order of business was the registration of members from 10 to 11:45 a.m., at convention headquarters in the Hotel Utah. At noon, the convention, now numbering eighty-five members, attended the Latter Day Saints' Tabernacle, in Temple Square, and listened to a recital upon the famous organ.

At 2 p.m. the first session was called to order in the banquet room of the Hotel Utah. As the summer meeting is devoted entirely to the presentation of papers and the visiting of various plants and points of interest, very little in the way of regular business was transacted. At this session J. D. Forrester, chief engineer of the United States Fuel Co., presented his paper, "A Few of the Adverse Conditions Encountered in Mining Coal in the Utah Fields"; following this paper A. C. Watts, chief engineer, and William Littlejohn, general superintendent of the Utah Fuel Co., delivered interesting talks upon the reopening of the Sunnyside Mine after the recent disastrous fire which necessitated sealing it.

At 5:45 p.m. the party adjourned to Saltair for a swim in the lake and for dinner, which was served in the Ship Café at 7:30 p.m. After dinner the party danced until 11:30 p.m.

Thursday morning, June 30, the meeting was called to order in the supper room of the Hotel Utah, at which meeting papers were read by D. C. McKeehan, chief engineer of the Union Pacific Coal Co., of Rock Springs, subject: "Growth of the Electric-Power System of the Union Pacific Coal Co."; by Benedict Shubert of the Lindrooth-Shubart Co. of Denver, subject: "Screening and Preparing Coal at the Tipple," and by E. R. Gibson of Salt Lake City, subject: "Coal-Mine Accounting."

The meeting adjourned at noon and again reconvened at 1:30 p.m., at which session the various papers read at this meeting were discussed; proposals for membership balloted upon and various other matters of business transacted. At 3 p.m. the meeting adjourned to the baseball grounds on South Main Street, where Salt Lake City went down to defeat at the hands of the Sacramento team of Sacramento, Cal. At 7 p.m. the members and their ladies sat down to a banquet in the banquet hall of the Utah Hotel, where the remainder of the evening was spent in feasting and dancing. This concluded the thirteenth semi-annual meeting.

*Secretary, Rocky Mountain Coal Mining Institute and chief engineer, Victor-American Fuel Co.

Operators Will Contest Anthracite Tax

AN AMICABLE suit—a bill in equity—probably will be filed in the Dauphin County Court of Pennsylvania soon to test the constitutionality of the Pennsylvania tax on the anthracite output, effective the first of this month but not collectible before Jan. 1 of next year. This decision was reached at Harrisburg, July 12 at a conference of representatives of the anthracite producers with Attorney-General George E. Alter, and prompt action will be taken so that the case can be carried on appeal to the State Supreme Court in time for a decision prior to the first of next year. Those attending the conference were W. S. Jenny, general counsel for the Glen Alden Coal Co.; R. H. Harris, Scranton; H. F. Drinker, Jr., Philadelphia; John T. Brady, Harrisburg, and David Reese, Harrisburg.

Attorney-General Alter said that the details of the suit have not been worked out. "We discussed practicable methods of promptly testing the validity of the anthracite tax," he said, "and are hopeful of finding a plan by which a final decree can be obtained before Jan. 1."

Bidders on Coal for Long Island Hospital Quote Prices Below Company Schedule

BIDS submitted by many coal men on July 8 for furnishing 18,000 gross tons of rice coal to the State Hospital at Kings Park, Long Island, showed most proposals to be below the company schedule of $2.50 per ton f.o.b. mine. Ten bids were submitted, the tonnage being divided into two separate lots—7 000 tons to be delivered between July 15 and Sept. 1, and the balance, 11,000 tons, to be delivered up to June 30 of next year. The bidders and prices follow:

	7,000 Tons	11,000 Tons
Coney Island Coal Co.	$2 60	$2 65
Weston Dodson & Co.	2 45	
Tuttle-Burger Coal Co.	2 45	2 45
Whiteley & Foedisch	1 99	2 34
Phoenix Coal Co.	2 11	2 34
Valley Camp Coal Co.	2 44	2 44
Patti-on & Bowns, Inc.	1 97	2 47
C. D. Norton & Co.	2 08	2 30
Whitney & Kemmerer	1 80	2 45
John W. Peale	1 69	2 16

Two bids were received for the entire 18,000 tons. They were: Whiteley & Foedisch, $2.20, and John W. Peale, $1.97.

Ellery B. Gordon Appointed President of Mid-State Coal Co., a New Corporation

ELLERY B. GORDON, having presented his resignation as secretary-manager of the National Retail Coal Merchants' Association at a meeting of the Executive Committee of the organization held in New York, June 10, will take up his new duties as president of the Mid-State Coal Co. Aug. 1. The latter is a new corporation organized to operate on a holding of bituminous coal lands in Jefferson County, Pennsylvania. The office of the corporation is in the Witherspoon Building, Philadelphia. Mr. Gordon held the office of secretary-manager of the retailers' association for two and a half years.

Production of Coal in Ohio, 1919 and 1920*

(In Net Tons)

County	1919	1920
Athens	5,181,643	6,872,646
Belmont	9,999,648	10,953,668
Carroll	361,823	388,513
Columbiana	650,971	957,811
Coshocton	274,998	458,841
Gallia	12,514	22,207
Guernsey	3,342,915	3,760,463
Harrison	1,452,061	1,917,607
Hocking	1,162,366	1,855,499
Holmes	11,512	9,645
Jackson	478,474	841,314
Jefferson	4,964,610	6,713,531
Lawrence	140,433	286,399
Mahoning	40,160	55,985
Medina	5,249	6,652
Meigs	877,516	1,339,162
Monroe	312	516
Morgan	208 671	276,852
Muskingum	399,364	669,961
Noble	809,312	638,257
Perry	2,580,890	3,700,511
Pike		15
Portage	75,310	121,943
Scioto	860	889
Stark	325,923	498 118
Summit	37,397	17,744
Trumbull	1,347	2,614
Tuscarawras	1,595,620	2,231,345
Vinton	166 881	340,866
Washington	4,543	16,687
Wayne	62,580	7,837
Totals	35,225,908	45,277,077

* From reports of the Ohio Industrial Commission.

T. H. Watkins Says Mine Workers' Pamphlet Is Notable for Misstatements and Omissions

IN the course of an address on "The Coal Situation in Central Pennsylvania," delivered before the Rotary Club of Clearfield on Thursday, July 15, T. H. Watkins, president of the Pennsylvania Coal & Coke Corporation, replied to certain press statements issued by the officers of district No. 2, United Mine Workers of America, and circulated in pamphlet form throughout the region.

Mr. Watkins' comments on the pamphlet were in part as follows:

"The officers of district No. 2 convey the impression that the Central Coal Association asks the union to break the contract now running. We asked for a conference to consider its modification, not its abrogation. Business men frequently meet changed conditions through modifying contracts by mutual agreement, when it is to their mutual advantage to do so; the miners' unions are the parties that break running contracts when conditions favor such action.

"The miners' pamphlet states: The facts are these: The mine workers are working under a scale of wages fixed by the U. S. Bituminous Coal Commission. These schedules were written into an agreement between miners and operators which will not terminate until March 31, 1922. This is a contract and will not be broken by the mine workers.

"The foregoing statement is far from the truth," said Mr. Watkins emphatically. "The real facts are that the United Mine Workers of America threw the commission's award into the scrap heap, along with former wage agreements, less than four months after it had been accepted by them as the basis of a new wage scale. On Aug. 15, 1920, as a result of illegal strikes and other unscrupulous methods, they forced an advance of $1.50 per day to day and monthly men over and above the scale of wages fixed by the commission.

"We are, therefore, not working under the scale of wages fixed by the U. S. Coal Commission. It appears to me that the officers of district No. 2 have made and broken so many contracts in the last five years that their memories have grown hazy as to which scale they now want to pretend is valid. If we are working under the wage scale fixed by the commission, then the operators are violating it by paying $1.50 a day too much, and this should immediately come off.

"The pamphlet is conspicuous for two reasons," continued Mr. Watkins; "first, its misstatements; second, its omissions. For instance, they forgot to mention the iniquitous and damnable check-off system. Of all American business men, the coal operator is the only one to tolerate such nonsense.

Tonnage Figures Ignore Wage Readjustment

"The tonnage figures of this district are correct," Mr. Watkins admitted, "but ignore the fact that most of the tonnage is from mines working on a readjusted wage basis. Many union mines are not working at all; others about 20 per cent.

"The miners' pamphlet quoted some figures purporting to be the earnings of the Pennsylvania Coal & Coke Corporation. I wish the figures were correct, but instead of being 'net' earnings, or 'profits,' as the pamphlet says, they are in gross, from which a large proportion was paid in Federal taxes. Cost of replacements is not deducted. The net results of my company's operations show an average profit from Jan. 1, 1916, to June 1, 1921, of 27½c. per ton, or 8⅜ per cent on actual capital invested. We are now operating at an actual loss."

Referring to the headquarters of the United Mine Workers at Indianapolis, Mr. Watkins stated that the miners, operators and merchants of the central Pennsylvania district are left subject to "the judgment of a far-away autocratic power, not acquainted or much concerned with local conditions. The consequence is that this district always suffers to benefit some other section of the country, local labor leaders not being courageous or able enough to act independently in this district's interest."

Mr. Watkins also scored the professional labor leaders of district No. 2 for their intimate association with socialists of the Foster, Fitzpatrick and Maurer type, and for the adoption of the miners' program of industrial revolution.

He asserted that the miners' leaders of the central Pennsylvania district, by abandoning the old system of collective bargaining in favor of a bolshevist social program, had brought the operators and the union organization to the parting of the ways.

Brophy Replies to Watkins' Address

REPLYING to Thomas H. Watkins' address before the Patton Chamber of Commerce, June 23, John Brophy, president of District No. 2; James Mark, vice president; Richard Gilbert, secretary-treasurer, and John Ghizzoni, international board member, all of the United Mine Workers of America, have published a statement to the effect that the operators of central Pennsylvania have refused to say what they want. If, however, they seek a wage reduction the mine workers' leaders say: "Our answer is this—there will be no reduction during the life of the contract."

The statement of the mine workers' leaders says: "Mr. Watkins gives slack work and competition as reasons why the district should break the wage contract. But slack work is not a local condition. It is nation-wide. When district No. 2 is producing 40.1 per cent, Illinois is producing 37 per cent. When our district is producing 37.3 per cent, Indiana is producing 32.9 per cent of full-time output. Mr. Watkins claims that the competition of non-union fields working on lower wages is taking away business. But slack work affects Somerset County, which shows 41.4 and 45.2 per cent of production."

Mr. Brophy is quoting the U. S. Geological Report of the weeks ended June 4 and June 11, but in doing so he says nothing about Westemoreland County's production of 71.8 per cent in the week ended June 4. That week Winding Gulf showed 68.9 per cent; New River, 53.6; Pocahontas, 52.9; Tug River, 74.2; and Logan, 55.6.

As a final shot the mine workers' leaders say: "Light will be thrown on Mr. Watkins' reaction by examining the figures of his Pennsylvania Coal & Coke Corporation. His company reports net earnings, which means profit, in 1916 of $181,675; in 1917 of $2,589,614; in 1918 of $2,232,371 and in 1919 of $800,158.

Despite Tumult Francisco Mine in Indiana Again Ventures to Operate

FROM June 10 until July 14 work was discontinued in the Francisco mine, near Princeton, Ind., from which 150 foreigners were driven out by a vigilante body alleged to be composed of miners. The superintendent, Edward Cox, also was driven out, but has returned. Work recommenced July 14. A special Grand Jury was impaneled by the Gibson County Court. It made 119 indictments for offenses in connection with the vigilante outbreak, 106 being for rioting, 11 for riotous conspiracy and 2 for perjury.

Among the indicted are Frank Bolin, president of the Princeton (Ind.) local of the United Mine Workers of America. One man, Ancil Drew, tried to run when arrested by the sheriff and received a shot in the left hand, the wound being but slight.

Must Pay as Tax More Than Coal Brings

OWNERS of the Woodward-Williamson coal tract in Edwardsville Borough and School District are endeavoring to have the valuation reduced from $1,000,000 to $400,000. A decree was made by the court permitting the

borough to introduce testimony to prove that the coal was more valuable than the sum fixed, and Judge Woodward on the stand said that he would be more than glad to sell his interest at the sum fixed by the court.

R. V. Norris, who was formerly engaged by the Woodward-Williamson interests, made a report on the property and recommended that the owners of the coal tract sell it to the Delaware, Lackawanna and Western R.R., Coal Department, now the Glen Alden Coal Co., for $675,000, but it is asserted that at that time he was seeking a good price for his clients.

A lease at a low royalty was made on the property, and the agreement required that the owners pay the taxes. Edwardsville is now practically a suburb of Scranton, and the taxes, in consequence, are so high that they exceed the royalties, making the property a debit and not an asset.

The Borough of Edwardsville wants the money and declares that it cannot be made to suffer by the terms of an improvident lease, that the coal is worth more than the valuation set on it and that by some method the lessees should be compelled to pay an adequate return on the true valuation.

Settlement Terms of British Coal Strike

ACCORDING to the report issued by the British Board of Trade, June 28, the terms of settlement of the coal dispute are as follows:

1. A national board shall be constituted forthwith, consisting of persons chosen by the Mining Association of Great Britain and by the Miners' Federation of Great Britain, equal members from each body sitting on the board. In each district, boards shall be established consisting of persons representing owners and workmen, each class being represented equally. The national and district boards shall draw up their own rules of procedure, which shall include a provision for the appointment of an independent chairman for each board.

2. The wages payable in each district shall be expressed in the form of a percentage upon the basis rates prevailing in the district, and shall be periodically adjusted in accordance with the proceeeds of the industry as ascertained in such district.

Adjustment by Districts and Not Nationally

3. The amount of the percentage to be paid in each district during any period shall be determined by the proceeds of the industry in that district during a previous period, as ascertained by returns to be made by the owners, checked by a joint test audit of the owners' books carried out by independent accountants appointed by each side.

4. The sum to be applied in each district to the payment of wages additional to the standard wages, as hereinafter defined, shall be a sum equal to 83 per cent of the surplus of such proceeds remaining after deduction therefrom of the amounts of the following items during the period of ascertainment: (a) The cost of the standard wages; (b) the costs of production other than wages; (c) standard profits equivalent to 17 per cent of the cost of the standard wages. The share of the surplus applicable to wages shall be expressed as a percentage upon the basis rates prevailing in the district.

If in any period the ascertained proceeds, after deduction of costs other than wages and the cost of the standard wages, prove to have been insufficient to meet the standard profits, the deficiency shall be carried forward as a first charge, to be met out of any surplus in subsequent periods, the surplus being ascertained as above.

Living Wage to Be Determined and Provided

5. If the rates of wages thus determined in any district do not provide a subsistence wage to low-paid day-wage workers, such additions in the form of allowance per shift worked shall be made for that period to the daily wages of these workers as, in the opinion of the district board, or in the event of failure to agree by the parties, in the opinion of the independent chairman, may be necessary for the purpose. Such allowances shall be treated as items of cost in the district ascertainments.

6. For the purpose of these periodical adjustments the units shall be the districts set out in the schedule hereto, and shall only be varied by the decision of the district board or boards concerned, provded that no variation shall take place prior to Feb. 1, 1922, in the grouping of any district unless it is mutually agreed by the representatives of both sides in the district or districts concerned.

7. The standard wages shall be the district basis rates existing on March 31, 1921, plus the district percentages payable in July, 1914, for the equivalents in any district in which there has been a subsequent merging into new standards; plus, in the case of piece workers, the percentage additions which were made consequent upon the reduction of hours from eight to seven.

8. In no district shall wages be paid at lower rates than standard wages plus 20 per cent thereof.

9. The national board shall forthwith consider what items of costs are to be included for the purposes of paragraph 4 (b) above, and in the event of agreement not being arrived at by July 31, the matter shall be referred to the independent chairman for decision.

10. The wages payable by the owners up to Aug. 31 inclusive shall be based upon the ascertained results of the month of March, and the wages payable during September shall be based upon the ascertained results of the month of July. The periods of ascertainment thereafter shall be decided by the national board.

Lose Month's Profit When Wage Is Reduced

11. During the "temporary period" as hereinafter defined the following special arrangements shall apply in modification of the general scheme set out above:

(a) In calculating the proceeds for March the deduction to be made for costs other than wages shall be the average of such costs during January, February and March.

(b) In any district in which reductions in wages continue to be made after the first ascertainment, no part of the surplus proceeds shall be assigned to profits if and in so far as this would have the effect of reducing the wages below the level in the preceding month.

When in any district there is a break in the continuity of reductions in wages upon the periodical ascertainments at that point and thereafter the general scheme shall apply fully in regard to owners' surplus profits.

(c) The proviso to paragraph 4 regarding the carrying forward of deficiencies in standard profits shall not apply, but any net loses shall be so carried forward.

(d) The government will give a grant not exceeding £10,000,000 in subvention of wages.

(e) This subvention shall be available for making such increases to the wages otherwise payable in any district as may be necessary to prevent the reductions below the March rates of wages being greater than the following amounts: During July, 2s. a shift for persons of 16 years of age and upward, and 1s. a shift for persons under 16. During August, 2s. 6d. and 1s. 3d. respectively. During September, 3s. and 1s. 6d. respectively, provided that the balance of the subvention is sufficient for this purpose.

Further Pledge for September and October

(f) If any district in which in any month the proceeds available for wages calculated in accordance with the terms of this settlement are sufficient to admit of a rate of wages equal to or higher than the rate payable under the maximum reduction for that month, the wages payable by the owners shall be calculated not in terms of basis plus percentage but on the same basis as during March, less flat-rate reductions uniform throughout the district for persons of 16 years of age and upward and persons under 16 years of age respectively.

(g) In any district in which the wages calculated in accordance with the terms of this settlement are less than

the wages payable under the maximum reductions aforesaid, the difference shall be met by the owners in that district during September to the extent of the aggregate net profits realized by them on the district ascertainment for July, and during October to the extent of the aggregate net profits realized by the on the district ascertainments for July and August.

(h) The expression "temporary period" means the period from the date of the resumption of work Sept. 30, 1921.

12. The period of duration of this agreement shall be from the date of the resumption of work until September 30, 1922, and thereafter until terminated by three months' notice on either side.

13. It is agreed as a principle that every man shall be entitled to return to his place when that place is available for him, and that men temporarily occupying places during the stoppage shall give way to men working in those places before the stoppage.

It is agreed, on the other hand, that there shall be no victimization of men who have been keeping the collieries open, not, however, in the sense that they are to remain at the jobs they filled during the stoppage of work, but in that they shall not be prevented from going back to their own jobs or from working subsequently at the colliery at which they formerly worked.

The schedule of districts to which reference has been made contains the following areas: Scotland, Northumberland, Durham, South Wales and Monmouth, Yorkshire, Nottinghamshire, Derbyshire, Leicestershire, Cannock Chase and Warwickshire, Lancashire, North Staffordshire and Cheshire, North Wales, South Staffordshire and Salop, Cumberland, Bristol, Forest of Dean, Somerset, Kent.

April-June Anthracite Shipments Show That Domestic Consumers Are Spreading Traffic Over Entire Year

SHIPMENTS of anthracite for June as reported to the Anthracite Bureau of Information at Philadelphia amounted to 6,031,937 gross tons, as compared with 5,793,895 tons in May, an increase of 238,042 tons. Cumulative shipments for the first three months of the present coal year, beginning April 1, have amounted to 17,793,297 gross tons, as compared with 17,290,046 tons for the corresponding period in 1920, an increase of a little more than 500,000 tons.

Production figures indicate that the anthracite industry and the anthracite consuming public are doing their part to spread traffic over the entire year and to prevent any undue stress upon mines and railroads when cold weather comes.

The single item of increase, 500 000 tons, does not cover the situation fully, for while total shipments this year exceed total shipments last year by that figure, shipments of steam sizes for the first quarter of the current coal year have declined a little more than 750,000 tons. In other words, the shipments of domestic sizes for the first quarter of this coal year have exceeded shipments of domestic sizes for the first quarter of the coal year which began April 1, 1920, by a little more than 1,255,000 tons.

Consumers' Stocks Greater Than a Year Ago

Thus domestic consumers of anthracite have in their cellars today one and a quarter millions tons more fuel than they had one year ago, and are in a correspondingly better position so far as next winter is concerned. This is an important fact from a market and distribution standpoint. Every additional ton of anthracite put in early is more than an insurance for the purchaser; it is a direct assistance to those purchasers who for one reason or another are not in a position to stock up in advance, and it is an assistance to miners and railroaders if it becomes necessary later, through stress of weather, to concentrate supplies at points needing immediate help.

While shipment figures for steam sizes of anthracite show a decline of more than three-quarters of a million tons for the first three months of this coal year, compared with last year, this coal has been produced. It is a byproduct which the anthracite mines cannot help making, but with the present industrial conditions the market is limited and much of this fuel is being dumped on stockpiles at the mines. These steam sizes, which compete with bituminous as industrial fuel, are always sold below the cost of production, but there is very light demand just now for industrial fuel of any sort.

The average monthly shipments for the present coal year have been 5,931,000 tons, against 5,780,560 tons for the coal year 1920-21 and 5,923,557 tons in the coal year 1919-20, and have exceeded the averages for any preceding years with the exception of the two war years 1917 and 1918, when washery coal recovered from the culm banks furnished a temporary excess supply.

Shipments by originating carriers were as follows, in gross tons:

	June, 1921	May, 1921
Philadelphia & Reading	1,157,738	1,108,476
Lehigh Valley	1,069,521	1,027,688
Jersey Central	571,213	544,716
Lackawanna	1,009,119	915,191
Delaware & Hudson	763,893	753,039
Pennsylvania	441,693	409,027
Erie	555,882	630,574
New York, Ontario & Western	163,742	153,809
Lehigh & New England	299,136	251,375
Totals	6,031,937	5,793,895

Efficiency Bureau Praises Operation and Accounting of Government Fuel Yard

THE Bureau of Efficiency, at the request of the Director of the Bureau of Mines, after the passage of resolutions by the National Retail Coal Merchants' Association criticising the cost accounting system of the Government Fuel Yard, has prepared a report on the methods of operation and cost accounting employed by the Government Fuel Yard at Washington, D. C.

"In our opinion," says the report, "the accounts of the Government Fuel Yard are complete and comprehensive, reflecting the investment in fixed and working capital and the results of operation, including the cost of each department. . . . The criticism which has been made from time to time of the Government Fuel Yard to the effect that its costs are not complete and that, in competition with commercial yards on a commercial basis, its operation would result in a loss, is not justified in our opinion, for none of the published cost statements of commercial yards that have come to our attention set forth handling costs per ton that compare favorably with the costs estimated above for the Government Fuel Yard, operating as a commercial yard."

Miners Want Consolidation Coal Co. to Pay Them Three-Quarters of a Million

CHARGING that the Consolidation Coal Co. by improper mine weights has deprived them of approximately three-quarters of a million dollars, Roy Anderson and 110 other miners have entered suit against that company to recover. Argument of the demurrer was heard before Judge Robert R. Henderson in the Circuit Court. The company contended that grounds for equity were not shown and that if the allegations of the plaintiff could be proved an adequate remedy existed at law. Judge Henderson, declaring that the importance and the intricacy of the questions at issue demanded most careful inquiry, said he would not render a decision until Aug. 1 and instructed counsel to file briefs with him before that date. The time during which the defendants are alleged to have made the alleged false weighings was October, 1902, and Oct. 7, 1917.

National Coal Association Would Co-operate with Hoover; Department Wants Data from Geological Survey

By Paul Wooton
Washington Correspondent

THE National Coal Association has given its president, J. G. Bradley, full authority to use his own judgment in negotiating with the Secretary of Commerce as to what statistics the association will furnish voluntarily in the matter of production, distribution and average sales realizations. The only limitation placed on Mr. Bradley by the Board of Directors was that he obtain assurance from the government that these voluntary reports will not be considered as violating the Sherman Law. Acting under the authority reposed in him, Mr. Bradley and J. D. A. Morrow, the vice-president of the association, plan to discuss the matter with Secretary Hoover in the near future.

Secretary Hoover stated on July 18 that he contemplates making no request of the operators to furnish voluntary statistics. He said that the new coal commodity division would get its figures as to production from the U. S. Geological Survey. As to price information, he stated that he preferred obtaining it from sources other than the operators, as it would be regarded by the public as more authentic when obtained from sources other than those who produce the coal. Mr. Hoover made it clear that this was no reflection on the operators, as it is natural that prices emanating from them would not be given the same weight as would those that could be collected otherwise.

In addition, Secretary Hoover expects to collect data as to stocks, in which the operators could not be of assistance.

Bradley and Morrow to Follow Legal Guidance

In their negotiations with Secretary Hoover, Messrs. Bradley and Morrow will be guided by a detailed opinion on the subject which was submitted to the Board of Directors by the law firm of Butler, Lamb, Foster and Pope. Extracts from that opinion are as follows:

"We understand that the method of carrying on this work was as follows: The National Coal Association collected from local producers' associations and trade bureaus statistical reports concerning closed transactions of bituminous coal operators and members of said bureaus, showing the aggregate number of cars sold for shipment into different consuming territories, the kinds of coal sold, the prices per ton and the class of customers to whom sold, and from the information so assembled the National Coal Association prepared and distributed to those local associations, bureaus and operators consolidated statistical reports showing the number of cars of coal sold for shipment from the several producing districts into the several consuming territories and the prices at which such coal had been sold. The information so assembled and distributed had to do exclusively with closed transactions which had been consummated by the making of contracts, and none of the information had to do with prices bid or offered or with future or prospective transactions or future trade or market conditions, and none of said information had to do with shipments made on such sales, the amount of coal produced by the different mines, or the name of the seller or of the customer or consignee of such coal.

"The dissemination of such information among the local associations, bureaus and individual operators simply advised those operators of market conditions such as are readily available to those engaged in many other lines of business; for example, those dealing on the stock, grain or other exchanges of the country. This information was currently published in trade journals and was available to the public press and to all consumers who cared to ask for it. It is perhaps superfluous to add that there was nothing whatever in the nature of an agreement to fix or enhance prices or restrain production through such reporting system or otherwise.

"Instead of resulting in any fixing or enhancing of prices, the information so collected and distributed by the National Coal Association showed that there was great diversity of prices prevailing at the time when such reports were made, and that different carloads of coal moving on the same day from the same producing district into the same consuming territory were sold at various and substantially different prices, and that there was nothing approaching uniformity of prices realized for coal of the same quality sold in the same places and at the same time.

"In discussing the question as to whether this practice should be resumed at the present time your Board, as we understand it, desires to be advised so far as possible as to whether the practice as above outlined was legal."

After a comprehensive review of the legal aspects of the case, in which many opinions and decisions on like matters are cited, including a discussion of the hardwood case, the brief continues:

Likens Scheme to Agriculture Reports

"It it difficult to see how the government could well claim that the interchange of such information is, in and of itself, illegal, in view of the fact that the Department of Agriculture for years past has been collecting and publishing weekly in its Market Reporter information concerning the supply and demand of agricultural products and all pertinent trade information for the use of both producers and consumers. It is apparently recognized by the government that it is legitimate and desirable that information concerning market conditions should be given wide publicity and it would certainly never be suggested that those producers who took advantage of the information thus furnished by the government and asked for their products the highest prices which the market conditions would justify were in any way guilty of illegal or improper practice, unless it could be shown that they entered into some conspiracy or agreement artificially to enhance prices or restrict production. In the same way, as it seems to us, the producers of coal are entitled to receive and to take advantage of information concerning market conditions in their industry.

"In closing we would state our opinion that a fortunate outcome of the present situation with regard to the system of statistical reporting would be to work out in co-operation with the Secretary of Commerce some method of collecting and disseminating reports which would be satisfactory to him and not in any way objectionable to the Department of Justice. Whether the Secretary of Commerce would at this time be prepared to entertain a proposition of this character and to countenance and encourage the collection of such statistics, we are not advised.

"It would from your point of view certainly be most desirable that you should secure if possible such official recognition of the legality and desirability of such statistical reporting system before the same is renewed. If such official recognition cannot at this time be secured, it would, in our opinion, be wise policy for your board to postpone the resumption of your statistical reporting system until the fall, when a decision from the Supreme Court in the American Hardwood Lumber Co. case can be confidently expected. And in the meantime some more authoritative declaration may be forthcoming from the Department of Justice concerning its attitude toward such interchange of trade information."

The Sunnyside Coal Mining Co. and the Spring Canyon Coal Co., both of Colorado, have been admitted to membership in the National Coal Association.

Hoover Advises Utilities to Buy Coal Now: Priority Not Likely to Be Granted

HERBERT HOOVER, Secretary of Commerce, made public on July 18 the text of a letter which he has addressed to all the public utility companies. The letter reads:

"I would like to call the attention of your association to the bituminous coal outlook. There is every indication that there has been an undue slackness in the purchase of coal which may accumulate to large demands in the autumn. I am convinced that, due to the general depression, the prices of bituminous coal at the mines is not too high at the presen time. This is, I think, proved by the fact that numbers of operating coal companies are making no profit whatever. If there should be a recovery of business activities in the autumn, taken in conjunction with the large increase in percentage of disabled cars (from 5 per cent to 16 per cent during the past six months) and the inability of the railways to finance their maintenance, there are possibilities of development of a most serious situation as regards coal movement.

"I cannot but feel that the Interstate Commerce Commission, in the face of warnings they have sent out in this connection, would not be disposed to give any priority in such an event. It seems to me, therefore, to be obvious that the public utilities companies, both in their own interests and the protection of the public should make early provision for stocks of coal sufficient to carry them over a critical period."

N. Y. School Board Awards Coal Contracts: $300,000 Less Than Last Year

THROUGH acceptance of bids received on June 27 (*Coal Age*, July 14, page 70) the Board of Education of New York City has saved $300,000 as compared with the coal bill for last year, the average saving per ton amounting to $2.55, according to Arthur S. Somers, chairman of the Supplies Committee. The awards were made by the Board of Education at its meeting on July 13.

William Farrell & Son obtained the contract for Manhattan Borough at a cost of $418.807.50 and the Borough of the Bronx at a cost of $158,782. The Wyoming Valley Coal Co. obtained the contracts for Brooklyn at $439,530; Queens at $133,121 and Richmond at $42.553.75. For delivering alongside 3,500 tons of semi-bituminous coal for the Parental School the contract was awarded to George D. Harris & Co. for $24,500. The bids for furnishing 700 tons of broken coal for the Rockaway schools were rejected and ordered re-advertised.

Mingo Mine Workers Write Their Demands

C FRANK KEENEY, president of district No. 17, United Mine Workers of America, has addressed a letter to Governor E. F. Morgan, of West Virginia, giving the demands of his organization. They are:

"That the Williamson Coal Operators' Association shall agree—(1) that all employees may return to work and that there shall be no discrimination against any employee belonging to a labor union; (2) that the eight-hour day be established and made applicable to all classes around the mines; (3) that wages shall be paid semi-monthly; (4) that the employees shall be allowed to trade where they please; (5) that employees shall have the right to select checkweighmen, as provided by law, and that 2,000 lb. shall constitute a ton; (6) that there shall be a joint commission, consisting of five representatives from each side (each side to choose its own representatives), for the purpose of adjusting wages of all men working in and around the mines, of determining equitable mining prices and yardage and of providing rules and methods for adjusting disputes between employers and employees.

"In order to avoid any failure to agree, a board of arbitration consisting of three members shall be created, one to be chosen by the operators and one by the employees, and these two to select the third member, who shall be a non-resident of this state. The board of arbitrators shall meet with the commission, and any question that the commission is unable to settle shall be submitted to and decided by the said board, which decision shall be final. The findings of the commission shall date from the time work is resumed, and shall continue until April 1, 1922."

Wage Cut Advocated in State of Washington

A REPORT submitted by the State Coal Commission to the Director of Labor and Industry in the State of Washington gives facts concerning the coal trade and advocates the lowering of retail prices on coal produced in the state to meet the competition from outside fields. The reduction should be from 50c. to $1 a ton on the steam grades and from $1 to $2.50 on domestic Western-State grades.

The commission also suggests a wage cut. The present scale of miners is $8.25 a day and the scale suggested is $6, that in 1919 being $5.89. As $8.25 per day was the highest scale paid before the strike and the lowest is $4.82, a return to a scale but slightly above that paid in 1919, which ranged from $5.89 to $3.20, is recommended.

Says Proposed Duty on Fuel Oil Would Equal Tax on Coal of $1.50 Per Ton

AS AN INCIDENT to the discussion of the proposed tariff on fuel oil, the Governor of Massachusetts at the expressed request of those opposing a duty on oil, telegraphed that this year there will be 500,000,000 gallons of Mexican crude oil brought into Massachusetts. Ninety per cent of that amount is fuel oil, which Governor Cox declares to be equivalent to 2,750,000 net tons of bituminous coal. The Massachusetts Chamber of Commerce also is urging the retention of oil on the free list. The proposed duties of 35c. per barrel on crude petro'eum and 25c. per barrel on fuel oil will put an additional burden upon the industries of Massachusetts, the State Chamber of Commerce declares, which would be equivalent in coal to a tax of $1.50 a ton. This would amount to "millions of dollars," says the Chamber, which "necessarily would be passed on to the consumer."

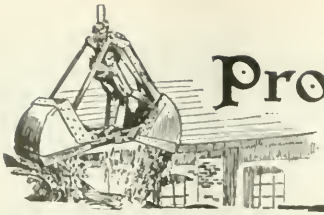
By a vote of 196 to 86 the House of Representatives on July 18 rejected the proposal of its Ways and Means Committee to place an import duty on crude oil and fuel oil, and adopted a motion of Representative Treadway, of Massachusetts, to place oils on the free list.

Pratt Is New Editor of Coal Review

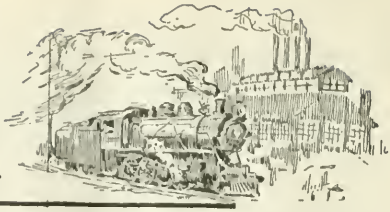
IN the interest of economy the Board of Directors of the National Coal Association has decided to combine the offices of the director of publicity of the National Coal Association and the editorship of the association organ, *Coal Review*, according to a report from the headquarters of the association. John Pratt, for more than a year director of publicity of the association, has been selected for the new position and will succeed William P. Helm, Jr., as editor of *Coal Review*.

National Coal Association Favors Repeal of Excess Profits Tax

THE Board of Directors of the National Coal Association has made clear its position on taxation. In acting on the referendum of the Chamber of Commerce of the United States, the board voted that individuals, corporations and partnerships should be taxed alike. The board voted in favor of the repeal of the excess profits tax and the substitution therefor of a 1 per cent commodity turnover tax and a corporation income tax of not to exceed 15 per cent.



Production and the Market



Weekly Review

PRODUCTION of bituminous coal continues on the down-grade. Output in the week of July 9, small because no mines worked on July 4, was 6,163,000 net tons, an average per working day of 1,233,000 tons, compared with 1,273,000 the previous week and 1,277,000 tons for the year to date. Indications are that output in the week of July 16 was smaller than for any full time week since early May. With loadings for the Lakes falling off and shipments to Atlantic Tidewater ports on the decline, the rate of production has slumped for several weeks. Now that domestic buying also has ceased in the Middle West and industries are not active, it appears that production is about down to bare necessities.

Promises of prompt action by large consumers of steam coal looking toward storage is contained in the responses from railroads and public utilities to the request of Chairman Clark of the Interstate Commerce Commission for early buying. Utility plants in New York City on June 20 had on hand 341,000 tons of bituminous steam coal, compared with 357,000 tons on May 2, and had 58,000 of anthracite steam sizes against 84,000 tons on May 2. In February these same plants had as high as 484,000 tons of bituminous steam coal and 131,000 tons of anthracite steam sizes on hand, so it may be seen that there is room for a considerable gain in this one locality.

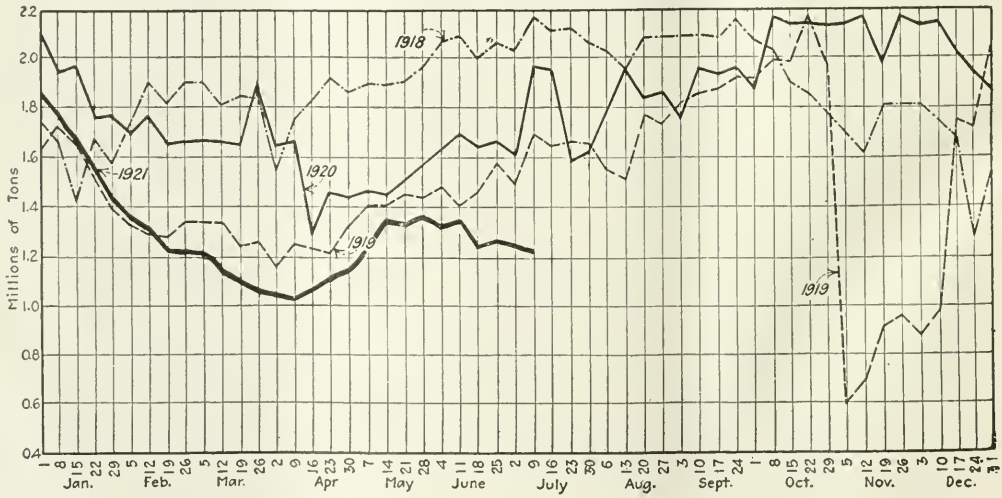
Prices are practically unchanged, *Coal Age* Index dropping one point to 89 on July 18, after having gone up to 90 on July 12 for one week. Prices continue to be largely nominal, with the volume of transactions in spot coal very low. In the Middle West there is a decided feeling that business is gaining strength and in the Rocky Mountain region the sentiment is strong that as soon as this year's crops begin to move the coal trade will pick up. In fact, the far West is the most hopeful of all and the far East the most pessimistic.

Anthracite is holding up in remarkable style. Production this year is 1,500,000 net tons ahead of last year and for the first six months was 45,500,000 net tons, a figure exceeded in the last eight years only by 1913 and the war years, 1917-1918.

Large Proportion of Shipments for Domestic Use

It is further pointed out that shipments from the mines of domestic sizes are really much greater than is indicated by these figures, for household coal has been a much larger portion of the total this year than in any recent year, because of the small demand for steam

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

sizes. It does not appear that there can possibly be difficulty this year in the domestic supply of hard coal, providing there is no labor trouble, as in August, 1920.

BITUMINOUS

Bituminous coal production in the week of July 9 is reported by the Geological Survey as 6,163,000 net tons, a decrease from 7,640,000 tons the preceding week, largely due to the celebration of July 4, when no coal was loaded at the mines. Later information indicates that last week, although containing no holiday, will show a decrease in output below recent full-time weeks.

Cumulative production through the first 161 working days of 1921 was 204,527,000 tons compared with 225,132,000 tons in 1919 and 267,841,000 tons in 1920. Compared with the average of 1917-1920, output to date in 1921 is 65,000,000 tons behind. The Geological Survey reports that little change in the general situation was indicated by the mine reports for the week ended July 2. Decreases occurred chiefly in the low-volatile fields shipping to tide. Lessened activity was reported from the Somerset-Cumberland-Piedmont region, and the New River and Pocahontas fields; also in the Kanawha, Harlan and southwestern Virginia districts. The change, however, was largely offset by an improvement in Ohio and western Pennsylvania. Illinois, western Kentucky and Alabama also reported improvement.

Competition of lower-cost coal from non-union fields, where satisfactory wage reductions have been accomplished, is exerting heavy pressure on the union fields under contract with the men to maintain until April 1, 1922, the highest rates of pay in the history of coal mining. Central Pennsylvania, a union field, is sore pressed by non-union coal from Somerset, Westmoreland and Connellsville.

Eastern Kentucky, operating non-union mines, is working from 52 to 60 per cent of full time and western Kentucky 33 per cent.

Lake dumpings have continued to drop, the total for the week ended July 18 being 787,780 net tons, compared with 835,616 tons the week ended July 10. In these two weeks only have dumpings at Lake Erie ports this year been less than the corresponding weeks of 1919.

The all-rail movement of coal to New England slowed down during the first week of July. Reports show that 3,288 cars of anthracite and 2,647 cars of soft coal were forwarded over the Hudson, against 3,846 and 3,057 cars, respectively, in the preceding week, and compared with 1,169 of anthracite and 3,904 cars of bituminous coal the corresponding week a year ago.

Last week was a very dull week at Hampton Roads. Vessel tonnage awaiting cargo was negligible with little change in the accumulations of cars on hand. Exports from Hampton Roads declined sharply during the week ended July 9, when 302,000 net tons were dumped for foreign cargo and 72 000 tons for foreign bunker. The total—374,-

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

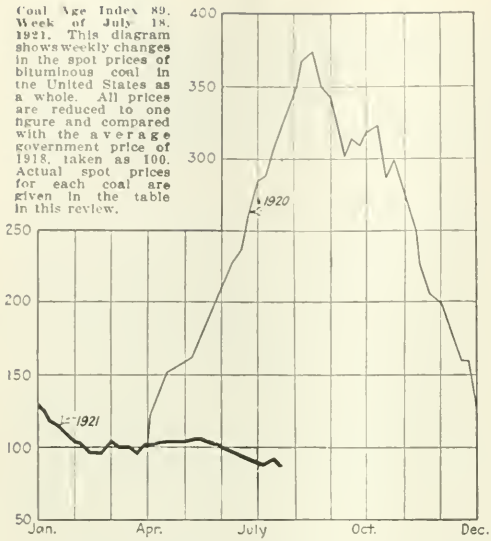
Low-Volatile, Eastern	Market Quoted	June 14, 1921	July 5, 1921	July 12, 1921	July 19,† 1921
Pocahontas lump	Columbus	$5 75	$5 75	$5 75	*$5.50@$5 75*
Pocahontas mine run	Columbus	3 45	3 25	3 25	*3 00@3 25*
Pocahontas screenings	Columbus	2 40	2 35	2 15	**2 15@2 40**
Pocahontas lump	Chicago	5 25	5 65	5 00	4 75@5 25
Pocahontas mine run	Chicago	3 15	2 50	2 65	**2 25@3 25**
*Smokeless mine run	Boston	5 95	5 90	5 90	*5 75@5.90*
Clearfield mine run	Boston	2 25	2 10	2 05	*1 75@2.25*
Cambria mine run	Boston	3 00	2 80	2 70	2 35@3 00
Somerset mine run	Boston	2 20	1 90	1 90	*1 50@2 10*
Pool 1 (Navy Standard)	New York	3 45	3 15	3 10	*2 75@3 00*
Pool 1 (Navy Standard)	Philadelphia	3 35	2 80	2 80	2 75@2 85
Pool 1 (Navy Standard)	Baltimore	3 20	2 75	2 60	2 60
Pool 9 (Super. Low Vol.)	New York	2 85	2 55	2 55	*2 35@2 60*
Pool 9 (Super. Low Vol.)	Philadelphia	2 95	2 40	2 40	2 30@2 50
Pool 9 (Super. Low Vol.)	Baltimore	2 85	2 55	2 40	*2 25@2.40*
Pool 10 (H. Gr. Low Vol.)	New York	2 45	2 25	2 25	*2 00@2.35*
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2 55	2 20	2 20	2 00@2 35
Pool 10 (H. Gr. Low Vol.)	Baltimore	2 40	2 25	2 15	*2 00*
Pool 11 (Low Vol.)	New York	2 15	1 95	1 95	1 85@2 10
Pool 11 (Low Vol.)	Philadelphia	2 35	1 90	1 90	1 75@2 00
Pool 11 (Low Vol.)	Baltimore	2 10	2 10	1 85	*1 75*
High-Volatile, Eastern					
Pool 54-64 (Gas and Steam)	New York	1 90	2 00	1 95	*1.55@1.80*
Pool 54-64 (Gas and Steam)	Philadelphia	2 00	1 75	1 75	1 75
Pool 54-64 (Gas and Steam)	Baltimore	1 85	1 85	1 65	*1.50*
Pittsburgh sc'd. gas	Pittsburgh	2 75	2 50	2 95	2 85@3 00
Pittsburgh mine run (steam)	Pittsburgh	1 95	1 85	2 10	2 00@2 15
Pittsburgh slack (gas)	Pittsburgh	1 65	1 60	1 45	1 40@1 50
Kanawha lump	Columbus	3 50	3 40	3 25	**3 00@3 60**
Kanawha mine run	Columbus	2 20	2 15	2 15	*1 75@2 25*
Kanawha screenings	Columbus	1 25	1 15	1 15	1 10@1 25
Hocking lump	Columbus	3 25	3 15	3 25	3 00@3 50
Hocking mine run	Columbus	2 15	2 15	2 15	2 00@2 25
Hocking screenings	Columbus	1 20	1 10	1 20	**1 15@1 30**
Pitts. No. 8 lump	Cleveland	3 25	3 25	3.25	3 00@3 50
Pitts. No. 8 mine run	Cleveland	$2 10	$2 20	$2 25	*$2.15@$2.25*
Pitts. No. 8 screenings	Cleveland	1 40	1 20	1 25	1 20@1 30
Midwest					
Franklin, Ill. lump	Chicago	3 55	3 80	3 55	3 00@4 05
Franklin, Ill. mine run	Chicago	3 00	2 90	3 15	*2 50@3.50*
Franklin, Ill. screenings	Chicago	2 00	1 90	1 90	**1 25@2 65**
Central, Ill. lump	Chicago	3 15	2 65	2 65	*2.00@3.00*
Central Ill. mine run	Chicago	2 50	2 40	2 40	2 00@2 75
Central Ill. screenings	Chicago	1 60	1 65	1 65	**1 25@2 25**
Ind. 4th Vein lump	Chicago	3 15	2 90	2 90	*2 35@3 25*
Ind. 4th Vein mine run	Chicago	2 60	2 50	2 50	2 25@2 75
Ind. 4th Vein screenings	Chicago	1 75	1 70	1 70	**1 50@2 15**
Ind. 5th Vein lump	Chicago	3 00	2 75	2 75	2 25@3 25
Ind. 5th Vein mine run	Chicago	2 45	2 40	2 40	2 00@2 75
Ind. 5th Vein screenings	Chicago	1 85	1 70	1 70	**1 35@2 10**
Standard lump	St. Louis	2 15	2 25	2 25	2 00@2 50
Standard mine run	St. Louis	1 75	1 75	1 75	*1.60@1.75*
Standard screenings	St. Louis	0 95	0 85	0.85	0 85
West Ky. lump	Louisville	2 55	2 75	2 70	**2 50@3 00**
West Ky. mine run	Louisville	1 90	2 10	2 10	**1 90@2 55**
West Ky. screenings	Louisville	1 50	1 45	1 40	**1 15@2 00**
South and Southwest					
Big Seam lump	Birmingham	3 80	3 50	3 40	**3 25@4 05**
Big Seam mine run	Birmingham	2 50	2 25	2 15	2 00@2 25
S. E. Ky. lump	Louisville	3 65	3 45	3 50	*3.25@3 50*
S. E. Ky. mine run	Louisville	2 25	2 25	2 25	*2 00@2 35*
S. E. Ky. screenings	Louisville	1 45	1 25	1 40	**1 25@1 75**
Kansas lump	Kansas City	5 25	5 40	5 40	**5 50**
Kansas mine run	Kansas City	4 40	4 25	4 25	**4 25@4 50**
Kansas screenings	Kansas City	3 15	3 25	3 25	3 25

* Gross tons, f. o. b. vessel, Hampton Roads.
† Advance over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	July 5, 1921 — Independent	July 5, 1921 — Company	July 12, 1921† — Independent	July 12, 1921† — Company	July 19, 1921† — Independent	July 19, 1921† — Company
Broken	New York	$2.61	$7 85@$8.15	$7 40@$7 75	$7 85@$8 15	$7 40@$7 75	*$7 75@8 00*	$7 40@$7 75
Broken	Philadelphia	2 66	8 00@8 20	7 55@7 85	8 00@8 20	7 55@7 85	8 00@8 20	7 55@7 85
*Broken	Chicago	5.62	12 75	12 70	12 75	12 70	12 75	*12 45*
Egg	New York	2.61	7 85@8 50	7 40@7 75	7 80@8 25	7 40@7 75	*7 75@8 00*	7 40@7 75
Egg	Philadelphia	2 66	8 00@8 20	7 55@7 85	8 00@8 20	7 55@7 85	8 00@8 20	7 55@7 85
*Egg	Chicago	5 62	12 60	12 70	12 60	12 70	12 60	*12 45*
Stove	New York	2.61	8 15@8 60	7 70@8 10	8 40@8 50	7 70@8 10	*8 00@8 25*	7 70@8 10
Stove	Philadelphia	2 66	8 25@8 70	7 90@8 25	8 25@8 70	7 90@8 25	8 40@8 50	7 90@8 25
*Stove	Chicago	5 62	13 20	12 95	13 20	12 95	13 20	*12 70*
Chestnut	New York	2 61	8 00@8 60	7 70@8 10	7 80@8 25	7 70@8 10	*7 65@7 90*	7 70@8 10
Chestnut	Philadelphia	2.66	8.25@8 60	7 80@8 25	8 25@8 60	7 80@8 25	8 25@8 60	7 80@8 25
*Chestnut	Chicago	5 62	12 95	12 95	12 95	12 95	12 95	*12 70*
Pea	New York	2 47	4 75@5 00	5 95@6.45	4 75@5 00	5 95@6 45	*4 50@4 75*	5 95@6 45
Pea	Philadelphia	2 38	5 50@6 25	6.00@6 20	4 50@6 25	6 00@6 20	*4 50@6 00*	6 00@6 20
*Pea	Chicago	5 62	10 90	11 20	10 90	11 20	10 90	11 20
Buckwheat No 1	New York	2 47	2 75@3 25	3 50	2 60@3 00	3 50	**2 65@3 00**	3 50
Buckwheat No. 1	Philadelphia	2 38		3 50	2 50@3 00	3 50	2 50@3 00	3 50
Rice	New York	2 47	1 75@2 25	2 50	1 60@2 00	2 50	1 60@2 00	2 50
Rice	Philadelphia	2 38		2 50	1 75@2 00	2 50	1 75@2 00	2 50
Barley	New York	2 47	0 75@1 50	1 50	0 60@1 25	1 50	0 60@1 25	1 50
Barley	Philadelphia	2 38		1.50	0 75@1 25	1 50	0 75@1.25	1 50
Birdseye	New York	2 47		2.50		2 50		2 50

* Prices and freight rates net tons; quotations f.o.b. cars, Chicago.
† Advances over previous week shown in **heavy type**, declines in *italics*.



Coal Age Index 89. Week of July 18, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.

000 net tons—was a little more than half the dumpings for foreign account in the week preceding.

Tidewater movement increased during June. Total dumpings at the five Atlantic coal ports were 4,492,000 net tons, an increase over May of 705,000 tons, and the heaviest since November, 1920. The increase was largely due to the heavy export demand resulting from the British miners' strike. Of the total foreign shipments—2,040,000 net tons—1,480,000 tons, or 74 per cent, went from Hampton Roads. This was but 35,000 tons less than the record for that port set in October, 1920. Exports from other ports increased somewhat.

The tonnage for bunker increased from 861,000 in May to 914,000 in June, and shipments to New England from 581,000 tons to 720,000 tons.

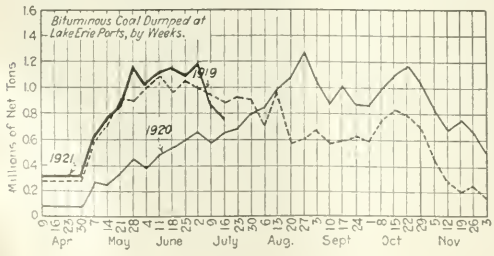
TIDEWATER BITUMINOUS COAL SHIPMENTS FOR MAY AND JUNE, 1921

(In thousands of net tons)

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	June Total	May Total
Coastwise to New England	99	44	72	505		720	581
Exports		108	388	1,480	64	2,040	1,559
Bunker	408	36	60	406	4	914	861
Inside capes	...	170	54	27	.	251	247
Other tonnage	485	1		77	4	567	539
June	992	359	574	2,495	72	4,492	....
May totals	956	327	443	2,031	30	.. ..	3,787

ANTHRACITE

Reports from the anthracite consuming territory generally record a notable slackness to household consumer buying of domestic sizes and premonitions that a larger share of the output must find its way to producer storage or mine operation be curtailed. As a matter of fact the situation will cure itself for, as independents no longer able to obtain premiums on domestic sizes and unable to get adequate prices on steam sizes are closing down, the problem becomes easier for those who remain. Nothing short of unexpected labor trouble can now prevent the country going into winter well supplied with hard coal. Prices are steady in the East but have dropped in Chicago. More detail on the record output of hard coal this year will be found in the news columns of this issue.



BYPRODUCT COKE

The Geological Survey resumes the publication of current statistics of the output of byproduct coke, which were discontinued at the close of the war. Returns for the month of June are summarized as follows:

The total output of byproduct coke for June—in part estimated—was 1,540,000 net tons. In comparison with the monthly average for 1920 this was a decrease of 1,025,000 tons, or 40 per cent. As the present maximum capacity of the byproduct ovens in this country is in round numbers 3,510,000 tons of coke per month, it will be seen that the industry was operating during the month of June at only 44 per cent of capacity.

The coal charged in the month of June is estimated at 2,210,000 tons. The normal monthly consumption of the ovens, assuming 85 per cent operation, would be 4,300,000 tons.

MONTHLY OUTPUT OF BYPRODUCT COKE IN THE UNITED STATES ( )

(Net tons)

	Coke Produced	Coal Charged
1917 Monthly average	1,870,000	2,625,000
1918 Monthly average	2,166,000	3,072,000
1919 Monthly average	2,095,000	2,988,000
1920 Monthly average	2,565,000	3,685,000
June, 1921	1,540,000	2,210,000

(a) Excludes screenings and breeze.

BEEHIVE COKE

Beehive coke is headed for the nadir, with the country down to a daily average of 7,000 tons against 60,000 tons a day a year ago. Prices of coke in the Connellsville region are so low that operators can make more money shipping coal in competition with union coal.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

(NET TONS)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date (a)
June 25b	7,704,000	190,725,000	10,566,000	247,896,000
Daily average	1,284,000	1,279,000	1,759,000	1,657,000
July 2b	7,640,000	198,364,000	10,286,000	258,182,000
Daily average	1,273,000	1,279,000	1,714,000	1,659,000
July 9c	6,163,000	204,527,000	9,659,000	267,841,000
Daily average	1,233,000	1,277,000	1,932,000	1,668,000

(a) Less one day's production during New Year's week to equalize number of days covered for the last two years. (b) Revised from last report. (c) Subject to revision.

ANTHRACITE

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date (a)
June 25	1,847,000	44,262,000b	1,870,000	42,830,000
July 2	1,868,000	46,109,000b	1,778,000	44,608,000
July 9c	1,525,000	47,634,000	1,541,000	46,149,000

(a) Less one day's production during New Year's week to equalize number of days covered for the last two years. (b) Revised from last report. (c) Five-day week.

BEEHIVE COKE

Week Ended July 9 1921 (a)	Week Ended July 2 1921 (b)	Week Ended July 10 1920	1921 to Date	1920 to Date (c)
34,000	46,000	361,000	3,432,000	11,267,000

(a) Subject to revision. (b) Revised from last report. ( ) Less 2 days' production during New Year's week to equalize number of days covered for last two years.

Foreign Market And Export News

British Mines Slow to Resume

Production Disappointing as to Quantity—Principal Companies Withdraw Quotations—Some Prices Stiffen—French Output and Stocks Decline—Ruhr Conditions Have Not Improved Over April.

Expectations of early resumption of production of coal in South Wales are proving to have been too optimistic, for, although the men have gone back to work, coal is coming forth in disappointing quantities. No official figures of output in the first two weeks of July have as yet been issued but cable advices to *Coal Age* from London are to the effect that because of the lack of production the principal companies have withdrawn their quotations for July. Next week the government will release statistics of production for the entire coal field. Production of coal in the United Kingdom from April 4 to July 2—that is, during the three months of the strike—was but 179,000 gross tons, practically all of which came from outcrop workings where miners were able to get out small quantities for local use.

Prices have increased on some coals. Best Admiralty large coal, f.o.b. Cardiff is quoted at 47s. 6d.@50s., unchanged from last week; but best Cardiff smalls are in urgent demand for bunkering and prices increased from 24s.@25s., as quoted last week, to 25s.@30s. Tyne primes were unchanged from last week at 40s.@42s. 6d. Quotations on best steams, Newcastle, increased to 45s.@50s. from around 40s. a week ago.

Decreases in both production and stocks of coal in France in May are shown in official reports just given out by the government and cabled to *Coal Age*. Output in May, exclusive of the Saar, was 2,108,000 metric tons of coal and 54,000 tons of lignite, compared with 2,258,000 tons of coal in April. Stocks of coal at the mines at the end of May were 1,363,000 tons, a decrease from 1,556,306 tons at the end of April.

Production of coal in the Ruhr district of Germany in June was 7,500,000 metric tons. The production of this field was in excess of 8,000,000 tons in January and February of this year but declined to about 6,000,000 tons in March because of labor troubles.

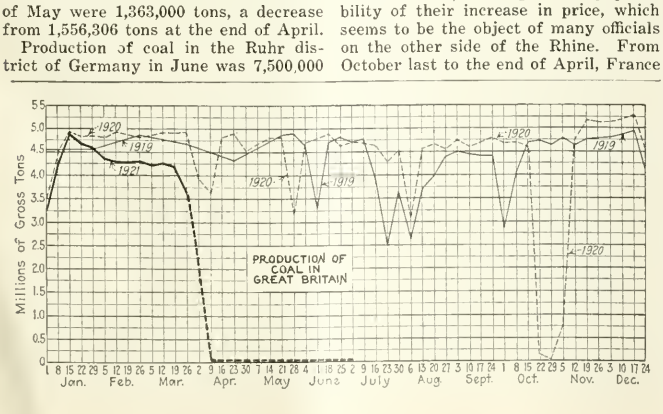
American coal is now (July 16) quoted at Milan at 295@305 lire per ton, compared with 305@315 lire per ton for best Cardiff steam coal.

French Market Offered British Coal at Low Prices

(Paris Correspondent of Coal Age)

There is nothing very important to report since last week. The British strike having ended, coal exporters from that country are turning all their efforts to the resumption of the important French coal trade, and the market here is flooded with offers at surprisingly low figures. For instance, coal briquets are being offered at 30 fr. less than the average French cost price, whereas before the strike the South Wales manufacturers pretended not to be able to manufacture this commodity at less than 60s. Newcastle first brands of gas coals are offered for shipment during August and September at 42s. 6d. and good seconds at 40s. f.o.b. Tyne ports. Foundry coke is quoted 50s. per ton and gas coke 40s. For all this, French buyers are still holding off on industrial coals, some important dealers in house descriptions being the only ones ready to buy now for the usual winter stocks.

Industrial conditions go on showing some improvement, and as a consequence many claims are forthcoming against the slackening of arrivals of German coals; also against any possibility of their increase in price, which seems to be the object of many officials on the other side of the Rhine. From October last to the end of April, France received in all a little over seven million tons of German coal, but as according to the Spa arrangement France was normally entitled to a little over fifteen million tons, this item shows a deficit of five million tons which certain French industrials want Germany to make up.



Hampton Roads Faces a Dull Month

Exports of coal through Hampton Roads dropped off very noticeably this past week, for which the settlement of the British strike is held responsible. The greater portion of the coal shipped last week went to the United Kingdom, indicating that if the British mines are again opened to their full capacity the export trade will fall off more.

Accumulations at tidewater this week remained at practically the same figures of last week, although vessel tonnage awaiting cargo at the end of the week was negligible. All piers experienced a very dull week.

	Tons
For Africa:	
Br. SS. Hartfield for Dakar	6,544
For Atlantic Islands:	
Br. SS. Ayebury for Teneriffe	4,645
For Brazil:	
Fr. SS. Hugo Stinnes for Rio de Janeiro	6,226
For Cuba:	
Br. SS. Berwindvale—for Havana	7,968
Dan. SS. Brynhild—for Havana	3,208
For Denmark:	
Am. SS. Winneconne for Copenhagen	3,754
Grk. SS. Eftichia Vergotti for Copenhagen.	4,891
For Egypt:	
Br. SS. Jesseric for Port Said	6,350
For France:	
Br. SS. Eirene for Bordeaux	5,948
For Greece:	
Ger. SS. Edmund Seimers for Piraeus	8,027
Grk SS. Eugenie S. Embiricos for Piraeus	8,337
Br.SS. Clan Macinnes for Piraeus	6,161
For Italy:	
Am. SS. City of St. Joseph for Genoa	1,196
Ital. SS. Filippo Artelli for Trieste	7,753
Ital. SS. Lilyada for Reggio Calabria	5,623
For Russia:	
Nor. SS. Thorgerd for Petrograd	3,645
Br. SS. Coatsworth for Petrograd	3,412
For Spain:	
Span. SS. Cabo Espartel for Seville	2,614
For Turkey:	
Nor. SS. Thomas Krag for Constantinople	4,766
For United Kingdom:	
Am. SS. Volunteer—for Falmouth	10,250
Am. SS. John Stevens—for Falmouth	6,991
Jap. SS. Yomei Maru—for Laud's End	8,387
Br. SS. Apsley—for Manchester	5,382
Br. SS. Lena—for Queenstown	5,722
Span. SS. Upo Mendi—for Queenstown	5,493
Br. SS. Great City—for Queenstown	9,997
Br. SS. Eastern City—for Queenstown	8,531
Nor. SS. Thordis—for Queenstown	5,695
Br. SS. Sudbury—for Queenstown	5,702
Br. SS. Glendhu—for Queenstown	5,957
Am. SS. Tenadby—for River Thames Port	5,321
For Gibraltar:	
Br. SS. Valdura	7,502
Ital. SS. Amista	7,015
Nor. SS. Joseph J. Cuneo—for Santiago	757

C. I. F. PRICES—AMERICAN COAL—GROSS TONS JULY 16

United Kingdom	$11 10	Havana	$8 30
Malmo	11 90	Santiago	8 95
Copenhagen	12 00	Guantanamo	8 90
Stockholm	12 10	Hamburg	11 10
Antwerp	11 10	French Atlantic	11 35
Alexandria	12 75	Lisbon	11 40
Constantinople	13 00	Algiers	11 65
Gibraltar	11 30	Marseilles	12 20
Rio de Janeiro	10 50	Piraeus	12 30
Buenos Aires	10 40	Port Said	12 80

Bunker Prices—Gross Tons

(Foreign quotations by cable to Coal Age)

Welsh Coal:	
Gibraltar	70s. f.o.b.
Port Said	84s. f.o.b.
Singapore	95s. f.o.b.
Rio Janeiro	100s. f.o.b.
Genoa	73s. trimmed
Antwerp	150@160 fr., trimmed
Belgian Coal:	
Antwerp	140@150 fr., trimmed
American Coal:	
Baltimore	$6.15@$6.40 trimmed
New York, Pool 9	$6.15@$6.30 f.o.b.
Pool 10	$5.90@$6.10 f.o.b.
Hampton Roads:	
Pool 5, 6, 7	$5.35@$5.50 f.o.b.
Pool 1, 2	$6@$6.25

Average Daily Italian Coal Receipts in Italian Controlled Vessels

(In Metric Tons)

Port	May, 1920	May, 1921
Trieste		1,039
Ancona	845	1,007
Civitavecchia	1,062	1,002
Leghorn	1,127	1,000
Genoa	885	988
Spezia		960
Naples	1,036	958
Palermo	1,060	934
Brindisi	970	858
Messina		824
Taranto		637
Savona	1,005	615
Santo Stefano		508
Torre Annunziata	1,032	
Venice	784	

AUSTRIAN RAILROADS HAVE PURCHASED 90,000 tons from the mines of the Sarre, this tonnage to be delivered in June, July and August at a rate of 30,000 per month.

DURING MAY, 1921, the Port of Rouen received only 33,329 tons of coal through Rotterdam, Ghent and Antwerp. On the other hand 99,103 tons of coal and coke were exported largely to the United Kingdom.

THE AUSTRALIAN GOVERNMENT has placed an embargo on the exportation of coal, according to recent cable advices.

French Output and Coal Stocks

April production and stocks of coal in France are shown by the following table, as published by the *Journal des Charbonnages*, correcting the original figures printed in *Coal Age*, (June 30, 1921, p. 1177). The output, exclusive of the Sarre, was 2,257,444 metric tons as compared with 1,817,430 in April, 1920. Total coal stocks at the mines on hand April 30 were 2,033,961 tons as against 4,500,000 on Jan. 1, 1921. Recent Paris reports state that coal stocks had decreased to approximately 700,000 tons at the end of the British strike.

PRODUCTION AND STOCKS OF COAL IN FRANCE, APRIL, 1921
(IN METRIC TONS)

District	Total Mined — Coal	Total Mined — Lignite	Stocks at Mines, April 30, 1921 — Coal	Stocks at Mines, April 30, 1921 — Lignite	Stocks at Mines, April 30, 1921 — Coal	Stocks at Mines, April 30, 1921 — Briquets
Arras	690,107	.....	415,992	.....	19,238	2,663
Douai	392,045	...	358,669	..	9,744	15,973
Saint-Etienne	275,437	.....	249,725	..	16,152	15,385
Lyon	211,554	.....	155,233	580	....	5,090
Clermont-Ferrand	106,615	36	72,597	187	..	..
Alais	156,692	1,296	103,235	76	10	21,673
Toulouse	135,225	423	89,103	1,796	5,474	21,102
Marseille	1,830	55,500	4,310	15,018	.....	..
Nantes	6,840	...	10,879	...	.....	242
Bordeaux	6,112	1,440	11,408	295	.....	1,529
Nancy	8,283	58,706	8,653	5	6,800	.....
Strasbourg	267,304	....	86,502	....	5,145	..
Total	2,257,444	117,401	1,566,306	17,957	62,563	83,657
Sarre	693,083		467,655		2,282	
Grand total	2,950,527	117,401	2,033,961	17,957	64,845	83,657

Germany's April Production Slumps

Shipments from the Ruhr in April, although in the aggregate a little higher than in March, show a decrease of 4,000 tons daily compared with the latter month. Nearly 400,000 tons were taken from the pit reserves. Daily production has therefore fallen short of March by approximately 15,000 tons. In Upper Silesia, production came to an almost complete stoppage on April 23 because of the renewed political troubles. April production figures and the output for the first four months of 1921 are shown as follows:

	April, Tons	January-April, Tons
Lower Silesia	438,813	1,638,266
Aix-la-Chappelle	221,820	1,692,791
Ruhr District	7,894,985	32,133,350
Upper Silesia	1,630,000	10,243,916
	10,185,618	45,708,323

April production in Prussia was 10,185,000 tons, as against 11,243,596 tons in March, which was lower than those of the two preceding months. The following figures, representing production during the first four months of 1921, show the drop since March:

	Tons
January	11,985,534
February	11,943,371
March	11,243,596
April	10,185,618

No shortage has actually made itself felt, partly due to the business depression resulting in decreased consumption, and also to the fact that only a part of the Upper Silesian production is shipped to Germany proper.

Reports From the Market Centers

New England

BOSTON

Slight Interest in Prices—Operators Figure Hard to Keep Mines Working—Coal at New York Piers Absorbed Only With Difficulty—Hampton Roads Quiet.

Bituminous—A few buyers are attempting to negotiate purchases, but these are for continuing delivery over a period, and shippers are not inclined to quote the spot basis for deferred shipment. But little progress is made, although there is ground for the feeling in some quarters that the next few weeks will see the ebb point in prices. Buyers make inquiry only for modest tonnages, and a very slight increase in the present movement of steam grades would be sufficient to meet all requirements. Reserves are still large among most manufacturers and there is no present intention to keep stocks much above their present level for the next few months. Few will consider carrying over much tonnage beyond April 1, for the trend of opinion is toward a lower price basis.

On the other hand, the more representative Pennsylvania operators are leaving no stone unturned to get business for July and August. Every inquiry is sifted; current quotations on Hampton Roads coal are closely watched for their bearing on orders at competitive points and all who are interested in coal at first hand are figuring hard to keep mines in operation at least two or three days a week. Consuming territory is being secured for places to put coal, and those with foreign connections are making efforts in that direction to move enough to help reduce mining costs. The producer's problem unusually is intricate; if only output could be raised to something like a 5-day week basis he would be in much better position to concede the price basis a few mill buyers are now willing to consider.

Those agencies which have started coal for Tidewater with a view to orders turning up later have been much disappointed. At New York and at Philadelphia, in particular, pier coal has been absorbed only with great difficulty, and the immediate prospect is anything but encouraging. There have been such shrinkages in value recently that the volume offering is likely to be less.

Pocahontas and New River at Hampton Roads also meet only a much restricted demand. Some shippers are finding a somewhat better reaction in their favor off shore, but the coastwise market is still very quiet. By reason of lower freights on sailing vessels from Hampton Roads the smokeless shippers are able to take occasional business that during recent years seemed allocated to Pennsylvania interests, but the tonnages are small. The real significance of such sales lies in the fact that under the present high all-rail tariffs, coal by water, especially east of Portland, Me., will have the preference.

It is interesting to notice that receipts through the Hudson River transfer points continue on about the same average that was maintained in June. The railroads are taking coal in enough better volume to offset what is not being shipped commercially, although there is a certain tonnage of small scattering purchases on the spot market that must be taken into account. A considerable number of steam users have been obliged to have contract shipments withheld because of physical inability to take on the coal. Consumption continues on a light basis in most indus-

tries, and few will buy very far in advance of actual needs, especially during a season when they have been trying hard to liquidate reserves piled up at high prices a year or so ago.

Anthracite—Under all the circumstances the trade feels that demand is keeping up remarkably well. Shipments have not been made so freely as buyers expected, and among retail dealers there is still a tendency to be cautious about declining deliveries. Conservative coal men here feel very strongly that when the household trade begins buying it will come with a rush, and for that reason the average dealer will take on all he can store and all he can finance.

At retail there is no improvement. In the larger cities, especially, people are not buiyng and the distributors are tying up equipment.

Tidewater—East

NEW YORK

Anthracite Demand Easier—Independents Make Concessions—Steam Coal Dull — Smaller Bituminous Stocks Strengthen Quotations—Buyers Remain Out of Market.

Anthracite—Market conditions are not encouraging. Buying is lagging but so far the operating companies are not experiencing any trouble in disposing of production. While the demand in this market is easy shippers are sending heavy tonnages westward where conditions are brighter.

Independent operators are forced to make concessions if they want business. There has been a further decline in quotations but in some cases sales show slight premiums above the company schedules. This is particularly true with regard to stove coal.

Pea is being sent to the stock piles. Demand shows no improvement and quotations are easy. Steam coals continue to move slowly. Demand is dull and large quantities are being stored. Quotations for buckwheat alongside were around $5.25; rice $4.25 and barley in some instances was quoted slightly above the freight charges.

Bituminous—There is a tendency to better prices due chiefly to less coal sent to this market, but this improvement is not general. Demand from New England showed a slight improvement and there was a belief among the local houses that consumers were about ready to enter the buyers market.

There was less coal on the local piers on July 15 than on July 8, tabulations showing 290 cars in the pools and 855 cars outside, as compared with 286 cars and 1,444 cars respectively the previous week. During the first 15 days of the present month there were 4,972 cars dumped over the local piers as compared with 5,353 cars in the corresponding period of last month.

The export market is quiet. Inquiries are fewer. One sale of a cargo of screened gas coal for Copenhagen shipment at around $12.65 was reported.

With coal not in abundance at the local piers quotations for Pool 1 ranged $6.25@$6.50; Pool 9, $5.95@$6.15 and Pool 10, $5.65@$5.85. While alongside bunker quotations ranged about the same, plus 35c. water freight, there were instances where loaded cargoes were quoted at figures slightly lower.

PHILADELPHIA

Anthracite Remains Quiet—Consumers Obstinate—Capacity Stocks in Yards—Bituminous Unfavorable — Buying Moderate—Prices Unchanged.

Anthracite—Lack of retail demand reached lower levels this week and dealers are not working to more than 20 per cent of capacity. They are laying off help and carrying only a minimum of men about the yards, and the general belief is that there will be no need to add to their forces until well into the fall.

The trade is still endeavoring to convert dilatory customers to the necessity of taking in their coal now, especially those who have done so in other years. Behind all the sluggishness is the belief that coal must be lower in price, despite all the arguments of the coal man to the contrary.

Producing companies still claim to be operating full time. It is a certainty that no size of coal larger than pea is going into the storage yards, and the only explanation is that the West continues to take a good percentage of production. The only size really wanted here is stove.

Steam sizes do not improve. A fair tonnage of buckwheat is being taken on contract, but the surplus is without a market. Rice is even weaker, and barley is almost uncalled for.

Bituminous—Trade at this time is at least not worse than the preceding period of ten days, but is really at a standstill. It frequently happens when the consumer does want coal, even only two or three cars, he will invite quotations from a number of shippers in order to get the benefit of the lowest possible price. This method is responsible for some low prices recently on good coals.

The best buyers at this time are the railroads, although they are not taking supplies in anything like the tonnage of other years. Prices on this are even lower than the market and for that reason there are many shippers who will not make any offers whatever for it, and due to the further fact that payment is likely to be deferred.

Market prices have not changed during the week, yet some shippers still feel that possibly lower figures might prevail, and are still buying lightly. There is nothing to the contract market, as the consumer seems utterly uninterested and the producer makes no effort to tie him up.

There are some very optimistic people in the trade who hope for a revival even before September. They base this on the recently lowered steel prices being sufficient to produce some orders in that line and thus encourage the purchase of coal in anticipation of a renewal in that industry in the fall.

HAMPTON ROADS

Tonnage Declines—Prices Soften—Accumulations Practically Unchanged

Coal business at the piers fell off during the week very materially, a total of only approximately 300,000 tons of coal being dumped. Coal dealers here are feeling the pinch of this reduced activity, especially, since the month of June was the busiest in the history of the trade.

Pools 5, 6 and 7 are $5.10@$5.25, Pools 1 and 2, $5.75@$6, f.o.b. piers.

A comparison of the situation at the piers is as follows:

	Week Ended July 7	Week Ended July 14
Norfolk & Western piers, Lamberts Point		
Cars on hand	3,568	3,450
Tons on hand	180,532	162,774
Tons dumped	206,228	135,316
Tonnage waiting	38,207	54,375
Virginian Ry. piers, Sewalls Point—		
Cars on hand	2,105	1,984
Tons on hand	105,250	38,586
Tons dumped	106,842	145,428
Tonnage waiting	8,969	696
C & O. piers, Newport News—		
Cars on hand	2,136	2,224
Tons on hand	106,760	111,200
Tons dumped	167,944	144,230
Tonnage waiting	100,375	40,605

BUFFALO

Trade Not Improving—Operations Curtailed—Much Distress Tonnage—Lake Shipping Active—Anthracite Consumers Buy Sparingly.

Bituminous—The movement is perhaps lighter than it was. Consumers will not stock and are allowing their stocks to run down, to all appearance. There have been depressions in the trade, but this one exceeds any other recent ones, nothing is appearing that looks like a change for the better.

Ask any mine owner what his operations are and he will say that they are mostly suspended. He finds that he can get coal enough floating about on the market to meet his requirements and most of it for less than it would cost him to turn it out. The Canadian bituminous trade is quite dull.

With matters as they are the prices are as small as ever, being not more than $3 for Youghiogheny gas lump, $2.75 for Pittsburgh and No. 8 steam lump, $2.50 for Allegheny Valley mine run and $1.50@$1.75 for slack.

Anthracite—Demand does not increase and it is not expected to do so till the hot spell is over. The warning is given out by shippers that if coal is not laid in now it may not be had in winter, but no heed is paid to it.

Independents are trying to hold up their premiums and at the same time keep the consumers buying. They are sending out their circulars to bituminous jobbers, trying to keep up the interest, but it is not easy.

Lake—Shipping agents complain that they cannot get as much coal to handle as they want. If the stocks continue to pile up on the upper docks it may be hard to find room for coal there

before the fall demand sets in. Loadings for the week ended July 9 were 128,600 net tons, of which 66,100 tons cleared for Duluth and Superior, 25,700 for Chicago, 18,800 for Milwaukee, 8,500 for Fort William, 7,500 for Sheboygan, 1,200 for Racine, and 800 for Mackinaw. Freight rates continue easy.

Coke—Demand continues light and does not promise to improve right away. The furnaces are running at such a low rate that most of the local coke plants are entirely idle. Prices are apparently at the bottom, on the basis of $4.50 for foundry, $3.75 for furnace and $3.25 for stock, with a little in domestic sizes selling $5@$5.25.

BALTIMORE

Soft Coal Market on New Low Level—Exports Continue Heavy—Hard Coal Officials Before Baltimore Grand Jury

Bituminous—An inquiry in the soft coal trade shows that business is traveling on new low levels. Prices are below the spot quotations of a week or so ago and in many cases are below the actual cost of production. The effort of high grade steam producers to hold such coals as run to Pool 9 at $2.50 or better has proven a failure. At this writing there is plenty of Pool 9 to be had around $2.25, and not a little has sold at figures between $2 and $2.20 in cases of great disposal emergency. Best grade gas coals, Pennsylvania screened, are offering around $2.25, while West Virginia screened can be had at about $2.10. West Virginia mine run is having slow sale at quotations all the way from $1.35 to $1.60.

The home call continues dreadfully dull, and there is no evidence whatever of manufacturing plants seeking to store in large quantities. The export movement is excellent and for the first nine days of July a movement of more than 140,000 tons cargo and about 18,000 tons bunker was recorded.

Anthracite—With business absolutely at a standstill and the prospects poor for ordering at this time because of a false public impression that prices are to be driven downward, the retail trade has a most difficult problem to combat. Officials of the Baltimore Coal Exchange, following sensational attacks in a particular newspaper, are this week appearing before the Baltimore Grand Jury and being questioned concerning price fixing. Desperate efforts are being made in certain quarters to make the trade a public "goat." Thinking men within the trade, who realize on what a moderate margin of profit the business is run in Baltimore, and the futility of engendering the hope that the legal action, no matter what its outcome, will cut retail prices, are fearful of results this fall and winter.

Should the Grand Jury action force the end of all restraint over the Coal Exchange members, the temptation to run prices up in a rush all market will naturally be strong. The trade believes that the most damaging thing to the public interest at this time is the so-called effort to aid the buying public by hammering at members of the Exchange.

Northwest

DULUTH

Interior Shipments Slightly Increased—Heavy Receipts Continue — Prices Quietly Shaded.

Shipments to the interior have improved silghtly, and in this coal men see some hope for a resumption of trade to such an extent before Aug. 1 that the threatened tie-up of all docks here may be averted.

The cause of the Inland movement is the slackness of railroad shipments and the fact that the roads feel that it is now a good time to get coal supplies into their several fueling stations. Should a demand for cars come from another source, it is probable that the coal movement will suffer a setback.

There is also an indication that the larger country dealers are taking on coal, although this resumption of activity is in but minute quantities. It is encouraging, however, to see even the slightest signs of life from sources which have been dormant for so long.

Receipts improved last week and fifty-seven cargoes were received. Of these, five were anthracite. Reports show that cargoes are on the way of which three are hard coal.

Prices remain about the same, with indications of concessions made sub rosa to some buyers, but no outward sign of any further cuts. One company, however, is reported as closing two municipal contracts for screenings at $3.85, which is 15c. below the market.

Anthracite demand is absolutely dead. Prices hold firm with egg at $12.75; stove and nut $12.80, pea $10.80 and buckwheat $8.50. A shortage of hard coal in mid-winter will undoubtedly be experienced unless some means is taken to move the stocks on hand here immediately.

MINNEAPOLIS

Sluggish Market Continues—Freight Adjustments a Disappointment—All-Rail Tonnage Low—Strong Competition for Business.

The buyers' strike, both wholesale and retail, continues without much change. So far as the dock interests are concerned, they have done their bit in the way of forwarding a good tonnage of soft coal. Receipts so far are better than 3,000,000 tons over the same period for last year.

Dock companies are in a position to offer a perfect defense if there is any serious shortage of coal this year. They have stocked the docks nearly to their capacity, while the outgo has been very small. It is not a case of asking the other fellow to take all the precaution nor to assume the whole burden. May shipments from the docks were very small and June was somewhat better. But neither has been equal to a reasonable amount in view of the possibilities.

One of the causes for a holding back of shipments was the anticipated reduction of freight rates on coal to numerous points in the Northwest. The change went into effect July 6, and has proved to be an increase to nearly all points, especially on soft coal. Hard coal has had a few inconsequential reductions, but had 140 increases while bituminous had 170.

The all-rail trade is not getting into action to any great extent, although it is picking off a little business now and then. Coal should be moving to the country from all sources of supply more freely than it has. Some of the large users, public utility concerns and municipal plants, have placed their orders for the winter's needs. In many cases, the prices made were very close and considerably below the price regarded as list—if such a thing exists.

The rail dealers feel that they are sure to get their share of the business when sales begin to stir. They say that the dock trade is fighting tooth and nail for business at a cost which means a loss. The dock men retaliate with a similar charge. From all appearances, the coming active season is going to see some of the giddiest competition that has existed in some years.

MILWAUKEE

Market Continues Dull—No Change in Prices—Receipts by Lake Liberal, and Yards Accumulate Heavy Stocks.

There has been no change in the coal situation at Milwaukee. Business could not be more dull. The demand is very slow, with the result that coal continues to pile up in the dock yards.

Receipts by Lake are liberal, but unless coal is moved out of the yards faster than it is at present, storage room will soon be exhausted. There has been no change in prices, but dealers expect an advance in anthracite about Aug. 1. Milwaukee has received 207 cargoes of coal thus far this season, the receipts aggregating 450,781 tons of anthracite, and 1,308,448 tons of soft coal, which is about double the receipts for the same period last year.

Inland West

CHICAGO

Domestic Market Stagnant—All Efforts to Move Coal Fruitless—Steam Outlook Better.

A number of the most aggressive sales agents have come to the conclusion that all efforts to sell coal are practically useless, and will continue to be so until the public awakens to the situation and decides to buy coal. This state of affairs appears in both the steam and domestic markets.

To give an idea of conditions confronting dealers, we know of one particular firm which has a large and modern coal yard representing an investment of over $75,000. During the

last two weeks, the total tonnage moved through this yard to the domestic consumer was 4½ tons. Another dealer with a yard in one of the North Shore suburbs moved only 1½ tons during the last three weeks. There is nothing wrong with the coal handled by these gentlemen, or with their sales methods, as they are both up-to-date aggressive business men, representing the highest type of retail dealer. Unemployment is very prevalent and the public is certain that freight rates and coal prices will be reduced before the fall months and in plenty of time to procure a winter's supply of coal. This week the convention of the Illinois and Wisconsin Coal Dealers' Association brought a number of retailers to Chicago, but we have not heard as yet of any operators or wholesalers profiting by it so far as orders booked are concerned.

The outlook for steam coal is a little brighter. People are taking very seriously President Harding's recent statement to the effect that conditions are not only becoming better, but will continue to improve very rapidly. Recent developments seem to indicate that this is so, so far as awakening interest is concerned, and there are evidences of renewed interest on the part of manufacturers in the steam coal market. Industries are not buying, but it looks as if they were planning to in the near future.

COLUMBUS

Stronger Domestic Demand — Steam Business Still Drags — Signs of Reduced Lake Movement—Production Still Low.

Some slight improvement has developed in the demand for prepared sizes. This is not sufficient to give much strength to the market, although it presages better things. Retail stocks are not as large as formerly and dealers are trying to replenish them. There is a fairly good demand for the better grades, such as Pocahontas and Splints. Retail prices are fairly strong at the levels which have maintained for some time. Hocking lump is $6.50, and West Virginia splints are $7.50@$7.75; Pocahontas lump and egg is $10. Anthracite is strong around $15.

Steam business is quiet in every way. Many of the larger users have rather heavy reserves. Manufacturing is slow in resuming and there is practically no increase in consumption of steam grades. Requisitions of railroads are not large.

Lake trade is fairly active. Some congestion at the Upper Lake ports is reported and it is the belief that there will be a reduction in tonnage by the latter part of July. During the week ended July 9 the H. V. Docks loaded 200,538 tons as compared with 176,762 tons the previous week, making a total of 1,940,079 tons for the season. During the same week the T. & O. C. docks loaded 52,632 tons as compared with 58,049 tons the previous week, making 498,555 tons for the season.

CINCINNATI

Smokeless Domestic Coals Soften—Market Very Sluggish — Slack Coal Strengthens with Production.

Smokeless, the king pin of Western coals, has at last been touched by the softness of the market. The breach between West Virginia bituminous offerings and those of Kentucky has widened to a perceptible degree. There have been some inquiries from the Lake, but at prices that do not give much enthusiasm, and the slack market is stronger, as there has been a decrease in the making of lump and block with the falling domestic demand.

Pocahontas and New River are still quoted $5.50 for lump and block but actual sales have been made around $5. Nut has been sluggish for some time at $4.75@$5 and has been cut 25c. Mine run can be had $3@$3.50 while slack is quoted at $3 for best grades. Off grade stock is as low as $1.75.

West Virginia has been showing the effect of large shipments which have been gathered up for Tidewater. Most quotations have been made $1.75@$2.25, with $2 as the general run. Better grades of lump are selling $3@$3.50 while others more friable are quoted $2.50@$3.

Kentucky nut and slack turnovers have been made at 90c.@$1.25. Mine run is quoted $1.60@$2.20 and there has been no material change in lump and block at $3@$3.50. Retailers hold to the prices established the first of the month.

DETROIT

Inactivity and Lack of Business Outstanding Features of Trade—Receipts Continue in Small Volume.

Improvement in buying demand is of slow development in the bituminous market in Detroit. Jobbers and wholesalers report little demand for either steam or domestic sizes. Consumers of steam coal are manifesting little interest in offerings and retail dealers show no inclination to add to stocks on hand.

In the steam trade the curtailment of buying is ascribed to a continued uncertainty among consumers concerning the probable extent of their requirements. Business in industrial and manufacturing lines is now proceeding haltingly, with production in most instances much short of normal and with a corresponding lessening of consumptive requirements for fuel. This has made it possible for many establishments to work along on reserves, or buying only in small lots.

Some users of steam coal with small requirements believe they will be able to supply their needs this year by purchasing spot coal.

Quotations are at present more of a nominal character than a reflection of the actual market. Lump from Ohio mines is quoted at the mines at $3@$3.25; mine run, $2@$2.50; nut and slack, $1.10@$1.25. West Virginia lump is $3.25@$3.50; mine run, $2.25@$2.50; nut and slack, $1.90@$2.25; smokeless lump and egg, $5.25@$5.50; mine run, $3.25@$3.50 and nut and slack, $2@2.25.

Owing to the extreme heat, domestic buyers of anthracite are evincing little interest in putting in a winter supply. Lack of employment and unwillingness to pay the prices asked also are deterrent factors. For prepared sizes retail prices range from $14.25 to $14.75.

ST. LOUIS

Local Situation Shows No Improvement —Steam Outlook Very Dismal—Railroads Fail to Store Coal.

There is little variance in the local situation, with the exception that one or two places in the state show a picking up in domestic orders, occasioned by newspaper publicity of the situation as it actually exists. Generally speaking, there is no buying of domestic coal.

The steam situation, if anything, is a trifle worse than last week. In the country there is some demand from flour mills and a little movement at two or three places least expected.

No Carterville coal is moving in except a little on contract, for which the dealers are being forced to rent additional space for storage. Mt. Olive is coming in on much the same conditions.

A few cars of West Virginia smokeless came in during the past week. Some little tonnage of coke, both by-product and gas house is being ordered for domestic use on account of the low prices.

An idea of how the situation compares with last year is indicated by the coal orders sent in by members of the Employees' Benefit Association of the Union Electric Light & Power Co., at St. Louis. This year the orders are for about 1,600 tons as against almost 7,000 tons last year. Offsetting this is the fact that some of the coal delivered last year may be left over.

CLEVELAND

Sentiment in Coal Trade Somewhat Improved—Activity Gains Slightly—Large Slack Order Placed—Stocks at Lower Lake Docks Diminishing

The appearance of one or two large inquiries and the closing of a number of substantial contracts in the last few days have served to bring about a slightly better feeling in the coal trade in this district. It is true that largest inquiries have come from public-utility corporations and similar sources, and that the demand from industrial users continues, as it has for months, on a hand-to-mouth basis. Efforts of the administration to finance the railroads and place about $500,000,000 in their hands are still looked upon as offering a ray of hope. Such a large amount of credit available for the roads would help the industrial situation.

The Cleveland Electric Illuminating Co. has closed a contract for 100,000 tons of No. 8 slack with a northern Ohio coal operator at a price said to be $1 a ton. Coal dealers expect that the Board of Education's requirements for 40,000 tons of coal will be awarded

soon. Bids have been submitted. Retail dealers say there has been a slight picking up in demand for coal, the result probably of the recent stiffening of anthracite prices and the failure of lower freight rates on coal to appear.

The stocks of coal at lower Lake docks are declining. With the falling off of production and the curtailed movement from the mines to the Northwest destinations, receipts of coal at the docks are less than the dumpings. Shipments up the Lake for the season up to July 11 were 10,765,847 tons, compared with 4,428,105 tons for the corresponding period of 1920, 10,497,770 tons in 1919 and 8,835,433 tons in 1918. Less bunker coal has been sold this year than for three seasons. This is due to the sharp curtailment of vessel operation, the result of the minimum ore shipments now current.

Receipts of bituminous coal at Cleveland for the week are the lowest on record, amounting to some 398 cars, divided into industrial, 307 cars, and retail, 91 cars, as compared with a total of 943 cars the preceding week, or a decrease of 545 cars.

Southwest

KANSAS CITY

Kansas Mines Resume—Domestic Call too Heavy—No Steam Buying.

Mines in Kansas resumed work July 11 and production for the week was above the tonnage produced since the middle of June. The demand for domestic grades exceeds the production. Mines are working only about half-time on account of no demand for steam. With the high cost of production, it is out of the question to store slack and run the risk of spontaneous combustion.

Threshing throughout the wheat belt is in full force and the yield is better than expected. Only the extremely high freight rates will prevent its prompt shipment to market.

Quotations are as follows: Arkansas lump $7@$9.50, slack $2@2.50; north Missouri lump $4.50, washed nut $4.50 @$5, washed slack $3.85, mine run $3.85, and raw slack $3@$3.15.

South

BIRMINGHAM

Steam Trade Dull and Demand for Domestic Lighter—Prices on Commercial Coal Unchanged

General demand is light and trade conditions have not improved in any respect. Owing to the uncertainty as to when business depression will begin to lift, industrial demand is confined to requirements of the immediate future, which are provided for in the spot market, and no interests seem willing to stock coal against that uncertain day when plant operation will require a supply of storage coal. The sentiment in the trade is that brisk business is not to be expected before next spring.

Mines are now being called upon to restrict shipments against domestic contracts, as dealers are disposing of very little coal in the retail market and most yards have stocked almost to the limit of their capacity.

Labor in the coal fields is plentiful and there has been comparatively little defection to other lines. Wage adjustments, which have been placed in effect at the majority of mines have been received with little or no complaint; in fact the reductions were petitioned for in most instances in order that operators might be enabled to book orders if possible, which would insure more regular work.

LOUISVILLE

Lake Movement Slower—General Demand Quiet—Retail Tonnage Light.

It is said by some coal men that business today is duller than at any previous period since 1907, when the panic resulted in general slow industrial conditions. Producers claim that with industrial conditions slow, plants are not consuming much steam coal, and employees of such industries are not in any position for stocking coal until it is actually needed. Jobbers report that it is not a question of holding old trade, but of selling at any price at all.

Railroads which have contracted for fuel are not using even the pro rata of the contract amount just now, and are not in the market for fuel. A few of the Southern roads have not closed their contracts as yet, and apparently are in no mood to do so. Public utilities, gas companies, etc., are buying small quantities as needed, and apparently are not worrying much about a probable high market later on.

Reports recently compiled show that in 1920 a total of 32,911 cars of coal, consisting of 1,493,136 tons were stopped off at Louisville, and 64,622 tons of river coal, making a total of 1,545,088 tons, which is about the normal annual consumption for Louisville.

Screenings are a little stronger as a result of reduced production of prepared, especially in movement to Lakes.

News From the Coal Fields

Northern Appalachian

ANTHRACITE

There is practically no change in the anthracite situation this week over last week. The independents are not working as well as they might, due to the fact that they are unable to get any premium over the company prices and because of the difficulty of disposing of steam sizes. Steam coal is a drug on the market and a considerable amount of it is being stocked locally.

The large companies are all working full time, apparently with plenty of orders for domestic sizes.

PITTSBURGH

Operations in Pittsburgh District Especially Light, on Account of Competition by Non-Union Districts.

Mine operations in the Pittsburgh district—the district as it is defined in the trade—are at a very low rate, there having been continued decreases since the spurt in May due to Lake coal movement. The district suffers, as does the coal industry generally, from the lightness of consumptive demand, but in particular it suffers from the competition of non-union districts, including the Connellsville region and parts of West Virginia. This is really the outstanding feature of the situation and there is speculation as to whether anything will come of it by way of a revision in the union mining scale. In the Connellsville region a succession of sporadic wage reductions culminated in a general reduction April 1, and at the beginning of this month two interests —Rainey and Washington—made additional reductions.

The steel industry has been down to almost no operation in the past two or three weeks, estimates being that the rate in tonnage output is less than 20 per cent of capacity, and coal consumption is correspondingly light. Other industries are almost equally depressed, and as there is no definite prospect of any great improvement in the near future there is practically no disposition to stock coal. Domestic coal is moving very slowly, there being little tendency on the part of householders to lay in winter supplies.

CONNELLSVILLE

One Inquiry for Contract Furnace Coke — Spot Easier — Production Still Smaller.

An inquiry has been before the trade for a few days involving 15,000 tons of furnace coke a month, August and September, for the Wickwire-Spencer Steel Co., Buffalo, which contemplates blowing in a furnace if it can operate it cheaply enough. This is the first inquiry for several months looking to the blowing in of a blast furnace. Predictions are made that about $3 will be quoted, although many operators with idle plants state that they would not contemplate resuming production unless they could get about $3.50.

The spot furnace coke market is

weaker, $3 being as high as is considered. Odd lots to miscellaneous consumers are generally sold at this figure by brokers, who get a margin below that from the operator. These are merely pick-up lots, as not more than two or three operators would run on such a price. While sales of coal are far below the district's capacity, they are at prices much better than is realized by turning the coal into coke

Foundry coke is not quotably changed, but seems softer and sales are of smaller volume. We quote spot furnace coke easy at $3 and spot foundry at $4@$4.50, depending on brand, per net ton at oven.

The *Courier* reports production in the Connellsville and Lower Connellsville region in the week ended July 9 at 6,200 tons by the furnace ovens, a decrease of 4,230 tons, and 12,200 tons by the merchant ovens, a decrease of 1,010 tons, making a total of 18,400 tons, a decrease of 5,240 tons.

UNIONTOWN

Tight Market Prevails—Coke Prices Soften Further—Demand Quiet.

Classified mines in the coal and coke region are undergoing inspection by pier inspectors with a view to insure proper classification of both the mine and the coal tonnage shipped to the various piers.

A substantial three months' contract for furnace coke at about $3.25, ovens, was placed this week through W. L. Byers & Co. for the Robesonia furnace at Robesonia, Pa. The contract calls for delivery of 7,000 tons per month during July, August and September. Delivery is being made from the Herbert Works of the Connellsville Central Coal & Coke Co., which has resumed operations.

While each week is now seeing a slight improvement in the industrial situation the resumption has not become so general as to find a reflection in the fuel market. Brands have much to do in determining the price for the little coke tonnage being sold and prices have a wide variance, the average for furnace, however, being $2.75@$3. For foundry coke there is a wider range of $3.50@$4.50.

An order for 16 000 tons of Pittsburgh vein of coal was shipped this week to piers for export to Holland. The price of the order was not divulged.

EASTERN OHIO

Production Outlook Gloomy—Lake Outlet Closing Slowly—Industrial Consumption at Minimum.

The outstanding feature of the week ended July 9 was a decided slowing down in operations, attributed to the July 4 holiday and curtailment in Lake shipments. Aggregate production was 314,290 tons, or approximately 59.8 per cent of the five-day rated capacity. Based upon a full week's operation output was but 49.8 per cent of capacity and some 83,000 tons under that of the preceding week.

Association mines worked but 55 per cent, but produced 65 per cent of the total rated capacity of the mines reporting. Figures indicate that operations throughout the field were lower than in some weeks, and there does not seem to be any immediate prospect of improvement.

With the Upper Lake docks rapidly becoming filled to capacity, and no change in the attitude of railroads and other consumers in that section toward commitments, little hope is entertained that the volume of cargo shipping can possibly continue at anything like the present rate; therefore restricted operations in eastern Ohio seem inevitable. The railroads have some 14,000 cars at Lower Lake docks and the amount on hand is diminishing daily, as shipments are less than dumpings.

At least 40 per cent of capacity is being lost weekly by reason of no market and operators are simply marking time awaiting developments. In the iron and steel industry, large consumers of Ohio coal, independents are reported operating at not more than 10 per cent of capacity, while the corporation mills are running about 30 per cent, and other lines are showing little, if any improvement.

UPPER POTOMAC

Production Almost at Standstill—Spot Prices too Low for Acceptance.

Production was largely at a standstill in the Upper Potomac and Georges Creek regions during the week ended July 9, as a result of continued market dullness. Operators as a rule were averse to mining coal under prevailing prices, which were as low as $2.35@$2.45 for Pool 9. Only a few mines were in operation at all in the Upper Potomac. Contract orders were the only ones in evidence, spot business being unattractive.

FAIRMONT AND PANHANDLE

Mine Idleness Grows—Lake and Tide Movement Declines—Railroad Coal the Main Bolster—Prices Soft.

Fairmont

Production was on a much lower level in northern West Virginia during the week ended July 9. The difference in the output amounted to about 75,000 tons, mine idleness jumping with the poor demand and the holiday on July 4. Tidewater markets reflected a sharp decrease, following the settlement of the British strike. Lake shipments have dropped off materially and it is now difficult to dispose of any coal. A large majority of the tonnage moving is for railroad fuel purposes.

Northern Panhandle

Except for an occasional small order for screened coal there is virtually no demand on a spot basis and production has declined further. Prices are so low generally as to preclude acceptance of orders. A little coal was moving to the Lake and Western markets but toward the end of the week Lake shipments were being curtailed.

Middle Western

INDIANA

Few Mines in Operation and Those but Half Time—Market Dead.

Mines throughout Indiana continue to close down and the depression in the mining districts grows more evident each day. No mines in the district are operating at full time and a majority of the mines have been completely closed down. Thousands of men are out of employment, many of whom have been without work for several months.

Appeals have been made to the public to buy coal now before the demand grows greater than production during the winter months. Domestic users have complied with this request to some extent but the industrial consumers have not.

Of approximately 219 mines in the state only 97 are actually working and these 97 are operating 50 per cent of full time. The situation has not changed much in the past week, and unless the market opens the majority of these mines will be compelled to curtail operations. The mines are operating on an average of from three to four days a week and are producing coal which was contracted for last summer.

WESTERN KENTUCKY

Operators Avoid Over-Production—Prices Well Maintained.

The majority of operators are playing safe in that they are making no effort to mine coal at give-away prices. There are a few who are cutting prices somewhat, but as a whole the field is sticking together, and working on the basis of making a profit on coal mined.

Records for the field show that last week's averages were 13c. a ton higher on prepared than for the previous week, and 15c. higher on mine run, but screenings show a loss of 10c.

Western Kentucky screens down to pea and slack, and fine screenings are in demand as a result of many concerns not being able to handle fine coal that contains nut sizes.

As a result of retailers being stocked up on prepared sizes, and domestic consumers taking very little coal, production of screenings is much below normal, which is aiding materially in maintaining prices.

SOUTHERN ILLINOIS

Conditions Show No Improvement—Steam Sizes a Serious Menace to Future Working Time—Railroad Tonnage Light—Serious Break in Prices.

The Carterville situation in Williamson and Franklin County shows no improvement in the matter of tonnage handled. Railroads are not taking the tonnage that was expected although the Burlington is reported as having bought 250,000 tons for storage.

Screenings are an absolute menace to the situation. There is no market

and several operators have stored all that they can afford to in the vicinity of the mines and some of these are causing trouble from spontaneous combustion. This is especially so in Franklin County. The "Big Six" are trying to hold to the circular price of $4.05 for domestic sizes. Mine run and screening prices are shot. The balance of the association members are trying to run in competition with prices made by the independents. At least, it would appear so from the quotations made.

Duquoin field conditions are extremely bad. Some mines get one day a week, some three days, with several of them idle, and railroad tonnage light.

The Mt. Olive situation shows little change. Steam moves only on contract. There is no change in prices, which are a minimum of $3 for domestic in the St. Louis territory and $3.25@$3.50 outside.

The Standard field is standing still. Prices are as low as they can go and working time cannot be much worse without shutting down altogether. The screenings in this field are causing some concern. There is no market at any price, but even if screenings were moving the demand for other sizes would not justify working.

MIDWEST REVIEW

All Markets Move Sluggish, but Inquiries Are Increasing—Labor Situation Causes Apprehension—Screenings Stronger with Poor Domestic Demand

All factors which go to make up a good market appear to be conspiring against the coal industry. The farmers are not buying, industries are running in a hand-to-mouth manner, if at all, and the weather, even for this time of the year, has been unseasonably hot and humid, having the most depressing effect even on those ordinarily most buoyant. The Northwest docks are crowded with coal, and have no more room for additional cargoes. This will prove to be a distinct blow to the mines in southeastern Kentucky and West Virginia, which have been operating in a fairly satisfactory way since early May. Dock operators have cut prices down to the bone, but in spite of this, the public remains uninterested. In the towns and cities of the Middle West the situation is about the same as the public has the idea firmly fixed in its mind that coal is going to be cheaper. So far no argument has been found which will dislodge this idea.

The demand for steam coal has not picked up although prices on screenings have strengthened to some extent, principally on account of the fact that lump coal is so hard to move, and there has been no accumulation of screenings at the mines as many of the mines have been idle. Running time of factories throughout the territory is not showing any inclination toward improvement although immediate prospects are brighter than they have been for some time. Inquiries on steam coal are coming in to the central markets in increased volume, and if these inquiries are any indication of the situation, a great many of the industries are planning on opening up within the next few weeks.

Operators and wholesalers are beginning to give serious thought to the labor problem. Practically all industries have taken a reduction in wages, and it is felt by some that the coal industry must keep in line with the others. Some of the non-union fields have already made reductions, and these put the Eastern non-union fields in a position to compete very seriously with the Middle West, consequently, the latter coal fields must sustain a serious loss, or else will have to make some sort of an agreement with the United Mine Workers which will bring about a reduction in the cost of producing coal at the mines.

A very significant statement appeared in the Chicago press a few days ago made by Charles S. Dodge, treasurer of the Illinois and Wisconsin Coal Dealers' Association. Mr. Dodge makes no bones about predicting a very serious coal strike next April if not before: "There must be a wage cut from the war-time peak. The other alternative is unemployment. The mine operators are determined to cut and the unions say they will accept no reductions. The only outcome of such a situation possible is a strike. It will probably be the bitterest fought of any in the history of the country." The basis of Mr. Dodge's argument is that the only way to meet competition is through a wage cut.

Middle Appalachian

LOW-VOLATILE FIELDS

Foreign Tonnage Declining — Some Mines Close Indefinitely—Holiday Production Losses Smaller Than Anticipated.

New River and Gulf

New River production declined further, due to the July 4 holiday and the existing depression. Many mines have closed down since the Fourth for an indefinite period. Curtailment of foreign shipments has removed the last mainstay of production and prices have softened.

In the Gulf region dullness was also more pronounced, and there was a slim output during the week ended July 9. General conditions are about the same as those existing in the New River field.

Pocahontas and Tug River

Despite the general apathetic market, Pocahontas production was fairly well maintained, although the holiday tended to pull down the output. Slack was in very poor demand and was not selling much above $2, prepared coal ranged $4.50@$5 and mine run brought around $2.50.

Tug River production was slightly reduced, although taking general market conditions into consideration, the output was larger than anticipated. Few spot orders are being placed and almost no new contracts have materialized. Much of the output went to Tide although Lake shipments are still holding. Slack coal was extremely hard to move.

HIGH-VOLATILE FIELDS

Holiday Production Losses Insignificant —Demand Unimproved—Lake Tonnage Less—More Mines Idle.

Kanawha

Depression was much in evidence during the week ended July 9, although more than the usual tonnage was produced on July 4, probably because miners were impressed by the fact that opportunities to work were becoming rather rare. The output was not above 30 or 40 per cent. Spot closings were few because of the low prices offered.

Logan and Thacker

Neither the holiday nor market depression prevented a good production in the Logan region. Operations, however, were confined to a few mines and much coal was going for storage. More inquiries were in effect but prices offering were too low for producers consideration; $2@$2.50 on prepared sizes, $1.75 for mine run and not more than 75c. for slack.

Williamson "no market" losses were not far short of 90,000 tons with an output of about 50 per cent. But little spot business was in sight.

Northeastern Kentucky

Production remains at a low ebb because of the general absence of any market. Screenings could scarcely be moved at any price which precluded the acceptance of any but meager domestic orders.

Virginia

As there was little or no spot market, mines were limping along on contract orders with about 60 per cent production. Few of the smaller mines were working as the state of the market precluded a resumption of operations.

West

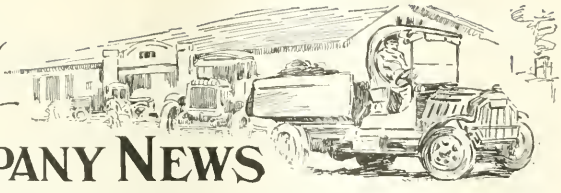
UTAH

Storage Prices Off—Demand Listless—Consumers Await Still Cheaper Coal.

There is practically no change in the coal situation. Consumers are convinced that prices will yet come down and nothing but an elaborate campaign on the part of some disinterested authority would convince them that they will remain where they are.

One of the largest retail concerns in Salt Lake City is stocking up but many of the smaller agencies are not in a position to do so. The dealers have raised the cash price to $10 again for lump and $9.50 for nut, the time limit on the special storage price being up. The reduction made practically no difference.

MINE And COMPANY NEWS



ALABAMA

With a view to placing a check on prices charged consumers for domestic coal in Alabama, Governor Kilby has been supplied with data showing the cost to the dealers of the various grades, f.o.b. mines, and is assembling information on freight rates, cost of retail handling, to which will be added a fair margin of profit, and a schedule of prices which consumers should pay for their coal will be published for the information of the public in the near future.

INDIANA

Negotiations to consolidate the **Oliphant-Johnson Coal Co.**, controlling ten mines in Indiana and Illinois, and the **Rowland Power Collieries Co.**, controlling thirteen mines in Indiana, have failed. Independent mining on a large scale has prevailed in this vicinity for some time. Organization of a large company, mining interests say, would dominate the field. George G. Rowland, president of the collieries company, a Chicago man, is said to have offered $1,000,000 in cash and millions of dollars in securities for a controlling interest in the Oliphant-Johnson mines.

The Enterprise Coal Mining Co. has been organized at Sullivan, with a capital stock of $50,000. The company will do a general mining business and the organizers are Robert Pickett, Sr., Robert Bonham, Arthur Ladson, Allen Zawyer, Axel Olsen, Frank Davidson, Mart Crooks, Thomas Scully and R. B. Squires.

The Bright Gem Mining Co., at Brazil, has been incorporated under Indiana laws. The company has been organized by A. L. Allais, A. H. Stark, Edward Allais, Jr., T. F. Grand and Edward Allais, Sr., and has a capital stock of $75,000.

The Atomized Products Co., of Evansville, a company which makes a fuel out of coal dust, has changed its name to the **Atomized Products Corporation.**

KENTUCKY

The Newport Board of Education has let the coal contract for the season's deliveries. This was taken by the **Newport Coal Co.** at $6 a ton for bituminous mine run. The coal is to be stocked in July and August.

The Berger Coal Mining Co., has secured leases on the Cumberland River and will put in a new operation. The company has been chartered with a capital of $150,000, by Guy Darst and C. E. Ralston, of Harlan; and C. H. Jarnagin, of Knoxville.

The Stevens Branch Coal Co., Prestonburg, a new $50,000 company, of which S. C. Ferguson is manager, is planning to produce 1,500 tons daily, when new operations are in.

The Kentwood Coal Co., Hazard, has let contracts to Charles Wright for erection of twenty-one cottages, for miners homes.

The Carrs Fork Coal Co., Hazard, H. E. Bulloch, manager, has increased its capital to $500,000 and plans enlarged operations.

The Eden Coal Co., G. D. Ison, Whitesburg, has recently increased its capital from $60,000 to $100,000.

I. Frulinger, president of a new $250,000 coal company at Island, is planning development of 1,700 acres of coal land.

The Burgess Coal Co., Louisa, has been chartered with a capital of $12,000, by M. D. Daniel, J. H. Burgess and Elizabeth J. Daniel.

NEW YORK

Beginning work on the Shallmar Coal Classification, **W. A. Marshall & Co.** has sent men throughout the coal fields to take samples, so that all mines may be properly classified. Wesley Lieb, of the Marshall organization, is in charge of this work. All mines will be classified according to their analyses.

M. G. Siener announces the organization of the **Cleveland & Buffalo Coal Co.**, of which he will be president and general manager, with offices in Buffalo. He has been for some years vice-president and Buffalo agent of the P. O. McIntire Coal Co. of Cleveland. Former trade relations with the company will continue.

OHIO

Roy R. Smith, proprietor of the **North Columbus Ice & Coal Co.**, has purchased the old plant of the Hoster-Columbus Breweries Co., Columbus, which will be converted into an ice manufacturing plant. It is the plan to open a large retail coal yard on the same property.

A new jobbing concern has been organized under the name of the **Gibraltar Coal & Coke Co.**, with offices in Columbus. The concern is a corporation, with F. S. Davidson, formerly sales manager of the Packard Coal Mining Co., as president, and J. W. Bresnahan, treasurer.

Fairmont people interested in the **Belmont and Fairmont Coal Co.** which will operate near Flushington in Belmont County, state that favorable progress is being made in developing the company's property and that a side-track is now being installed. The estimated production of the new mines will be about 500 tons a day.

The Columbus Board of Purchase has rejected all bids recently opened for approximately 11,000 tons of Hocking nut, pea and slack for various city departments. The board will continue to purchase on the open market.

PENNSYLVANIA

The Shannopin Coal Co. is being organized by Robert N. Miller, Wilburt S. McKee and Hiram Hill, to operate coal mines in the Pennsylvania fields. Application will be made for a state charter. Wilson & Evans, 832 Oliver Building, Pittsburgh, represent the company.

The six weeks' summer course in mining at State College opened on June 28 and the indications are that the enrollment will be exceedingly large. Representatives are attending the classes from Brownsville, Rockwood, South Fork, Portage, Cresson, Beaverdale, Barnesboro, Hastings, Osceola Mills, Winburne, Madera, Robertsdale, Dudley and other places.

T. Stanton Davis and E. M. Burns of Ebensburg and J. Edgar Long of Clarksburg, W. Va., members of the **Davis-Long Coal Co.**, of Ebensburg, were in Pittsburgh recently where they were defendants in an equity suit in the United States Court brought by Charles N. Blanchard of Binghamton, N. Y. The suit was brought against the coal firm to recover money which he paid on the purchase of the property and also for the cancellation of the contract. The trial was completed late in the week and attorneys will argue the case this fall.

Work is now in progress for thirty-seven additional houses to be built for the **Ebensburg Coal Co.**, at Revloc, Cambria County. Strayer & Co., of Johnstown has the contract for the excavations and foundations. The buildings will be rushed to completion as they are needed for the miners.

UTAH

Judge Iverson of Salt Lake City in the case of the U. S. Railroad Administration vs. the **Spring Canyon Coal Co.**, has decided in favor of the coal company. There were two complaints and the court decided in both instances that the damage in question was not due to any negligence on the part of the company's employees.

Leading operators are enthusiastic over the proposed power and light plant which would consume from 75,000 to 100,000 tons of slack per year, for which a market has now to be found. The plant, if it is erected, will in all probability be placed in Carbon County where there are a dozen companies operating at the present time.

A. J. Mayes has acquired title under a lease to 2,094 acres of coal land in Township 16 south and ranges 7 and 8 east. The lease was granted through the local U. S. land office, stipulating that Mr. Mayes must spend a total of one-half million dollars in developing the property within the next three years, after which time the government will receive a royalty of 10c. a ton on all coal mined. This makes a total of five leases sold at the Salt Lake City land office since the coal leasing bill became a law last year.

WEST VIRGINIA

Favorable action was taken by the Circuit Court of Kanawha upon the application for the appointment of a receiver for the **French Collieries Co.**, operating in Clay County. Manager French of the property was appointed receiver by the court.

Judgment in favor of the plaintiff for $15,960.32 was rendered in the Circuit Court of Kanawha County in connection with the suit of the **Old Dominion Coal Corporation** against the **Fort Dearborn Coal Co.**, which was instituted a short time ago. The defendant filed a demurrer to the declaration of the plaintiff but this the court overruled, awarding the judgment in the amount named.

The Wyoming Coal Sales Co. through Alex Vowles, sales manager has perfected arrangements for the opening of offices in Charleston. The organization is the sales company for the mining interests of J. C. Sullivan in Wyoming, McDowell and Pike counties.

Stockholders of the **Federal Colliery Co.** of Huntington, having authorized a dissolution of the company, this concern has surrendered its charter and discontinued business. H. C. Duncan was the president of the company.

In connection with the suit of Kenna-Gentry against the **Cora Coal & Coke Co.** for $25,000, claimed as the amount due him for engineering the sale of the mine and properties of the defendant company operating in Logan County, to the **Standard Island Creek Coal Co.**, of Cleveland, a jury in the Cabell Circuit Court returned a verdict in favor of the defendant company. The property of the defendant company was located between Logan and Holden.

The Connellsville By-Products Coal Co., of Morgantown, has contracted for a new steel tipple at Scott's Run. The equipment will consist of an incline apron conveyor, together with the necessary machinery for proper delivery of cars in the mine bottom to the dump and feeder hopper and the equipment in the tipple will consist of Marcus screens, together with the necessary loading chutes.

The Carter Coal Co. of Coalwood, has ordered a set of Nolan automatic cagers, to be used at the shaft bottom. This company is making extensive mine improvements.

BRITISH COLUMBIA

An amendment to the **"Coal Mines Regulation Act"** was passed at the last session of the British Columbia Legislature providing that "no lamp or light other than a locked safety-lamp of a pattern approved by the Minister of Mines shall be allowed or used underground in any mine. Operators have been provided with a list of "approved" safety-lamps. There are included in this the electric lamp manufactured by the Edison Storage Battery Co.; the Concordia portable electric lamp, manufactured by the Concordia Electric Co., Pittsburgh; the Wico portable electric mine-lamp, manufactured by the Witherbee Igniter Co, Springfield, Mass.; the Pioneer portable electric mine lamp, manufactured by the Pioneer Electric Mine Lamp Co., Philadelphia, Pa.; the Wheat portable electric mine lamp, manufactured by the Hoehler Manufacturing Co., Marlboro, Mass.; and five types of flame safety-lamps.

Traffic News

The I. C. C. has decided that the rate on slack coal from Deering to Caney, Kan., during Federal control was unreasonable, and has awarded the **Weir Smelting Co.**, which complained against the rate, reparation on certain shipments.

That damages amounting to not less than $10,000,000 to industrial plants along the right of way of the **Indiana Coal Railroad**, now operated under lease by the C. & E. I. railroad, will result if abandonment of this road is permitted by the I. C. C., was asserted recently by R. B. Coupstick, traffic manager and commerce attorney of the Indiana State Chamber of Commerce. "There is no necessity whatever for the abandonment of this road," said Mr. Coupstick. "The revenues now accruing from traffic handled over the road amount to about $2,000,000 annually, more than sufficient to pay operating costs and a reasonable net return. However, much of the traffic that should go over this road has lately been diverted over the main road of the C. & E. I. to Chicago, which has lessened traffic over the division. The road, which the petition now before the commission seeks to abandon, has a mileage of about 175, including the main division from Lacrosse to Brazil and the branch from Percy Junction to Momence, Ill."

The Milwaukee Western Fuel Co., has compained to the I. C. C. against unreasonable rates on coal from points in Kentucky to the Hocking Valley and B. & O. docks at Toledo, for trans-shipment by boats for transportation beyond.

Jesse E. Isgreeg and others of Clinton, Ind., complain against unreasonable rates on coal from mines in the Clinton district to Clinton.

Moore & Moore, Inc., Mason City, Iowa, complain against unreasonable rates on coal from Cincinnati, Iowa, to St. Benedict, Iowa.

The Illinois Coal Traffic Bureau of Chicago has complained against unreasonable rates on coal from Fulton-Peoria, northern Illinois, Danville, Centralia, Duquoin and southern Illinois groups to Council Bluffs, Iowa, Omaha, Nebraska and South Omaha.

The Willard Coal Co., Kentucky, complains against unreasonable rates on coal from Willard to central freight association territory during and since Federal control.

In the case of the **Clinton Paving Brick Co.**, an I. C. C. examiner recommends that rates during Federal control on intrastate shipments of bituminous coal from mines in the Clinton district to Clinton and Logan, Ind., were unreasonable.

In the complaint of **A. W. Hillebrand Co.**, an examiner recommends that the rate on bituminous coal from Casselman, Md., to St. George, Staten Island, N. Y., is unreasonable; that rates on bituminous from points on the B. & O. in the Meyersdale, Pa., district to an industry on the Erie R.R. at Weehawken, N. J., are not unreasonable, and that charges on shipments of bituminous from points on the Pennsylvania in Pennsylvania to an industry on the Erie at Weehawken, N. J., were in excess of those lawfully applicable.

The A. L. Mott Co. and others of Trenton, N. J., have complained against unreasonable rates on coal from points in West Virginia to Trenton.

Hearing was given by the I. C. C. July 15, at Galesburg, Ill., on the application of railroads to continue rates on bituminous coal from Breeds, Ill., to St. Paul, which are lower than the rates on like traffic from Rawalt, Ill., and other intermediate points.

Personals

A visitor in Cincinnati late in June was **W. R. J. Zimmermon**, president of the Old Dominion Coal Co. with headquarters in Charleston, W. Va.

Alex Vowles, sales manager of the Wyoming Coal Sales Co. was in Charleston recently making arrangements for opening an office in that city.

After spending several weeks at Battle Creek, Mich., **Charles Land**, manager of the Logan-Eagle Coal Co. at Stowe, W. Va. has returned home.

A recent visitor in the Logan field was **A. H. Land**, head of the Dickinson Fuel Co., of Charleston and also treasurer of the West Virginia Coal Association.

Harry C. Drum, Fairmont coal broker, was a visitor in Eastern markets recently.

Alex R. Watson, of the C. L. & W. Coal Co. was a visitor in the Philadelphia market during the opening days of July.

H. D. Everett, manager of sales of the Smokeless Fuel Co., spent several days in the New York market recently.

Operators and others prominent in the coal trade of Cleveland taking heed of the old adage that "All work and no play makes Jack a dull boy" have perfected arrangements for the second annual golf tournament of Cleveland coal men, the maiden event being held at the Mayfield Club, June 30 other names are to follow every two weeks during the summer on the various courses. The following are team captains in the tournament: **S. H. Robbins**, president, Youghiogheny & Ohio Coal Co.; **A. A. Augustus**, president, Cambridge Collieries Co., **George Enos**, president, George A. Enos Coal Co.; **J. T. Forepaugh**, Northwestern Fuel Co.; **Joseph Micheltree**, M. A. Hanna & Co. **D. F. Hurd**, secretary of the Pittsburgh Vein Operators' Association of Ohio, is the official handicapper and manager of events.

Association Activities

Tidewater Coal Exchange, Inc.

At the quarterly meeting of the Board of Directors of the exchange, held in New York City on July 6, Commissioner R. A. C. Magruder, who is also secretary-treasurer of the exchange, submitted the financial and tonnage reports for the first fiscal year ended April 30, showing the exchange had dumped 10,546,028 tons of bituminous coal over the 14 piers operating through the exchange at New York, Philadelphia and Baltimore, as compared with 11,820,318 tons dumped outside the exchange, the tonnage being handled for the year at a cost of 2c. per ton.

The following were elected to fill vacancies existing on the Board of Directors: T. M. Dodson, Bethlehem, representing the Upper Potomac Coal Association, Inc.; A. Lisle White, Clarksburg, W. Va., representing the Northern West Virginia Coal Operators' Association; J. P. Cameron, Pittsburgh, representing the Pittsburgh District, and N. C. Ashcom, of B. Nicoll & Co., of New York.

The proposed revisions in the rules and regulations of the exchange were discussed but adoption was postponed until July 20.

Immediately following the meeting of the Board of Directors a joint meeting of the Executive Committee and the Railroad Advisory Committee was held at which the appointments of W. B. Walton, as deputy commissioner at Philadelphia, and N. H. Whalen, as deputy commissioner at Baltimore were confirmed. The appointments which were made by Commissioner Magruder, became effective July 1.

Mr. Walton succeeds F. E. Clark who was appointed assistant commissioner, and Mr. Whalen succeeds J. A. Biddison, who resigned.

Northern West Virginia Coal Operators' Association

Two days were given over to the discussion and settlement of dead-work conditions and general grievances in northern West Virginia fields by the joint board of operators and miners whose territory is embraced within that covered by the association, the joint board being in session on June 21 and 22. One of the first questions taken up was that in connection with dead work at the plant of the Century Coal Co. at Century, W. Va. After going into this matter thoroughly the board decided that the question was one for settlement by the management of the company and the local union, the belief being expressed that unless they were able to adjust matters, it might be considered desirable to let conditions remain as they are now. A number of cases involving the discharge of employees were passed upon by the board. The decision of Commissioner E. S. McCullough made in January, permits coal companies to combine jobs in cases where the mine is working on part time or where the slackness of work is such that the full force of the mine is not needed.

There were present at the meeting the following: C. H. Tarleton, Fairmont; Everett Drennen, Elkins; A. Lisle White, of Clarksburg, all of whom represented the operators; Frank Keeney, Charleston, president of District 17; J. S. Fornasch, Grafton; Ralph Aielio and Frank McCartney representing the miners.

National Coal Association

On the Cost Accounting Committee of the association are

Brewster, T. T. (chairman), general manager, Mt Olive & Staunton Coal Co., St. Louis, Mo.

Barker, G. H., vice-president, Maynard Coal Co., Columbus, Ohio.

Barnum, Walter, treasurer, Pacific Coast Co., 50 Church St., New York City.

Heaps, George, Jr., general manager Boone Coal Co., 601 Polk Bldg., Des Moines, Iowa.

Drennen, E., vice-president and general manager, West Virginia Coal & Coke Co., Elkins, W. Va.

Ramsay, Erskine, first vice-president, Pratt Consolidated Coal Co., Birmingham, Ala.

Randall, Robert, general manager, Consolidated Coal Co. of Saginaw, Saginaw, Mich.

Sampson, W. J., president, Witch Hazel Coal Co., Youngstown, Ohio.

Reed, W. B. secretary, National Coal Association, Washington, D. C.

Honnold, P. C., secretary, Coal Operators' Association, 2017 Fisher Bldg., Chicago, Ill.

Huff, W. H. president, Victor-American Fuel Co., Denver, Col.

Hornberger, J. B. L., comptroller, Pittsburgh Coal Co., Pittsburgh, Pa.

McKinney, W. D., secretary, Southern Ohio Coal Exchange, Columbus, Ohio.

Norris, R. V., 524 Second Natl. Bank Bldg., Wilkes-Barre, Pa.

Allport, J. H., Barnesboro, Pa.

Johnson, W. L. A., secretary, Southwestern Interstate Coal Operators' Association, 519 Keith & Perry Bldg., Kansas City, Mo.

Industrial News

Boston, Mass.—The office of Percy Heilner & Son is now located in the Congress Building, Water St. and Post Office Square.

Buffalo, N. Y.—W. C. Blodgett, for several years local coal agent of Dickson & Eddy, of New York, and who covered a wide territory from Oswego to the upper lakes for that firm, has reopened an office at 406 Marine Trust Bldg., after having been out of business a year or more, and will cover his old territory in the same interest again.

Charleston, W. Va.—The Automatic Reclosing Circuit Breaker Co. of Columbus is opening an office at 110 Hale St. Donald J. Baker is in charge of this office.

New York, N. Y.—The local office of the Morrison & Risman Co., jobbers in rails and track accessories, has been moved to 25 Cortlandt St.; telephone Cortlandt 4405.

Coming Meetings

The Huntington Coal and Industrial Exposition will be held in the Chamber of Commerce Building, Huntington, W. Va., Sept. 19 to 24 incl. Chairman of committee, Thomas A. Palmer, Huntington Chamber of Commerce, Huntington.

American Institute of Mining and Metallurgical Engineers will meet at Wilkes-Barre, Pa., Sept. 12 to 17. Secretary, F. F. Sharpless, 29 West 39th St., New York City.

National Association of Cost Accountants will hold its annual convention at Cleveland, Ohio, Sept. 14, 15 and 16. Secretary, S. C. McLeod, 130 West 42d St. New York.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The twenty-fourth annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

The West Virginia-Kentucky Association of Mine, Mechanical, and Electrical Engineers will hold its annual meeting at Huntington, W. Va., on Sept. 20 to 23. Secretary-treasurer, Herbert Smith, Huntington, W. Va.

The following first-aid meets will be held during August: The Davis Coal & Coke Co., first-aid and mine rescue meet at Thomas, W. Va., on the 3d. The State of Iowa will hold its annual first-aid and mine-rescue meet on the 6th at Albia. At Birmingham, Ala., state first-aid and mine-rescue meet on the 6th. On the 20th a state first-aid and mine-rescue meet will be held at Charleston, W. Va. Under the auspices of the Colorado Fuel & Iron Co. a local first-aid and mine-rescue meet will be held at Pueblo, Col., on the 20th.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

Volume 20 NEW YORK, THURSDAY, JULY 28, 1921 Number 4

A Summer Questionnaire

IT IS NOT often that a request for information or a questionnaire reaches the official of a coal company from his association with more real reason behind it for the good of his particular business than that on reconsigning recently mailed out by the the American Wholesale Coal Association to the jobbers. Reconsigning is to the middleman what car supply is to the producer, and the problems of each in maintaining a maximum of freedom in the use of cars, each peculiar to his way of doing business, are indicative of the function of the associations representing the respective branches of the trade. Everything and more that the abolition of the assigned car means to the producer is at stake with the jobber in the extension of the reconsigning practice.

In sending out his questionnaire to the membership of the wholesale association Mr. Cushing aptly points out that to many jobbers, traffic means, mainly, reconsigning, and he asks for information from those who alone can give it, regarding the extent and ramifications of the practice. Just as the producers have for years been opposing the assigned-car practice with general arguments but without specific facts, so has the argument over reconsigning been conducted. No one is able to be precise in his statements of value and importance to the trade of this implement of business because no one has heretofore collected the facts about it. Mr. Cushing has listed under a few heads the data essential to a better understanding of the subject and quite properly tells his membership that if he is to pursue the matter to advantage before the railroads and the others interested in general traffic problems, he must be armed with more than hackneyed generalizations.

It is being requested that the wholesalers report such simple facts as the total number of cars handled by months the first of this year, the number reconsigned, the number taken from other wholesalers, and of those reconsigned, the number rebilled before arrival, after arrival, both before and after expiration of free time, and other similar details, all of which questions will at once appeal to the jobber as pertinent to the proper analysis of the problem. Mr. Cushing recognizes that his problem is not so much that of deciding what information he needs as it is getting the data from those who can alone furnish it. He notes that last year he made a request on the six hundred members of his association for certain essential data and that only seventy-six members responded. Such a feeble response can but be discouraging to an association officer, and it is no wonder that Mr. Cushing says that he is asking for these new data reluctantly, despite that fact that they can easily be taken from the records of any shipper.

Commenting on the use of words, Brander Matthews once noted that *pie* is the *raison d'être* of New England indigestion, whereas *pi* is the *sine qua non* of dialect stories. To the middleman in the coal trade, reconsigning is both, and any of the six hundred members of the American Wholesale Coal Association who do not promptly and fully answer the questions that Mr. Cushing has put to them are either reluctant that the facts become known or are indifferent to the future of their business.

We are insistent and consistent advocates of fact-finding in coal. It is a pleasure to support the plea of the wholesale association for data from its members, because this branch of the trade needs a broader understanding and more sympathy with the modern principle of doing business and going before the public with fundamental facts as well as more experience in collaborating in such work. Self-interest in this instance would prompt self-education of the jobber. Mr. Cushing need not be disappointed, however, if the returns fail of 100 per cent, because, by making light of all efforts and arguments of the government to gather information from the trade, he has given his membership cause to look with too little interest on his statistical requests.

Keeping Track of Prices

IN our search for landmarks by which to chart the way over the troubled seas of uncertainty index numbers have almost become a fetish. Prices, wages, production, every measure of industrial and human progress is tabulated, diagramed and studied. There is no more scientific and sensible way of making comparisons than the index number, but when one of our most cherished and respected federal financial institutions sends a representative to our office for a record of our prices of coal for one hundred years we are in turn flattered, amused and moved to expostulation.

It appears that this institution is about to construct an index number of prices from 1820 to date and that coal as one of the basic commodities is to be included. Furthermore it is proposed to use prices of Pittsburgh coal as representative of this industry, notwithstanding that the first record of production of bituminous coal in Pennsylvania, as recorded by the United States Geological Survey, was in the year 1840 and that the first year for which there is a separate record of the production of anthracite was 1821. For the first fifty years of the 100-year period—that is, until about 1870—more anthracite was produced than bituminous and hard coal was the coal of industry as well as the fuel for households. A proper selection for such an index for the earlier period, therefore, would depend on anthracite, but in later years the production and price of soft coal must be chosen to correctly portray conditions in this country.

A refinement sought in this study is monthly quotations on the price of coal throughout the 100 years. Unfortunately price records by years, not to think of months, are not available except for isolated portions of this period, and some of those that are of record are

not worth consideration. The Bureau of Labor statistics of the Department of Labor, for instance, still carries as a basic commodity in its selected list of monthly quotations of wholesale prices, the price of Pittsburgh coal f.o.b. cars at Cincinnati! It appears that at one time, many years ago, Pittsburgh (Youghiogheny) coal was regularly quoted by the Chamber of Commerce of that city in cents per bushel, floated down the river in barges. We are unable to ascertain how the quotation is obtained currently or why it should now be given consideration by students of economics and prices.

After making inquiry as to whether the government considered including in its 100-year study of monthly prices that of gasoline and possibly automobiles, we closed the interview by referring the ambitious collector of facts to some octogenarian in the trade. We fear that getting prices of coal one hundred years back is as hopeless a task as knowing them one hundred days ahead.

Scientific Farming an Adjunct to Mining

THE address of J. J. Rutledge at the Illinois Mining Institute strongly but apparently unintentionally suggested to the hearer the advantage of combining farming with mining in districts where both could be pursued. If operators purchased their land in fee they could take out all the coal and yet would sustain only the loss that the damage done to the surface actually caused, whereas where ownership of coal and surface is divided, payment has to be made which greatly exceeds any actual damage.

Unfortunately coal operators have rarely been prudent farmers. They seldom organize their farm work as skillfully as their mine work, and where farming pays it is not profitable to hold farm lands and leave them unworked or under yearly lease, as the value of the land as a farm is likely to be even greater than its value for mining. It would be better to recognize them as complementary and try to get the best results out of both.

A careful study might profitably be made into the best use to which the surface could be put, the farm superintendent being regarded as an official equally important with the man in charge of the mine and the selection of the agricultural machinery and methods as much an object of care as the choice of mining machinery and of operating plans.

Large farms should be at an advantage in marketing and immense areas of country which are now given up to certain limited forms of farming could by an enterprising farmer-operator be converted to farm better suited to the soil and market.

Methods of mining that would give a larger percentage of recovery, less cost for yardage, less expense for production, less haulage expense and larger coal could be planned if the surface belonged to the coal owner rather than to an avaricious farmer who was looking eagerly for an opportunity to collect "damages" altogether out of proportion to the injury which mining and subsidence might do to him.

Mr. Rutledge, speaking about complete recovery of coal, views it solely as a matter of royalty and coal conservation. More important by far is the ability to get coal of large size, to concentrate the work, to use loading machines, to conserve the outlay on shaft sinking, heading driving and plant construction by increasing the tonnage obtainable from these operations and to plan the work so that the locomotive can deliver its cars in unbroken trips, as could be done in thick coal with panel longwall.

A saving in accidents would be affected by drilling in a more standard way. This could be assured by using panel-longwall faces, when the holes could profitably be drilled by one man who could be relied on not to extend them to an excessive length or into the "solid." Longwall, moreover, does not require heavy shooting and presents conditions not favorable to the propagation of dust explosions. With longwall, it is fair to say, shotfiring might be made safe to life and property.

Hydraulic shooting of the coal might even be introduced advantageously, as the longwall face favors its introduction. Pneumatic backfilling, of course, is a possibility. It would eliminate subsidence almost entirely. Accidents would be reduced by having the locomotive always at the head of the trip and so removing the need for uncoupling and recoupling underground. It also would be possible to do away with a number of switches and frogs which often cause derailments.

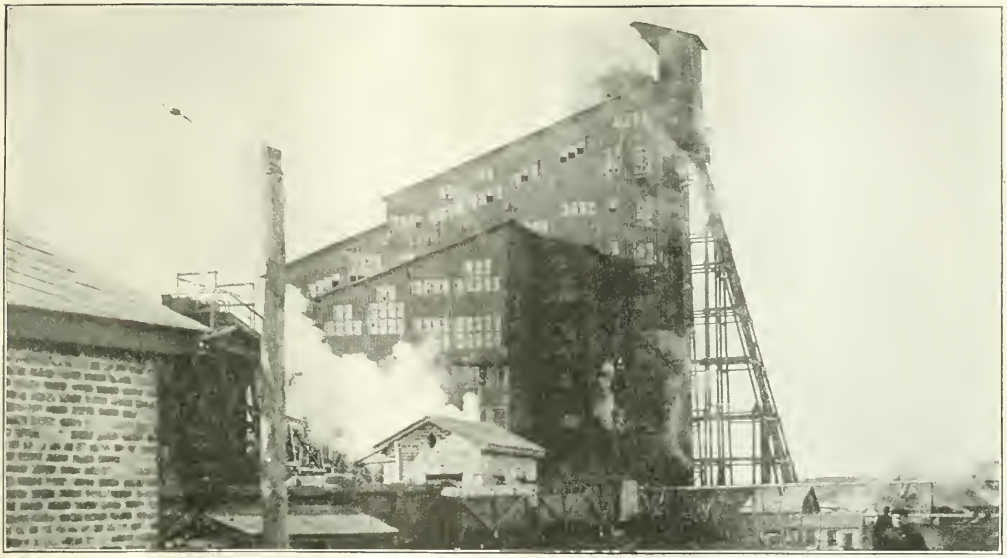
In no section of the country is panel longwall more clearly indicated than in Illinois, and undoubtedly it would pay even if the farms were purchased merely to run wild. Still more profitable would it be if the surface were diligently cultivated and an intensive effort made to find the best kind of product and the most desirable market for it. The flooding of the surface by subsidence would not be inevitable as it is so often today if the proper means were taken to prevent it, these means, however, being beyond the purse and engineering ability of the average farmer.

Anomalous Activity

FEW indeed are the industries which work as steadily as the anthracite mines. Jett Lauck assured the world that the steadiness in the near past was no warrant for the future. The present year has shown him to be wrong. More anthracite coal has been mined during the present coal year than in the same months of the previous year, and this despite the fact that the former twelve months commenced in a boom period and the present started when business had flagged grievously.

This steady work has given the mine workers money to spend. *The New York Times* in its section headed "The Business World" informs us that "Word went forth a short time ago that while the rest of the country was suffering from a business slump, the coal district around Wilkes-Barre and Scranton was fertile sales territory. The result of this report, so salesmen say, who have returned from that section, is that the Pennsylvania towns mentioned have been flooded with representatives of every kind."

Unfortunately for the laboring people, numbers have gone to the anthracite region hoping for work in other lines than mining, and in that respect the coal region is little if any better than other districts. It is only the mines and the stores which have work, and only the collieries and the trades people who can buy. The anthracite region is a comparative oasis in the business desert, but even there only the coal and mercantile businesses are thriving. The anthracite mine workers cannot allege irregular work, but such is human nature and such the twist of the mine workers' minds that it is likely they will feel that it is only right that they shall be duly compensated for the irregular work of their bituminous fellow craftsmen, with whom they are combined to seek a new scale next April.



SUSQUEHANNA COLLIERIES CO.'S SCOTT COLLIERY BREAKER AT KULPMONT, NEAR SHAMOKIN, PA.

By Using Vertical Box Chutes and Retarding Conveyors Scott Breaker Greatly Reduces Degradation

Open Chutes, When Used, Are Short—Box Chutes Are Kept Full—Feed Regulating Discharge—Retarding Conveyors Used for Short Runs—Only Two Sizes Made at Each Shaker—Fine Material Cushions Coarse

By Dever C. Ashmead
Kingston, Pa.

ONE of the most difficult problems encountered in the preparation of anthracite coal is the transference of the material from one portion of the breaker to another, as well as the final lowering of the finished product to the pockets. Appreciable loss in the amount of the prepared sizes results from improper design of the equipment used for these purposes.

The problem is well illustrated by work that has recently been done at the Scott Colliery breaker of the Susquehanna Collieries Co. Outstanding among the changes has been the tearing out of a chute 350 ft. long which formerly carried clean broken coal from the top of the building to the loading pocket. The degradation of coal incurred in traversing so long a chute was considerable.

Many schemes have been adopted to reduce the great degradation losses which invariably result when coal is moved from point to point in the breaker. None of the means yet tried seems to be entirely free of objectionable features; some reduce but little the amount of breakage, some are too long, consume power unnecessarily or are too expensive in upkeep.

In the reconstruction of the Scott breaker some means had to be devised for lowering the coal from the top of the structure to the pockets at the bottom with minimum abrasion. In dispensing with chutes not only was degradation of the coal largely reduced but the saving of space was considerable. Most of the interior in the original building was occupied by chutes and it was expedient to remedy this condition. Besides this the first cost of the chutes and their upkeep was unduly expensive.

The Larger the Coal the More It Suffers

It must be remembered that the larger the coal the greater the degradation in the chute. When the coal is first crushed it is reduced to steamboat size. As this crushing is done near the top of the breaker this coal has to be taken down the longest chute and has, therefore, all the degradation due to its long travel added to that arising from its large size. Being unmixed with smaller sizes, there is no fine coal to cushion it in its travel. Consequently it suffers severely when it is caused to travel by any method that is based on the free movement of coal under gravity.

It is realized that gravitation, while a cheap force to employ, is almost always the most expensive in the end. The movement of coal by gravity is inexpensive, but that cheapness is entirely fallacious economy when the debits for degradation are considered as they rightly should be.

The Scott breaker was built several years ago. As time passed methods of preparation were altered and

LOWER END OF TWO BOX CHUTES SHOWING FINGERED DOOR

By adjusting the weight on the arm by which the door is lifted the latter will be closed tight or opened to suit the load on the pans or flaps. These box chutes are more than 36 ft. long.

improved so that it recently became necessary to make radical changes in the preparation equipment. How extensive these changes have been can be understood when the flow sheet of the past is compared with that of the present. Only four years intervened between the dates at which the two flow sheets appearing in this article were respectively representative of the methods employed.

Box Chute Like the Full-Battery System

The first changes made were the installation of retarding dragline conveyors. As will be seen later, the breaker has three of these still in use. Later the box type of chute now employed for lowering coal through excessive vertical distances was developed. One of the accompanying illustrations shows two of these chutes handling broken coal; one is for the product of the Christ jigs and the other handles the material from the clean-coal side of the building.

The basic idea employed in these chutes is the preservation of a continuous column of coal from the point of discharge at the bottom to the point of entrance at the top. The vertical box is fed from an ordinary chute provided with a pan control. When the vertical portion is filled the material backs up in the inclined chute until it pushes the pan downward. This raises the door at the bottom of the chute and allows coal to escape until sufficient weight is removed from the pan, when it rises, the discharge door closes and coal ceases to move in the box. The action of this device may be seen in the accompanying diagram. Of course, the vertical chute is lined with sheet iron to reduce wear.

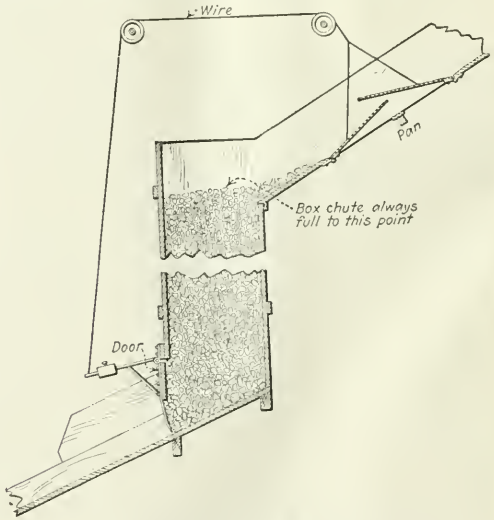
This type of chute does not entirely eliminate breakage, but reduces it appreciably. It is believed that if the square corners of the vertical box were rounded degradation would be still further lessened, as most of the breakage apparently occurs in the corners. If these were not present lumps would not stick in them to produce a grinding effect. It also is possible that if the angle at the bottom of the box were made more acute there would be less tendency for grinding due to the weight of coal above pressing on that which is leaving the box.

Another marked deviation from ordinary practice in this breaker is the adoption of the jig setting, these machines being arranged in steps, as has been described in a previous issue of *Coal Age*. (April 7, 1921, p. 618.) This jig setting materially reduces the number and length of the chutes employed in this breaker.

To understand the necessity for the adoption of better methods of lowering coal a description will be given of the passage of this material through the breaker. At each point where special arrangements are employed in the lowering process, the reasons for their adoption will be set forth. The numbers employed throughout the text will refer to corresponding numbers on the flow sheet.

Broken Passes to Pocket by Box Chute

From the surface the coal is hoisted to the top of the breaker in the mine cars on a self-dumping cage (1). From this it is discharged onto the bull shaker (2). This separates the coal into three sizes, lump (3), steamboat (4) and fine (5). The lump passes onto a picking table (6), where the large pieces of rock (9) are separated from the coal (8). The product thus cleaned then goes to the No. 1 rolls (11). Rock (9) from picking table (6) also is hand-picked and whatever coal is saved is sent through the No. 1 rolls (11). From this crusher the coal passes to a shaker (19), where steamboat (20), broken (21) and fine coal (22) are made. The steamboat goes to another picking table (26) and is cleaned of rock (35).



CROSS-SECTION OF AN AUTOMATIC BOX CHUTE

The coal piles up in the box, and when the door is opened moves slowly toward the opening. The door is normally closed but is opened whenever coal begins to back up in the open chute at the top, thus loading the pans or flaps and causing a pull on a wire by which the door is opened.

The broken is sent through one of the box chutes (100) already mentioned and through a telegraph chute leading to the broken coal pocket (104). The box chute (100) is installed at this point in order to avoid the use of about 300 ft. of ordinary chuting. It immensely decreases degradation.

Steamboat coal (4) from the bull shaker (2) joins with that from the main shaker (19) and passes to a picking table (26). The cleaned coal (34) from this table then goes to a No. 2 roll (41). At this point the coal goes to another shaker (53), on which four sizes, steamboat (61), broken (62), egg (63) and finer (64), are made. The steamboat coal then goes through a No. 3 roll (73) and thence passes to a shaker (80), on which egg (81), stove (82), chestnut (83) and finer (84) are prepared. The broken coal (62) from shaker (53) goes to the box chute (100) on its way to the pocket (104). Egg coal (63) from the same shaker (53) likewise passes directly to its pocket (105).

Bypass Egg or Broken if Market Demands

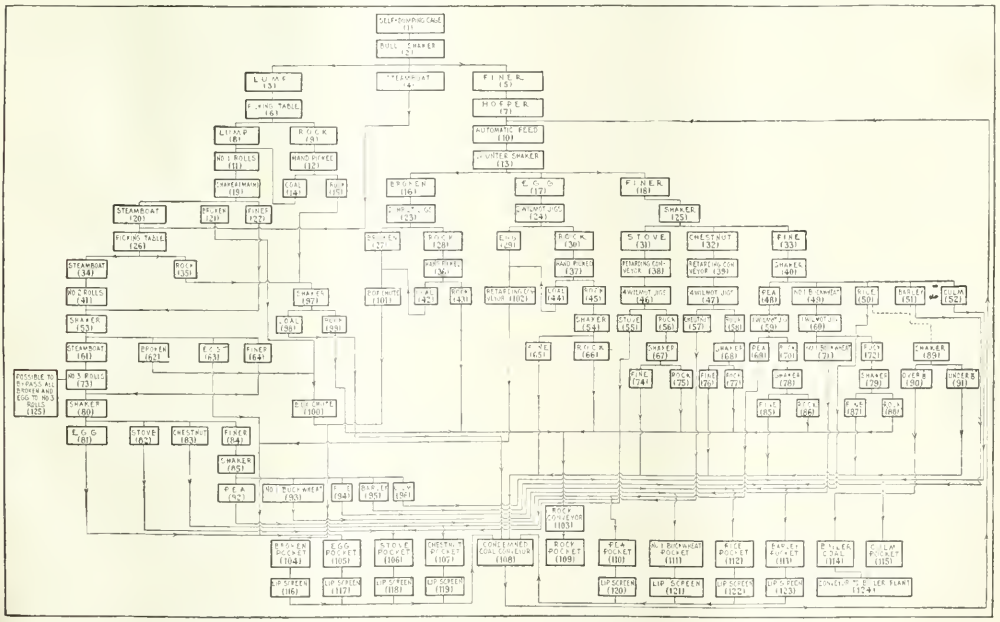
When orders for egg or broken are scarce these sizes can be bypassed and sent through the No. 3 roll (73). The egg (81), stove (82) and chestnut (83) sizes from shaker (80) all go to their respective pockets without further treatment. Finer coal that has passed through this shaker goes to another (85) on which pea (92), No. 1 buckwheat (93), rice (94), barley (95) and culm (96) are made, after which each size passes to its proper pocket. The culm goes to the culm bank.

The finer coal (22) from shaker (19) joins with that coming from the No. 2 rolls (41) and passes through the shaker (53). The finer coal (64) made on this shaker (53) passes directly to shaker (80) and is treated with the material from the No. 3 rolls (73).

The rock (15) and (35) which is separated from the

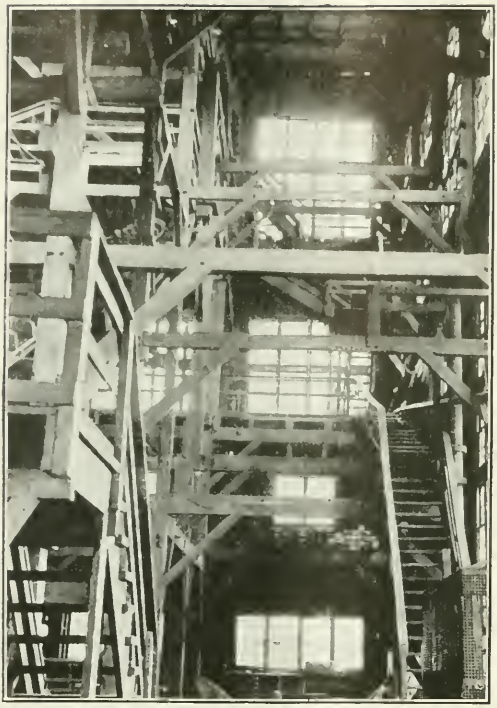
RETARDING CONVEYOR LOWERS CHESTNUT FROM SHAKERS

The illustration also shows the tops of the chestnut jigs. This retarding conveyor brings the coal from a considerable height in the breaker and saves much degradation, is positive in action and saves room.



FLOW SHEET OF NEW ARRANGEMENT OF BREAKER AT SCOTT COLLIERY

It will be noted that only lump and steamboat are taken off on the first shaker, and after passing the first rolls, only the steamboat and broken. After the second rolls, broken and egg are taken off. True, a little steamboat still remains, and it is taken off as a third size but there is little of it. After the third rolls egg, stove and chestnut are taken off. From the counter shaker only broken and egg are taken and from a second counter shaker only stove and chestnut. Thus in general only two sizes are taken off at a time and the sizes finer than those taken are left together so that the finest sizes cushion those which are coarser. When the prepared sizes have been taken out the steam sizes are separated without any regard for this principle.



SPACE RELEASED BY RELINQUISHING OPEN CHUTES

This large space was formerly taken up by innumerable chutes. Box chutes and retarding conveyors now do the work. The cross timbers at different heights show how the sloping floors of the chutes were secured, but the floors themselves have been removed.

coal on this side of the breaker is passed to a shaker (97). Here adhering coal is loosened and passes through the screen to the condemned-coal conveyor. The rock is deposited by the rock conveyor in the pocket for that material.

Thus far this description has been confined to the treatment administered to the coal on the "clean" side of the breaker. It now becomes necessary, therefore, to revert to the finer coal (5), which passes through the lowest deck of the bull shaker (2). This coal is discharged into hopper (7), from which it is fed by an automatic feeder to the counter shaker (13). Here the broken (16) and egg (17) sizes are separated from the finer material.

The broken coal (16) is treated in two Christ jigs (23), and the cleaned product (27) passes to a box chute (101) on its way to the broken-coal pocket (104). Rock (28) from these jigs is hand-picked, and the coal (42) that is salvaged from it is thrown into the clean coal (27) from the jigs. Were it not for the box chute employed to move the coal at this point it would be necessary to use the old sloping chute, which in this case probably would attain a length of 300 ft. The box chute is about 35 ft. long vertically.

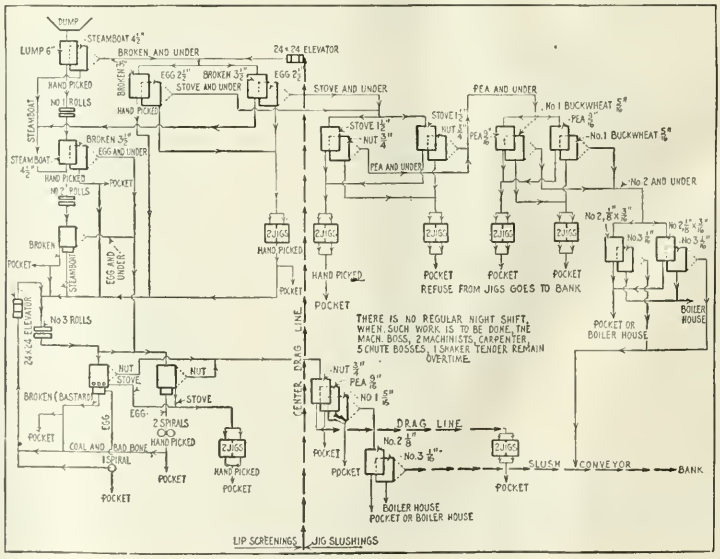
From the counter shaker (13) the egg coal (17) receives exactly the same treatment as that administered to the broken (16) except that washing is done on two Wilmot jigs (24) instead of on jigs of the Christ type. In place of using a box chute to convey the coal from these jigs to the pocket a retarding conveyor (102) is employed, saving a number of long chutes. Rock (30) from these jigs is hand-picked (37) and then passed to a shaker (54) to remove the fine coal (65) that may come over with the slate.

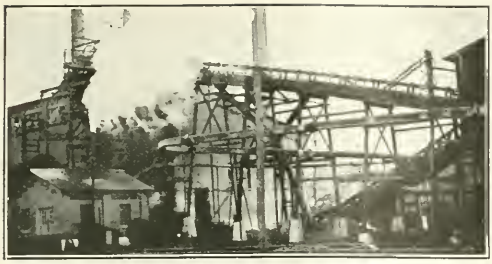
The finer coal (18) from shaker (13) passes to another shaker (25), where three separations, stove (31), chestnut (32), and finer (33), are made. As the jigs (46) for the stove coal are located on the main floor of the breaker just above the pockets, and the stove-coal shaker (25) is high up in the building, it is necessary to use a retarding conveyor between the shaker and the jigs that treat the coal. By so doing degradation is greatly reduced.

Four Wilmot jigs (46) prepare the stove coal made

Flow Sheet Discarded

This breaker required a machinist boss, a carpenter, a rope tender, two machinists, seven platform men, one platform boss, five chute bosses, one man to clean hopper, thirty-seven slate pickers, one jig boss, six jig runners, two laborers, one engineer, two shaker men, one man on the rock line, one on the rolls, one on the chutes, one on boiler coal and a breaker boss—a total of 73 men. The machinery consisted of one Mullen pump, 20x10x36 in.; one two-cylinder breaker engine, 18x30 in.; one single-cylinder conveyor-line engine, 14x24 in., and one two-cylinder breaker hoisting engine, 16x30 in. There were in all twenty-five shakers, fourteen jigs, three spirals, two 24x24-in. elevators, three rolls and three screens.



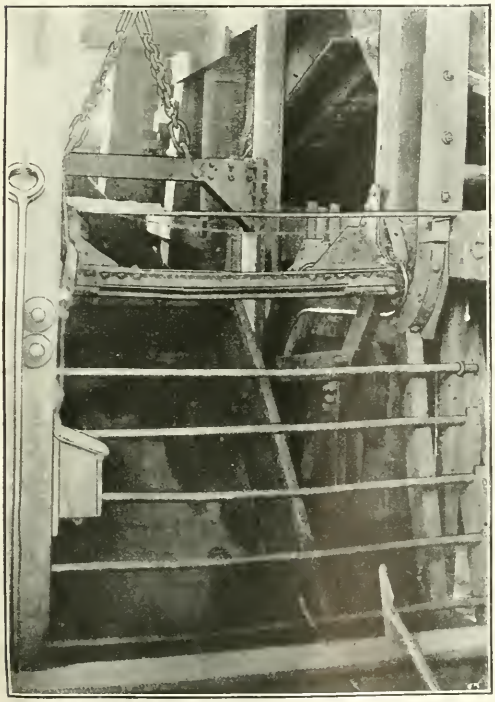


CONVEYOR FROM BREAKER TO POWER PLANT
This shows not only the conveyor for boiler-fuel but also the ash conveyor by which the ashes from the ash pit are conveyed to the rock pocket of the breaker.

on shaker (25). These machines are arranged in "step" formation. Under ordinary circumstances rock from the jigs is run over a shaker (67) to separate the fine coal from the slate. The treatment accorded chestnut coal (32) from shaker (25) is exactly similar to that accorded the stove size.

From shaker (25) the finer material goes to another shaker (40). At this point all of the fine sizes of the counter or dirty coal are separated, making pea (48), No. 1 buckwheat (49), rice (50), barley (51) and culm (52). The pea coal goes through a Wilmot jig (59) and thence to its pocket (110). The No. 1 buckwheat coal is likewise treated in a Wilmot jig (60), the cleaned product going to pocket (111).

Rice (50) and barley (51) receive no further treatment than that necessary to size them, after which they proceed to their respective pockets and are ready for shipment. When it is necessary to use these coals for boiler fuel they are united as they leave shaker (40) and pass to another shaker (89). The deck of this screen is provided with ¾-in. openings and all coal passing through goes to the condemned-coal conveyor (108) while that which passes over goes to the boiler-fuel conveyor (124). Culm from shaker (40) goes to the culm bank (115).



CAGE AT TOP OF BREAKER IN DUMPING POSITION
The coal is dumped from the cars into the chute that feeds the bull shakers.

Coal that is recovered by the shakers over which the rock from the jigs is passed is sent to the condemned-coal conveyor (108), which carries it back for retreatment. The same is true of the coal passing through the pocket or lip screens. Rock from the jigs is taken by the rock conveyor (103) to the rock pocket, from which it is hauled to the dump for disposal.

The distinctive details of this breaker are: (1) The manner in which the coal is lowered from considerable heights by means of box chutes and the employment of retarding conveyors. Both these devices have a decided tendency to reduce the amount of degradation and to decrease the amount of space required for installation of the chutes (2). The arrangement of jigs in batteries, so that they receive either a constant feed or no coal at all. These machines thus are enabled to produce a better and more uniform output. This arrangement also tends to reduce the length and number of chutes required to handle a given amount of coal.

As a result of these changes in arrangements for the transference of coal from one part of the breaker to another, a vast network of chutes has been eliminated and vacant places now exist in this building that are devoid of both machinery and chutes. It is evident that the cost of upkeep has been materially reduced, as much less chute lining has now to be replaced. Another detail of importance in the remodelling of this breaker is the practice of separating only two sizes at a time and using the finer material to cushion the larger. This also tends to reduce degradation.

Many anthracite coal companies do not appear to give adequate attention to the losses arising from the breaking and attrition of the coal. It seems that in many cases small changes might be made in the construction of chutes that would pay for themselves many times over in the course of a year.

Build Your Mine-Door Frames of Brick

By R. W. Mayer
California, Pa.

MOST mine doors are hung in wooden frames which are not only subject to decay but increase the fire hazard. Furthermore, wooden frames are seldom air-tight and more or less leakage usually takes place around or through them.

In order to obviate these difficulties the side members of the frame at least may be built of brick. Hitches are cut into the rib, into which brick walls, or, more strictly speaking, pilasters, are built. A beam forming the top of the frame is built into and is supported by the side walls. Hinges also are built into them, the bolts extending completely through the wall and being embedded in the joints. Long strap hinges usually are employed and the door is allowed to overlap the brick wall by three to four inches. Of course, the walls should be given batter sufficient to render the door self-closing.

By Mixing Fine Coal, Water and Oil, Grains of Oily Coal Are Formed, with Elimination of Earthy Impurities*

In Trent Process Powdered Coal Is Mixed with 30 Per Cent of Its Weight of Oil in Presence of Water—Effects 95 Per Cent Combustible Recovery with Low Ash Content

By G. St. J. Perrott† and S. P. Kinney‡

IN CONNECTION with its coal-washing work the U. S. Bureau of Mines is making an investigation of processes to separate mineral matter from coal which are based on the selective action of oils. This article gives the results of one phase of the investigation, namely, the application of so-called bulk oil methods of concentration to the cleaning of coal. This part of the genral inquiry has been carried out in co-operation with the Trent Process Corporation, of Washington, D. C.

When a mixture of pulverized coal and water is agitated with oil in an amount equal to 30 per cent of the weight of the coal, a clean separation of a considerable part of the mineral matter is obtained. The carbonaceous material forms with the oil a pasty agglomerate which is heavier than water, whereas the mineral matter which was physically separated from the carbonaceous material by the fine pulverization remains suspended and can be drawn off with the water.[1]

Coal Is Washed as Ore Is Concentrated

The history of coal washing has been similar to that of ore concentration. Hand picking has been supplanted by jigs, jigs have given way to tables in the treatment of the finer sizes of coal, and of late much attention has been given to the possibilities of froth flotation and other methods making use of the selective action of oils.

Bacon and Hamor[2] in discussing the problem of the utilization of fuels, describe experiments carried on at the Mellon Institute by Dr. C. B. Carter on froth flotation of coals. He found that the combustible matter contained in washer waste of all grades could be almost completely removed by suitable oil flotation, with a recovery of between 70 and 90 per cent of the combustible matter. The best results were obtained with washer waste crushed to pass a 48-mesh screen. The coal particles showed maximum floating properties when they were sharp, angular and lustrous. Grinding in machines of the disk type was found to destroy these physical properties and to make the yield of recovered coal from refuse ground in this manner small and its ash content high. Estimates showed that a plant to handle daily 500 tons of ordinary bituminous coal-washer waste would cost $135,000. With such an installation it was estimated that at a cost of $1.84 per ton 75 per cent of the coal present could be obtained from refuse containing 65 to 70 per cent of ash, the product being in the form of dry 25-per-cent ash concentrate. It was found difficult to remove pyrite by froth flotation.

Ernest Bury[3] and co-workers describe an investigation of froth flotation of coal carried out at the works of the Skinningrove Iron Co., England. These workers were able to obtain concentrates analyzing 9 to 14 per cent ash from washery wastes containing 40 to 75 per cent ash. The tailings contained 76 to 89 per cent ash. The authors of the article mentioned believe that a considerable amount of pyrite may be removed by the process, although no sulphur analyses are given. The washed product, which forms as a thick heavy stable scum on the water surface of the froth boxes, contains about 50 per cent of moisture. This concentrate is discharged into revolving filters of the Oliver type, is drained under suction and discharged as a filter cake containing 10 to 15 per cent of moisture.

The cost of cleaning coal by froth flotation is estimated as not greater than the cost of jig washing. In regard to the scope of froth flotation in coal cleaning the authors state as follows: "The flotation method does not, of course, compete with washers which treat nut coal for sale on the open market for boiler firing, etc.; it can be employed only where the original coal is fine or where crushing is part of the normal treatment—that is, for coking, gas-making, briquetting, coal-dust firing, colloidal fuel, etc."

Comparison of Coal and Ore Concentration

The mineral matter in coal is classified, (1) according to its physical state of subdivision, as "intrinsic" and "extraneous" and (2) according to its chemical composition as shale, clay, "slate," sand calcite and pyrite. Intrinsic impurities are those which are present in a very fine state of dissemination throughout the coal substance and are not separated from the coal substance even by very fine pulverization. This intrinsic mineral matter is in part derived from the original material and in part is material from external sources which was deposited by sedimentation and precipitation during the laying down of the coal. Extraneous impurities occur in the form of partings, veins and nodules or may be impurities mechanically mixed with the coal during the process of mining. Part of this extraneous mineral matter is removed by the standard methods of washing coal, the amount removed depending on the fineness of crushing necessary to physically separate mineral matter from coal substance, and on the size of crushed coal which the washery can efficiently treat.

There are certain obvious differences between concentrating coal and concentrating ore. In ore concentration the valuable material is heavier than the gangue

*First part of article entitled "The Use of Oil in Cleaning Coal," Reports of Investigations, U. S. Bureau of Mines. A second installment will appear next week.

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[1]This is known as the Trent process and has been developed and applied to coal cleaning by Walter E. Trent, vice-president of the Trent Process Corporation, 1440 U. Street, Washington D. C. Patents on this process have been applied for by that company.

[2]Bacon, Raymond F., and Hamor, William A.: "Problems in the Utilization of Fuels," *Jour. Soc. Chem. Ind.*, Vol. 38, June 30, 1919, pp. 161-168.

[3]Bury, Ernest; Broadbridge, Walter, and Hutchinson, Alfred: "Froth Flotation as Applied to the Washing of Industrial Coal," Trans. Inst. Mining Engineers, Vol. 60, February, 1921, pp. 243-253.

and constitutes a small percentage of the total material treated. In coal concentration the valuable material is lighter than the refuse and constitutes a large percentage of the total material treated.

Furthermore, there is a larger difference in specific gravity between values and gangue in ore than in coal. Gangue in ore varies in specific gravity from 2.5 to 3 and values vary from 4 to 8, whereas the mineral matter in coal (with the exception of pyrite) varies in specific gravity from 2 to 2.7 and the clean coal concentrate from 1.2 to 1.7.

Again, coal contains *extraneous* mineral matter easily separated by crushing and *intrinsic* mineral matter none of which can be separated except by very fine pulverization. The crushed raw coal which is to be concentrated may contain particles of coal of varying gravities containing varying amounts of inseparable ash, making a clean separation impossible at the degree of fineness employed with ordinary washing methods.

Elmore Bulk Oil Process of Concentration

One of the early processes of concentrating ores which made use of selective wetting was the Elmore bulk oil process. Elmore mixed the ore with several times its weight of water and an equal weight of oil in a revolving drum. After gentle agitation the mixture was run into a spitzkasten, where the water and gangue settled to the bottom and were removed. The ore was separated from the oil by a centrifugal apparatus. Froth flotation, employing an amount of oil equal to about 1 lb. per ton of ore treated, or less than the recovery losses in the bulk oil processes, has superseded the Elmore process in the treatment of ore.

As the further history of the coal concentrate is to be different from that of the ore concentrate, it does not necessarily follow that methods using relatively large amounts of oil are impracticable for concentrating coal even though such methods have been practically abandoned in ore-concentration practice.

Oil in Coal-and-Oil Amalgam Can Be Used

The ore concentrate is to be passed through a metallurgical operation for the recovery of the pure metal; the coal concentrate is to be used ultimately as a fuel and in many cases is to be subjected to distillation for the production of coke. The mixture of coal and oil may be burned without further treatment or it may be carbonized with the formation of coke and recovery of the oil and byproducts from the coal. If the oil employed contains a considerable percentage of pitch, it may serve to make coherent coke from feebly coking coals.

The work at the U. S. Bureau of Mines has been made rather on the fundamentals of the bulk oil method than on its economic aspects. Experiments on a laboratory scale have been made to determine for a variety of coals the ash and sulphur removal, combustible recovery, and oil losses with different oils, different methods of agitation, and various degrees of fineness of pulverized coal. The experimental procedure followed has aimed to obtain data giving a complete balance sheet of the process.

The recovery of oil from the coal-oil agglomerate by distillation has been investigated by J. D. Davis, fuel chemist, Pittsburgh Station, Bureau of Mines. His results will be set forth in a subsequent article. This article will include a description of methods employed in determining the efficency of the process in cleaning coal on a laboratory scale and will summarize the results obtained with typical coals of the country. A brief discussion on the subject of fineness of grinding and its effect on separation of mineral matter from coal will be included.

Oil and Coal Agglomerate To Avoid Water

The bulk oil method of cleaning coal depends upon the same principles of selective wetting that have made possible froth flotation of ores and have been voluminously discussed in the literature of flotation. When oil is stirred into a suspension of coal in water, the first tendency probably is the formation of a suspension of droplets of oil in the mixture. The coal particles, however, are so readily wet by oil in preference to water that the globules rapidly become small agglomerates of coal and oil. These agglomerates tend to adhere to one another, entrapping water in the spaces between them and forming the pasty mass which precedes the "breaking" of the mixture.

As a result of further agitation, the small agglomerates coalesce into larger granules and finally coalescence reaches a point where a large amount of water is released from between the particles, and the separate granules are visible. With further agitation the granules agglomerate into larger masses and, if sufficient oil has been added, finally form a more or less homogeneous mass.

Three Conditions Favoring Large Recovery

The best conditions for rapid formation of this "amalgam"[1] are (1) low surface tension between coal and oil, (2) a high surface tension between coal and water, and (3) a high surface tension between oil and water. In other words, the reaction will take place most readily (1) with a coal which is very readily wet by oil, (2) with a coal which is not readily wet by water, and (3) with an oil which does not readily form emulsions with water. From (1) and (2) we should expect that the bituminous coals and graphite should respond most readily to treatment and that the lignites would be more resistant.

From (3) we should expect gasoline and the higher paraffin oils to form an "amalgam" more readily than benzol and the higher aromatics and that the presence of substances in water or oil which tend to lower the surface tension between water and oil would make the formation of the amalgam more difficult.

Particles of refuse which have been physically separated from the clean coal particles by the preliminary pulverization, will be easily removed if they are readily wet by water in preference to oil and removed with difficulty if they have any tendency to be wet by oil. Hence we should expect that shale, clay and gypsum would be readily removed suspended in the water but that pyrite might tend to remain in the amalgam.

Coal is pulverized to pass a 65-mesh screen in a laboratory disk crusher. For finer meshes the coal is then ground in a porcelain ball mill with an equal weight of water for periods varying from four hours to as long as sixty hours when extremely fine grinding is desired—coal as fine as 800-mesh has been obtained in this manner. The coal is washed from the ball mill

[1] The term amalgam is used to designate the mixture of clean coal and oil. In ordinary technical usage, amalgam refers to an alloy of metal with mercury, but the term is correctly used, according to Webster's dictionary, to refer to any "mixture compound, or union of different things."

into a settling jar, from which, after settling has taken place and some of the water has been decanted, it is transferred to a small electrically-stirred glass churn. Three-hundred-gram samples of coal have been employed in most of our work and have been agitated in the churn with about 900 cc. of water. A sufficient quantity of oil is added—about 25 per cent of the weight of the coal for a coal containing 25 per cent removable refuse—and the mixture is agitated until the agglomerate of small egg-shaped granules known as the amalgam is formed.

Amalgam So Solid That It Can Be Washed

The amalgam and water and suspended refuse are poured onto a 100-mesh screen and washed with water. The amalgam is then placed in the churn and washed with fresh water and the process repeated until no further mineral matter is removed.

After the amalgam has been separated from the refuse and the refuse filtered on a weighed paper, the products for analysis are: (1) Amalgam consisting of purified coal, oil, and 10-30 per cent water. (2) Refuse, consisting of mineral matter, a small amount of combustible matter, oil and water. (3) Refuse water, consisting of all the water used in the process with the exception of that retained in the amalgam and filtered refuse, a small amount of dissolved mineral matter, and under certain conditions possibly emulsified oil.

Before analysis can be made both amalgam and refuse must be freed of oil and water. This separation must be done in a quantitative way, so that oil losses, if any, may be determined. The obvious way of separating the oil is extraction of amalgam or refuse with a solvent which dissolves the oil but does not affect amalgam or refuse. If this solvent boils at a higher temperature than water, the water may be condensed and measured, thus determining amounts of oil and water in one operation.

Water Distilled and Oil Removed by Benzol

Due to the large amount of water in amalgams and refuse and the difficulty of accurately sampling the wet amalgam, it has been found more practicable to subject the whole amalgam and refuse to a separate distillation at 110 deg. C., in which water is caught and measured. The dry material is then extracted with benzol to determine the percentage of oil.

When a volatile liquid such as benzine is used in making the amalgam, distillation determines the amounts of both water and benzine and no extraction is necessary. Even when heavy petroleum oils are used in making the amalgam it is best to dry in the still because a small portion of the oil always comes over with the water. Drying in an open dish would thus give rise to a loss of oil, for which no account is given.

In calculating the efficiency of the process several values are of interest, three of the most important being: (1) Percentage of ash in the oil-and-water-free cleaned coal; (2) percentage of ash reduction; (3) percentage of combustible recovery. The first two values are qualitative measures of the efficiency. The percentage of ash reduction equals the percentage of ash in the raw coal minus the percentage of ash in the cleaned coal all divided by the percentage of ash in the raw coal. Percentage of combustible recovery is a quantitative measure of the efficiency of separation of combustible matter from mineral matter. It is equal to

$$\frac{C - rc}{C}$$

where C is the percentage of combustible matter in the raw coal, c is the percentage of combustible matter in the refuse, and r is the percentage of refuse by weight of the raw coal.

Difference Between Ash and Mineral Matter

In calculating the amount of combustible matter in coal or refuse it must be borne in mind that combustion of carbon is not the sole reason for loss in weight when coal is ignited in the analytical method for determination of ash. There is always a larger amount of mineral matter in coal or refuse than represented by the percentage of ash as determined by the ordinary analytical method. For example, a refuse which shows 85 per cent ash remaining after ignition to constant weight at 750 deg. C. does not contain 15 per cent combustible matter.

Several factors contribute to this loss in weight: (1) Combustion of carbonaceous material; (2) decomposition of carbonates; (3) oxidation of pyrite to Fe_2O_3 and SO_2, and combination of part of the SO_2 with oxides formed from decomposed carbonates; (4) loss of water of hydration from clay and shale.

Water of hydration varies from 2 to 12 per cent of shale. Calcium carbonate is present in small amounts in the coals of the Appalachian fields, but may constitute as much as 50 per cent of the ash of some of the Illinois coals. Parr[5] has proposed the following formula for calculating the corrected ash:

$$Corrected\ ash = Ash_w - 3C_1 + \frac{5S}{8} + 0.08\left[Ash_w - \left(\frac{34C_1}{3} + \frac{10S}{8}\right)\right]$$

where Ash_w = percentage of ash as weighed after ignition at 750 deg. C. with addition of H_2SO_4;

C_1 = percentage of carbon occurring as carbonate in the unburned coal;

S = percentage of sulphur in unburned coal.

In our work, time has not been available for determination of carbonate in the refuse and the corrected ash has been determined as follows:

$$Ash\ corrected = 1.08\ ash - \frac{21}{40}S$$

Any correction factor must of necessity be an approximation, the correctness varying according as the composition of the ash varies from the assumptions made in deriving the formula. As stated, the water of hydration which is present in shales may vary from 2 to 12 per cent. Part of the sulphur is present as organic sulphur though the formula assumes the sulphur is all present as pyrite. As little organic sulphur is removed with the refuse, the sulphur correction will be found fairly accurate.

Drivers Object to Stabling Their Horses.—Having been required to spend eight hours at work and to stable their horses, as is customery, in their own time, the drivers at No. 12 colliery of the Dominion Coal Co., at New Waterford, N. S., stayed at their work till the regular quitting time, 3 p.m., and then drove their horses to the landing, leaving them there. They were immediately reported to the management and their lamps were stopped. In consequence the mine was idle on July 8. The drivers assert that the stabling of their horses would take twenty minutes.

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[5]Parr, S. W.: Preliminary report of committee on coal analysis: *Jour. Ind. and Eng. Chem.*, vol. 5, June, 1913, p. 523.

How the Trent Process May Modify Our Coal-Preparing and Coal-Utilizing Practices*

Almost Ashless Fuel Obtained—Can Be Stored, Under Water if Desired —Oil or Product May Be Distilled—Non-Coking Coal May Be Coked—Distilled Product Will Briquet Without Added Material—Byproducts Increased

By O. P. Hood†
Washington, D. C.

DURING the war certain suggestions concerning power production were made by Walter E. Trent to the War Inventions Board, and at the request of the War Department facilities for experimental work were provided on the grounds of the Bureau of Standards.

The experiments were along the line of controlling the conditions of combustion in a closed space. In order to reduce slag troubles, experiments were carried out for removing ash from powdered coal. After the war, work along this line was continued, resulting in the Trent process, which agitates or beats together powdered coal, water and oil.

Ore preparation has lately received a new technology by the use of small quantities of oil in water for froth flotation, and although the methods, results and mixtures of the Trent process were quite different, yet the same physical phenomena of differential wetting were used, and the possibility of interesting results in fuel technology was evident. A co-operative agreement was entered into whereby the Bureau of Mines was to investigate the underlying physical and chemical facts and make them public, and the Trent Corporation was to pay the cost of the investigation.

The several reports as made have been available to anyone interested and are now to be published. While the Bureau of Mines felt justified in investigating the physical phenomena so far as might be done in a laboratory and so far as public interest might reach, no attempt was made to discover the commercial possibilities which development might bring. The question of commercial possibilities must be left for commercial enterprise to answer.

Ashless Plastic Fuel, Almost Water Free

Briefly, the process consists in agitating together powdered coal, water and oil. This produces a partly de-ashed plastic fuel, called an amalgam, the oil selecting the coal particles and largely excluding the water and ash. The amalgam can be freed from the water, which is mechanically held by agitating much in the same way as butter is worked. The amalgam can be burned in several ways. For example, it may be shoveled, or forced through pipes by pressure; it also can be stored, under water if, for fire prevention, such storage is believed to be desirable.

The laboratory results immediately suggest many interesting possible applications. For pulverizing fuel, wet grinding presents many advantages over dry grinding, provided the water can be eliminated afterward. The ability to reduce the ash in coal may make available large quantities of low-grade coals and material now considered as waste at the mines.

May Distill Oil and Make Coke or Briquets

If an oil is used which can be distilled at a temperature below the distilling temperature of the coal, powdered fuel is reclaimed from the amalgam and the oil may be reused. If a heavy oil be used and distilled to dryness, a coke product may be recovered, although the coal used may have had no coking quality. If the distillation proceed only to a heavy pitch, a mass suitable for briquetting may be made.

In distilling oil mixed with a finely-powdered material the distillates are similar to those obtained by distilling under pressure, so that the distillation of an amalgam of coal and oil gives quantities often more favorable than the sum of the separate distillations of the coal and the oil.

The amalgam can be used for a gas-making fuel, and gas-house tar emulsions can be dehydrated by mixing with powdered coal, the amalgam being retorted for further gas making. Graphite ore can be separated from its gangue, and coke can be separated from flue dust by using the Trent process. Clean coal in anthracite sludge will make an amalgam if oil is added.

This brief sketch of possibilities revealed by small-scale laboratory work shows that the field for investigation and development is large. The general results show that real benefits are physically possible by treating coal in this manner. The bureau has interested itself more particularly in the ash-separation phenomena or the cleaning of coal, as outlined in the foregoing paper, and in the distillation of the amalgam, which will be discussed in a future article.

*Comment on an article entitled "Conditions Under Which Bulk-Oil Concentration of Fine Coal Gives Best Results," appearing on preceding pages.

†Chief mechanical engineer, U. S. Bureau of Mines.

New Conveyor Car Loader Fills Cars at Rate of a Ton in Two Minutes

MODIFICATION recently made by the Portable Machinery Co., of Passaic, N. J., renders its scoop conveyor adaptable to underground mine-car loading conditions. In the accompanying illustrations, Fig. 1 shows one type of this device. The machine has an inclined portion and a horizontal extension. Both the inclined and horizontal parts of the conveyor are adjustable, giving a variable discharge height. The carrying apron is a rubber conveying belt, 16 in. wide, fitted with cleats to keep the material from rolling back. It travels at a speed of 125 ft. per min. The manufacturers give the loading capacity of the machine at one ton in two minutes.

The distinctive feature of the scoop conveyor is the feed end. This can be pushed into and completely buried under the material to be conveyed. This allows

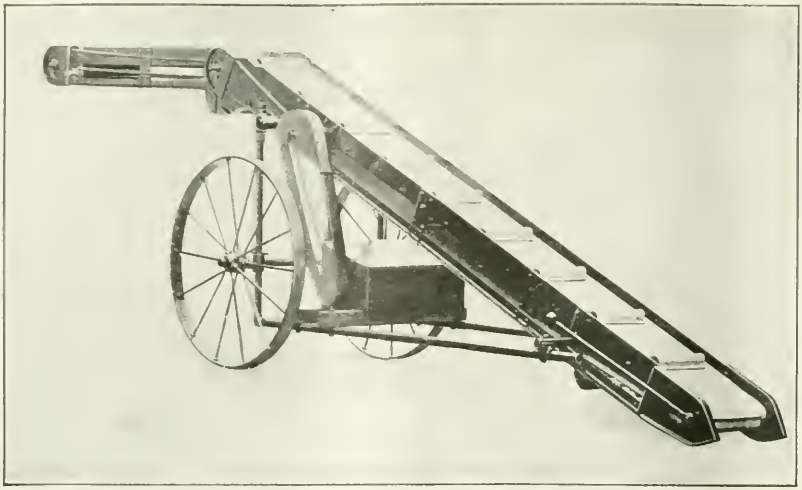


FIG. 1.

Mine Car Loader

This is a coal conveyor which raises and transports the coal but does not gather it. A man can load more material onto the low and handy point of a conveyor than into a car at a distance. Moreover the coal is delivered with less breakage, which is just as important in the mine as outside.

the material to be scraped onto the carrying belt instead of it being necessary to lift it by shovel or fork, thus saving much labor in loading.

The machine is of light weight but sturdy construction and is mounted on large-diameter wheels that can be readily rolled over ties, rails or similar obstructions. The wheels need not rest on the room track. This allows moving the feed end of the loader over a large area without swinging the discharge end away from the car.

This device is fitted with suitable electric or air motor to meet the requirements of the mine in which it is employed. The machine is built in regular, special large, and special small sizes, the latter being shown in Fig. 1.

Fig. 2 suggests the ordinary application of the standard size loader as well as the use of a removable-plank feeding platform that saves labor under conditions where it is possible to throw down the material as shown. When using the loading platform, a number of planks are placed over the feed end of the loader. The material is then brought down on the platform, after which it may be fed readily to the conveyor by removing one plank after another.

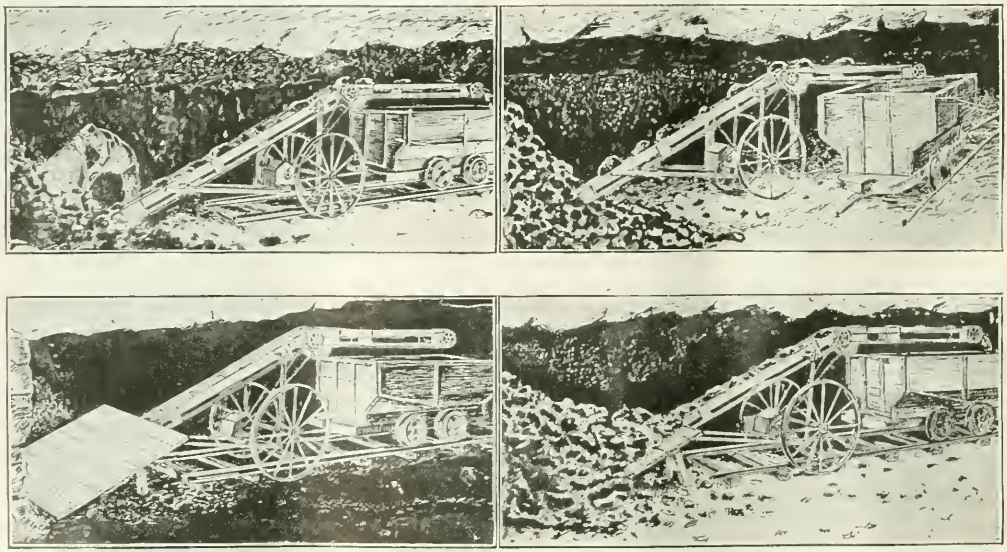


FIG. 2. APPLICATIONS OF THE MINE-CAR LOADER TO DIFFERENT CLASSES OF WORK

The upper left-hand corner shows the loader straddling the mine track and loading a car immediately behind it. Note how readily it reaches the end of the car which in hand loading has often to be filled by the miner who is trimming the load. In the upper right-hand corner the conveyor is shown on the track and loading at an angle. In the lower left corner a platform is shown with heavy legs. The coal can be blown down on this platform and scraped down from the pile into the conveyor.

Solid-Car Crossover Dump Which Clamps on Wheels; Loaded Car Returns Empty to Original Position

Cars Fed by Action of Dump Without Help of Dumpman—Car Turned Through One and a Half Quadrants and Then Righted—Rock Cars Pass Through Dump Without Being Discharged—Dashpot Regulates Speed

EACH year the solid-body mine car grows in favor. The advantages of this type of construction are so well known that they need no enumeration here. The chief objection to the use of these cars has been that means for their efficient discharge were not available. Kickback and crossover dumps have given long and satisfactory service and now devices intended for a similar purpose but adapted to handle solid-body cars are coming into the field in appreciable numbers.

One of the latest devices of this kind, known as the Twin Boy automatic dump, is shown in the accompanying illustrations. As may be seen, this is of the semi-revolving or oscillating type and moves through an angle of 135 deg. in discharging each car instead of turning completely over, as does the full revolving machine. The dump frame is built upon triangular or, rather, Y-shaped spiders through which a heavy shaft passes.

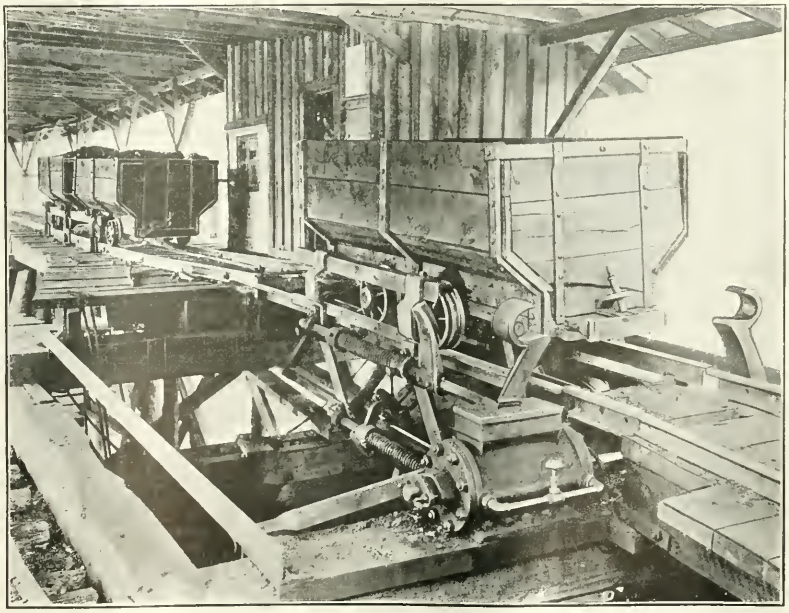
At either end this shaft is provided with a heavy half-shrouded pinion meshing with a similarly shrouded rack. The two shrouds are thus in contact at the common pitch line and the weight of the dump is supported by and rolls back and forth upon these shrouds as cars are dumped. An oil-filled cylinder with a piston the rod of which is connected to the main shaft and a throttling bypass extending from end to end controls the speed of dumping.

The two tracks are offset upon opposite sides of the supporting shaft when in the normal position or when ready to receive a loaded car. Thus one is offset a certain distance to the right of the supporting shaft while the other is offset an equal distance to the left. As the track leading to and from the dump is fixed in position the shaft of the dump must move sidewise upon the discharge of each car a distance equal to twice the offset of the cars. The length of the rack and the stroke of the piston are made of corresponding length.

Rapidity of Discharge Regulated by Dashpot

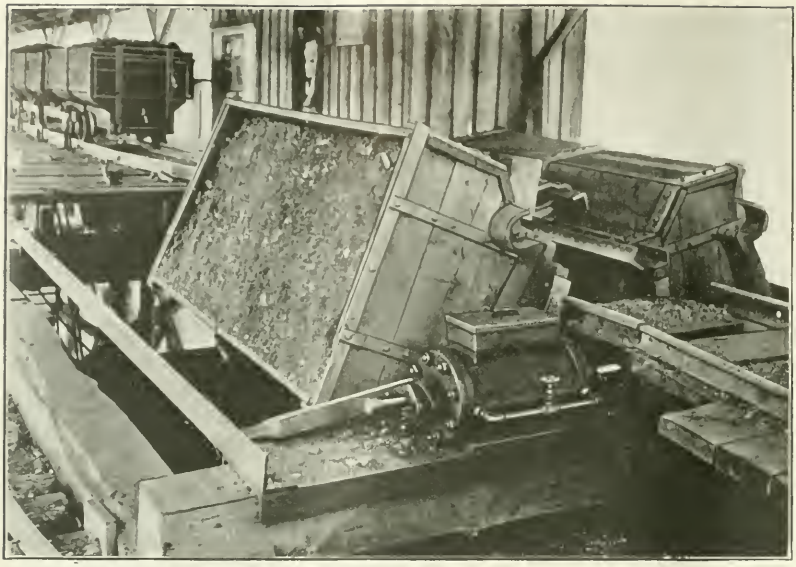
The rack is surrounded by a box cast integral with it and which is kept full or partly full of oil. Both it and the pinion are protected by a tight sheet-iron cover excluding dirt and coal dust. The valve in the bypass connecting the two ends of the cylinder may be adjusted to throttle the flowing oil to any desired degree, thus controlling the rapidity of lateral movement and consequently the operating speed of the dump.

Each of the two tracks upon the dump is provided with a pair of holding-down angles gripping the car wheels, a pair of horns and a latch. A length of rail just in front of the dump is hinged at one end. A full car passing over this length of track depresses it, throwing into action through a system of levers the



Automatic Dump

The cars are held by the wheels. Where the equipment is of various shapes but has standard wheels this kind of dump has that fact as a further advantage over others which grasp the cars by the sides. The oil dashpot which regulates the speed of dumping can be seen in the foreground. A car is being discharged on the far side of the dump, but it cannot be seen in this view. Its downward movement has just lifted the empty car back into place on the track.



Cars Seesawing

The loaded car is descending. In doing so it brings up the empty car, which can run off the dump and be replaced by a load. This new load by seesawing the apparatus in the opposite direction will lift up the original loaded car, which by this time will have discharged its contents into the chute. The speed can be regulated to suit the needs of the mine. The cars in dumping do not actually revolve but turn through 135 deg.

trip brake mechanism two or three car lengths ahead of the dump. This brake is an angle iron that engages and presses down upon the tops of the wheels of the cars in the trip. The construction of the trip brake is such that its braking effect is the same regardless of the condition of the wheels and rail. Thus, on a rainy day when the track is wet, when a car tread is oily or some similar abnormal condition prevails, the angle rail above the wheels sets down upon them with a pressure sufficiently great to counteract the effect of the lubricant and a moving trip is brought to rest in practically the same distance as would be traversed if the wheels were dry.

Operation of this dump is controlled by means of the hand lever shown in the side view. Normally this hand lever stands in the central position. To start operation the lever is moved backward or to the right to the limit of its travel. If left in this position the operation of the dump will be entirely automatic and uncoupled cars will pass to it, be discharged and move on out again successively at the highest possible speed until the entire trip has been dumped. When the lever is in this position the hinged length of rail is not latched down during the rotation of the dump, as is normally the case, but the dump may be so adjusted as to right itself and be in readiness to receive the next car before it arrives.

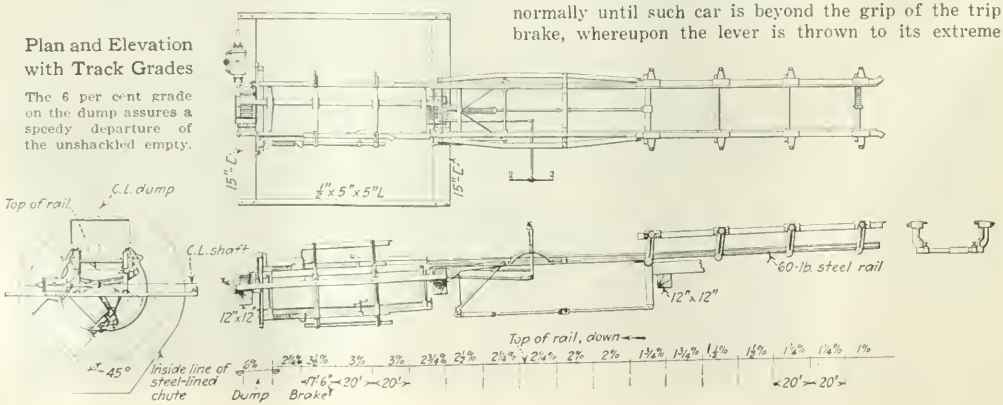
If the lever is first depressed (to the right) and immediately returned to a vertical position one car at a time will pass through the dump, but this apparatus may be so set as to discharge the cars very slowly, the hinged rail being latched down until the dump reaches its upright position.

If the lever is thrown to the left from the central position as far as the first notch the brake remains latched and dumping operations cease except that the dump is free to move. If the lever is thrown to the left to its extreme position or to the second notch the entire mechanism is locked in place.

This renders it possible to pass cars across or through the dump without discharging their contents. Thus, when a car of slate is in a trip the dump is operated normally until such car is beyond the grip of the trip brake, whereupon the lever is thrown to its extreme

Plan and Elevation with Track Grades

The 6 per cent grade on the dump assures a speedy departure of the unshackled empty.



left position. This allows the slate-laden car to pass through the dump and be shunted to the slate track either before or after going through the kickback.

The only force utilized in the operation of this dump is gravity, the arrangement being such that the descending loaded car raises the empty. The expense for power of operation, therefore, is nothing and the only cost involved after installation is that of maintenance and other fixed charges. The dump is sturdily constructed and in those plants where it has been installed it has given an excellent account of itself. This machine was designed by W. R. Coleman and is manufactured by the Anniston Electric Steel Corporation, of Anniston, Ala.

Mining Losses in Middle West and Means That May Be Taken to Eliminate Them

CLOSER attention to the economics of coal mining was urged by J. J. Rutledge, superintendent of the Central Experiment Station of the U. S. Bureau of Mines, Urbana, Ill., in an address delivered before the recent meeting of the Illinois Mining Institute.

"Coal is now selling with great difficulty," Mr. Rutledge said. "I have been told that screenings in central Illinois are being offered for sale as low as 50c. per ton, which is certainly far below the cost of production. Lump coal does not seem to have suffered as badly as fine coal, but there has been some cutting of prices in this grade also.

"Some of the mines in the Southwest have not worked since last December. Others—railroad-owned mines or mines supplying railroad coal exclusively—are working only from two to three days a week. One operator with thirty years' experience in the Southwest district told me he had never seen a condition like the present one. He said there was no market for fine coal, yet he could not help making some fine coal, if he was to make lump coal, and the loss he was compelled to suffer on the fine coal would compel him to charge at least $15 per ton for his lump coal in order to come out even. One company had 56 'no-bill' cars of fine coal on the tracks and the railroads were refusing to furnish any more cars for the loading of fine coal."

Middle West Needs Greater Coal Recovery

Mr. Rutledge urged that there should be some changes in the methods of working coal. Special attention should be paid to greater recovery. In many mines at present worked by the pillar-and-room system the maximum recovery varies from 45 to 55 per cent, and the remainder of the coal is left in such a condition that it is almost impossible economically to recover it. In other words, Mr. Rutledge said, the coal is irretrievably lost. By improving mining methods, such as panel longwall or pillar-and-room retreating, the recovery can be increased from 45 to 55 per cent, which is the present extraction, to 80 or 90 per cent, with a considerable reduction in the cost of production.

"If by the expenditure of an equal amount of entry driving and brushing from 25 to 35 per cent more coal can be recovered, mining costs can certainly be reduced by adopting the improved methods of mining," said Mr. Rutledge. "Estimates of the amount that it is possible to reduce the mining cost by improved methods of mining vary from 15c. to 25c. per ton. Moreover, the quality of the coal produced by these methods will be better than that produced by the old method, and this will be an additional amount on the right side of the ledger. When our coal is gone, it cannot be replaced and is gone forever."

Proper scientific study of subsidence would be of great economic importance, Mr. Rutledge said. As an example of the economic importance of such a study Mr. Rutledge cited an important coal field where the pillar-and-room method of mining prevails. This field is now producing an amount of coal which has a royalty value of $300 per acre. Under a proper system of mining, involving good recovery, this amount should be increased to at least $500 per acre, the surface and coal being separately owned. Is it not much better to mine this coal exhaustively and to neglect the value of the surface, when the difference between the coal and surface value is so great? he asked.

Mr. Rutledge also spoke for more rigid inspection of boilers, the use of improved devices for underground haulage to replace the slow, troublesome and expensive animal haulage, and the use of improved mining methods to decrease the necessity for coal washing. He also expressed the belief that underground loading machines will soon be found at work in many coal mines, even as they are now in many metal mines.

"One of the greatest defects in the present system of mining is the loading of slate and rock underground and the transportation of them to the surface to be deposited on the rock dump," he said. "Every car of rock or slate hoisted to the surface at least takes the place of one car of coal and possibly two cars. In other words, if the miners were not loading a car of slate or rock they probably would be loading it with coal. The driver would be hauling coal, a revenue-producing load, instead of that which is only an expense and a waste. Moreover, it is necessary to maintain expensive dirt dumps on the surface, and this involves an expense. The haulage of heavy slate or rock in mine cars soon destroys them and tends to cause them to be in poor repair at all times.

Heavy Shot Firing a Cause of Much Expense

"Mine accidents and disasters are among the greatest sources of expense in mining coal. Under the dangerous method of blasting coal off the solid that is followed in some states, fatal accidents to shotfirers are frequent. In one state, where blasting off the solid is almost universally followed, some mines have lost by successive shotfirers' explosions as many as eight or ten shotfirers; that is to say, any one of several mines have had from eight to ten shotfirers killed in a period of time varying from eight to fifteen years.

"One mine is said to have actually lost fifteen shotfirers in twenty years of operation, one or two shotfirers having been killed at a time. The average amount paid for a shotfirer's death claim alone, not including damage to the mine and loss of output to the operator and of wages to the miners and other employees, has been from $3,000 to $3,500. Several recent shotfirers' explosions have cost the mining companies concerned amounts varying from $20,000 to $50,000, including damages paid to heirs of deceased shotfirers and repairs to underground workings.

"Surely it would be cheaper, speaking only from a cold, money-making standpoint, to abolish such a dangerous method of producing coal and endeavor to mine the coal by use of mining machines and permissible explosives."

Problems of Operating Men

Edited by James T. Beard

Assistant Foreman to Mine Superintendent

Opportunity Awaits the Deserving Worker. The Ability to Fill Higher Positions Is Often Only Discovered When the Emergency Arises for a Man to Show His Worth

NUMEROUS letters in *Coal Age* have referred to the disadvantage under which a mine foreman works when his superintendent has little practical knowledge of mining. In reading these letters, I have asked myself: Why will coal operators appoint men with little mining experience to the position of superintendent?

There are doubtless many reasons for such appointments. The man chosen may be a close friend of the operator; or his knowledge of bookkeeping and accounting may have gotten him the position. In small operations, it frequently happens that the store manager acts as superintendent of the mine.

In every industrial undertaking, whether large or small, the expense of operation, involving the necessary outlay for labor and material, is a dominant factor, and frequently blinds the eyes of the operator to every other consideration. The fact remains, however, that if affairs outside of the mine are conducted with little regard to inside requirements, things are badly disorganized.

The Business and the Operating End of an Organization

Whenever a mine operation becomes large enough to have a separate business organization and operating department it is time to get away from the combination official, whose authority is always more or less uncertain in one branch or the other of the organization.

Coal mining is a business proposition and has its business side. It is likewise an operation requiring practical mining knowledge and experience. The man in charge of operations and the handling of men must have, besides his practical knowledge and experience, considerable tact and a pleasing personality. His success will depend most largely on his ability to surround himself with capable officials and workers.

Mine owners are frequently at a loss to know whether it is better to place a business man having little or no mining experience in charge of their organization, or to choose a mining man who has the necessary experience, but who has never interested himself enough to inquire into the relative costs of the different supplies and material needed in the mine. Both of these types of men have a one sided viewpoint that will undoubtedly affect the success of the undertaking.

Just here, I recall a remarkable incident where the worth and ability of an assistant foreman was brought to light through circumstances that were unforeseen. The incident shows how a short-sighted mine management is prone to overlook the ability of some humble worker and seek elsewhere for men they need to fill positions of trust.

Selecting a Mine Superintendent

For a considerable time, a certain mine owner had not been able to find a capable mine superintendent. He had employed five men in that position in a single year. Three of the men, though having mining experience, were unable to get along with their men. The other two, for lack of experience, left the men to do largely as they pleased.

It so happened that when the last superintendent resigned he took the foreman with him, much to the regret of the owner because the foreman was one of the kind who expressed no ambition to rise above that position. Some companies have a knack of making their foremen feel that way, being prone to regard them as better fitted for the positions they hold than for a place higher up the ladder.

Automatically, the assistant foreman then became acting foreman. The manager told him to do the best he could until another man could be found. Indeed, several weeks passed by, during which time the assistant foreman performed the duties of both mine superintendent and foreman.

In the meantime, several men were had under consideration by the owner, who had decided to get a man of known ability from another state. The man sought had promised to come after giving suitable notice to his employer, but failed to show up at the mine.

In this manner, a month or two passed; things looked better and were going more smoothly every day. The result was that the former assistant and now acting foreman was one day called into the office and informed that he had been appointed superintendent. He was told to look around for a high-class foreman and give him charge of the mine, which he did, choosing one of his fellow assistant foremen for that position.

The quality that entered into the new superintendent's make-up was the trust and confidence he placed in each man, whom he regarded as capable of performing the work given him. His policy was to make every man feel that he must be master of his position and responsible for the work in his hands. Every man felt that he was needed, but not so badly that the job could not get along without him.

Naturally, there were a few who took advantage of the fair treatment given them, regarding themselves as of so much importance that the place would close down if they resigned. These incompetents were weeded out by turns and are now working for other companies, but looking for the happy day when the ex-assistant foreman will send for them to return, to keep the place from going to smash.

Pikeville, Ky. GEORGE EDWARDS.

Foremen's Work Made to Count

When work counts for nothing in the mine it is a sign of poor management. A good mine foreman will make his work count.

KINDLY allow me to say a few words on the subject introduced by W. H. Luxton, *Coal Age*, May 26, p. 955, in regard to a mine foreman's work often counting for nothing. Where that is the case it is my belief that the foreman makes a poor manager or organizer.

In his letter, Mr. Luxton named several causes that operate to make the efforts of a foreman fruitless. First attention is drawn to the lack of suitable transportation facilities in the mine. Then, he mentions poor equipment in the way of mine cars and tracks being in bad condition, a poorly arranged system of haulage and insufficient power.

By referring to these important items, the correspondent shows that he understands the necessity of having a well-equipped mine if coal is to be gotten out and sent to the tipple at a low cost and the mine worked successfully.

For some twenty years past I have been a certified mine foreman in Kentucky and Tennessee. In both of these states the mine law requires that the foreman must devote his whole time to his duties in the mine while it is in operation, keeping a careful watch over the ventilation and timbering.

The foreman must visit each and every working place in the mine, see

that the proper amount of air is in circulation and breakthroughs made at the required distances apart in all room and entry pillars. These are but a few things to which a mine foreman must attend daily. To satisfy the management he must keep the coal moving or he will be asked to explain the reason why, which is not always easy to do.

Foremen Must Employ Needed Competent Assistants

Now, clearly, it is a practical impossibility for a foreman, however active, to be everywhere in the mine at the same time. In order to be efficient as a foreman, he must employ competent assistants and train them, each for their respective duties.

For example, every foreman should have a good trackboss who understands tracklaying; a head timberman to look after the timbering of roads and erecting brattices where such are needed to conduct the air to the working face, and a good driverboss to look after the drivers and keep the coal moving.

These several bosses must employ practical men and train them for their work. When that has been accomplished the foreman has the mine under his full control. By keeping in touch with his men there will be little cause to complain that his efforts are fruitless. Everything he does will count for something.

Mine Electrician Needed

When a mine is equipped for electric haulage it is very important to employ a competent electrician to take charge of the work of wiring the mine and bonding the rails. Another matter that an efficient foreman will not omit is to supply the men with good tools without which little can be expected to be accomplished.

Throughout the mine there must be strict discipline. Every man must understand that he is expected to give eight hours work for eight hours pay. If there is one man on the job who is a time-killer there will soon be others following his example. It is up to the foreman to get rid of such men as quickly as possible.

To my mind, a really efficient foreman will so organize his force and instruct his men that they will not require him to run after them and see that they are doing their work. The work of such a foreman always counts.

Crawford, Tenn. Oscar H. Jones.

How to Americanize

Practice of American ideals the most effective means of impressing these on the mind of the foreigner. Americans must live up to the ideals on which this country is founded.

With much interest and enjoyment I read the letter of Henry Bock, June 2, p. 998, and feel that he has expressed the truth in regard to Americanizing the large numbers of foreigners that are constantly coming to this country.

We *talk* about American ideals and the principles for which America stands, but how many of us Americans live up to those standards and ideals of which we are so proud? Do not our actions often belie our words and what is the effect on the foreigner who is watching us?

My experience since coming to this country some years ago is that its form of government is the best in the world. No other country affords as many opportunities to the working man for advancement. Speaking for myself, I could not have hoped to have done as well in the old country or to have stood the same chance to succeed there as I have in coming here.

Living American Ideals

For this reason, it has been my constant endeavor to live up to what I understand are American ideals. I resolved that if ever I had authority to direct and influence foreign-born workmen I would see to it that they, one and all, got a square deal, and to this resolve I attribute what success has been mine.

It is a pleasure to know that I enjoy the respect and confidence of that class of foreign labor with which I have been associated, and I am glad to say my treatment of them has met the approval of the coal companies who have employed me. As a rule, the company wants its foreign labor treated fairly in every respect.

If I interpret Americanization correctly, the term means living up to the principles of our American Constitution. None can deny that the framers of the Constitution had faith in God. If I am right, it was their first consideration, and true Americans must have the same faith and practice the principles of the Golden Rule, in any attempt to Americanize the foreigner.

Where We Fail

How is it possible, let me ask, to bring the foreigner to a true conception of American ideals when we permit the desecration of the American Sabbath, and are willing to discredit the provisions of the 18th Amendment; or, in other words, drift from these fundamental principles of our government on which this country was founded. Can we not see that all this is un-American.

Not long ago a lady, sent from Washington, called on me to ask my help in starting a night class for foreigners, as an effort to further Americanization. The government was willing to furnish the books, a teacher was to be engaged whose pay was to come from a small fee obtained from each one in the class.

The first night our efforts were rewarded by a large attendance; books were distributed, officers elected and the work organized. Besides the American Constitution, the book contained a few questions on good citizenship, such questions as a man must be able to answer when going before a judge to take out citizen papers.

The plan failed of its purpose, however, as at the next meeting night only four men were present and the second night but two remained. What the foreigner most needs is a true example of the meaning of Americanization. He must be taught to read and write the English language. If I am rightly informed there are whole communities of foreigners where not a word of English is spoken.

Speaking of the force of example, what can we expect when, as occurred in a mining town where I lived a while ago, the Squire sold liquor around among the foreigners, and when they were brought before him in a drunken condition he imposed on them a fine. In this manner he got revenue from them going and coming. Through our failure to live up to American ideals, we lose in the estimation of the foreigner and our influence counts for naught. Thomas Hogarth.

Indiana, Pa.

ANOTHER LETTER

Without doubt, as stated by Henry Bock in his interesting letter, *Coal Age*, June 2, p. 998, it is difficult for a foreigner to readily grasp the true principle and meaning of our form of government. The average foreigner labors under the mistaken idea that here every man is a law unto himself.

Many foreigners come to this country with the intention of becoming good citizens. They do the best they know how and, from this class, there is nothing to be feared. Another class, however, has no respect for any form of government and the men seldom have any intention of becoming citizens. They are here to make money and return in a short time to their own country. It is this class that gives the most trouble.

In my opinion, the most effective means of Americanizing foreigners is to compel them to learn and speak the English language. There are several hundred periodicals now printed in foreign languages and published in this country. Some of these, I regret to say, have not been wholly loyal to our government and its institutions. The tendency of such is to keep alive the foreign spirit, which is a great hindrance to the work of Americanization.

The Immigration Problem

We boast much of our country, its high ideals, institutions and democratic government. But, unless we adopt a different policy toward foreign immigration, we shall wake up some morning to the realization that the country is no longer truly American. The question of immigration is one of greatest importance.

Richard Bowen has well remarked, *Coal Age*, Feb. 17, p. 319, "The standard of our miners is measured by the character and reputation of those charged with their supervision and instruction." That being true how important it is that mine officials shall be

men of good character and a strong commanding personality.

The mine superintendent or foreman who has no further thought or interest in his miners than the number of tons of coal they can load, or the manner of work they perform, will never raise the standard of character among citizen miners or make a good Americanizer among foreigners. It requires a noble-hearted Christian bearing, which is the most valuable asset in the work of Americanization.

Before we can succeed in the work of elevating the standards and Americanizing other people, we must first return ourselves to the true American ideals from which we have departed in a great measure during the last few years. We must put in practice the principles underlying those ideals.

THE GOLDEN RULE WILL BRING PEACE

There will always be those who will discourage the idea of applying the Golden Rule, in attempting to assimilate the interests of operator and employee and adjust their differences. To my mind, this can be done and it is the only means by which peace and harmony will be established between these two elements in the industrial world.

Instead of being friends with common interests at stake, capital and labor are today arrayed against each other in a death struggle, each viewing the other through its own selfish glasses, those of Capital being colored green, while those of Labor are smoked with hatred. Is it any wonder that each sees only wrong in the other.

If American operators and miners would Americanize their ownselves by taking into their hearts and lives some of the Gospel grace that is an attribute of American ideals, peace and prosperity would not be far away, and the effect would be to Americanize the stream of foreign immigration now pouring in upon us. Indeed, on so doing depends the future welfare and safety of American institutions.

JOHN ROSE.

Dayton, Tenn.

Loose End in Blasting Coal

Does the Bituminous Mine Law of Pennsylvania make it illegal to blast coal on a loose end, without first mining the shot, as the reading of the law would seem to imply?

ATTENTION was drawn, a short time ago, by an inquirer in *Coal Age*, Apr. 14, p. 676, to a section of the bituminous law in Pennsylvania, defining the manner in which coal must be blasted. A little later, June 2, p. 999, the question was discussed by W. H. Luxton, who argued for a clear understanding of the intended meaning.

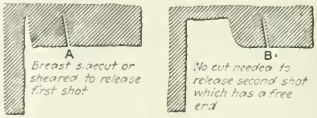
Taking the law as it reads, it would seem that the coal must always be mined before it is blasted. A literal interpretation would seem to forbid the blasting of coal from a loose end, unless it is previously mined, which every practical miner knows is unnecessary.

The section referred to is to Art. 4, Sec. 9, which reads: "The mine foreman shall direct that the coal is properly mined before it is blasted. 'Properly mined' shall mean that the coal shall be undercut, centercut, topcut or sheared by pick or machine, and in any case the undercutting shall be as deep as the holes are laid."

In view of the fact that four separate locations are named in which the coal must be cut, it is evident that the term "undercutting" means a cut made in the bottom of the seam or below the coal and cannot be used in a general sense. Instead the word *cutting* should be used in speaking of the depth to which the coal is cut.

Since the law requires the mine foreman to "direct that the coal be properly mined before it is blasted," and specifically defines the meaning of the expression "properly mined," the question may naturally be asked, Does the law forbid the blasting of coal on a loose end without first mining the shot?

Assume, for example, that the coal, in a breast, has been sheared or side-



BLASTING A BREAST OF COAL

cut on one rib. A hole is then drilled, as shown at A on the left of the accompanying figure. In compliance with the law, the depth of the hole must not exceed the depth of the shearing or sidecut. After the shot has been fired and the broken coal removed, the breast will present somewhat the appearance shown on the right of the figure.

It is common practice to continue, now, shooting this breast by drilling a second hole at B and firing the shot, then a third and a fourth till the entire breast is finished. But these do not require to be mined in order to give the powder an opportunity to perform its work. The coal removed by the first shot has provided what is termed a "loose end."

Frankly speaking, it would be a waste of time and labor to mine any but the first-shot in this breast. It cannot be assumed that the law is intended to forbid the blasting of coal under these conditions, as that would be contrary to common practice.

If it is considered that no additional cutting or mining is needed in a breast of coal after the first sidecut has been made, all that the law should state is that no blast shall be fired without the coal is first mined or sidecut, or there exists a loose end that will give the charge an opportunity to perform its work.

Such a construction of the law, in reference to blasting coal, would cover the conditions that exist in pillar work and when mining an irregular breast of coal where ample opportunity is afforded for the shot to free itself. As every good miner knows, a shot must have a free end to be effective and safe. This is only another instance where our lawmakers lacked the necessary practical knowledge that would have avoided this ambiguity.

Holsopple, Pa. I. C. PARFITT.

Inquiries Of General Interest

Working a Steep Seam of Coal

Main Slope Driven on the Full Dip with Gangway Levels Turned to the Right and Left of the Slope Headings and Rooms Driven to the Rise of Each Pair of Levels

KINDLY permit me to present the following proposition for discussion in the columns of *Coal Age:* We are about to develop a seam of coal on a thirty-three per cent grade, running at right angles with the face of the coal. What I want to know is the best method of opening and developing the mine with a view to the economical working out of the coal and having due regard for safety; also I would like to ask regarding the comparative cost of working inclined and level seams.

R. E. HOWE.

Vice-President and General Manager, Shamrock, Ky. Climax Coal Co.

We understand that this seam of coal has a uniform dip corresponding to a grade of thirty-three per cent, and that the direction of the dip is at right angles to the natural face cleavages of the coal.

In reply, we would suggest driving the main slope headings, say three or four abreast, depending on the nature of the coal with respect to the presence of gas and water. These headings should be driven on the full dip of the seam and, as they advance, gangways or levels are turned to the right and left of the slope headings, inclining them slightly up the pitch from a right angle, so as to provide a grade of about one per cent in favor of the loaded cars. The gangways should be driven in pairs, making the upper entry of each pair the haulage road and the lower one the air-course, which is also used for drain-

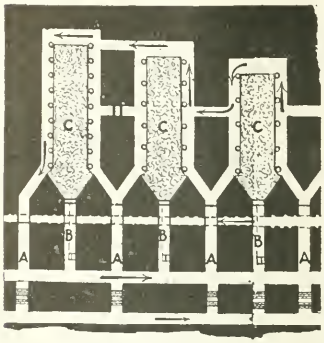
age. Here also, as the gangways are advanced, breasts are turned to the rise at regular intervals.

Unless conditions require otherwise, it will generally be preferable to drive the gangways to the boundary line before turning breasts. The coal can then be worked out on the retreating system; but the adoption of this plan will depend chiefly on the demand for coal and the amount of capital invested.

The plan of working out the coal in breasts driven to the rise is that known as "Chute Mining." As shown in the accompanying figure, loading chutes, B, B, are driven up the pitch on, say forty-foot centers. These are driven narrow, eight or nine feet in width for a distance of from six to eight yards where they are widened out on an angle of forty-five degrees to the full width of the breast. As shown in the figure manways, A, A, are driven up between the loading chutes to a point where they are divided or branched to connect with the manways on each side of each breast.

A strong battery is built at the head of each loading chute by which the flow of coal is controlled as required. As the coal is mined at the face of the breast, it falls into the chute, C. This portion of the breast is kept filled with the broken coal, which affords sufficient support for the miner while he is at work at the face.

What is called a "monkey" airway is driven across and over the chutes in



ILLUSTRATING CHUTE MINING

thick seams, its purpose being to maintain ventilation across any chute that may become blocked. The proposition is open for further discussion.

It is not possible to give any general idea of the comparative cost of working inclined and level seams, as this will depend too largely on conditions.

Examination Questions Answered

Examination, Foreman and Assistant Foreman, Fifteenth Anthracite District

(Hazleton, Pa., April 19, 20, 1921)

QUESTION—*What are the dangers and consequent results arising from not having accurate and complete surveys of the workings of a mine?*

ANSWER—The principal danger consists in the live workings penetrating any adjoining abandoned workings that may contain accumulations of gas or water. There is also danger of not taking needed precautions when the workings are driven under water courses, lakes or ponds. Without a careful survey and map of the workings, these may be extended beyond the property line, or there may result the loss of much coal by reason of a haphazard method of mining that will generally induce creep or squeeze in different portions of the workings.

QUESTION—*Explain how mine workings are plotted on the map and to what scale. If between two lifts shown on a map, there is a horizontal distance of 150 ft. and a vertical distance of 200 ft. what is the pitch distance and what is the average pitch?*

ANSWER—Mine workings are plotted as if projected on a horizontal plane, except in cases where the seam is very highly inclined and it is advisable to make the projection on a vertical plane or otherwise, giving the elevation at numerous points throughout the mine. The Anthracite Mine Law of Pennsylvania requires the mine map to be drawn to a scale of 100 ft. per min.

The pitch distance corresponding to a horizontal distance of 150 ft. and a vertical distance of 200 ft. is $\sqrt{150^2 + 200^2} = 250$ ft.

Since the rise is 200 ft. in 150 ft. horizontal distance, the average pitch of this seam is 4 ft. of rise in 3 ft. horizontal distance.

QUESTION—*If, in a gaseous mine, electricity is used for motive and other power would you consider it safe to extend the conducting wire beyond where the ventilating current has been properly established?*

ANSWER—If a mine is generating explosive gas there is always danger in extending a live wire or conductor into a place where the gas is liable to accumulate. Such conductors should only be installed on roads, travelingways and other places that are properly ventilated.

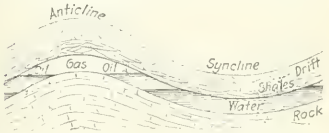
QUESTION—*If a breast is driven a distance of 500 ft. on a rising grade of 10 per cent, what should be the distance represented on the map of the mine, and what height has the breast attained above the gangway level?*

ANSWER—In this case, the pitch distance is 500 ft. and, the grade being 10 per cent, the grade angle or angle of inclination is that whose tangent is 0.1, or 5° 43′. Then, since the cosine of this angle is 0.995, the horizontal distance corresponding to the length of the breast is $500 \times 0.995 = 497.5$ ft., or 4.975 in., as measured on the map.

The total rise of the breast above the gangway is 49.75 ft. In this calculation the percentage of grade is estimated on the horizontal distance, which is common practice in seams of moderate inclination.

QUESTION—*Show by sketch what is meant by an anticlinal and a synclinal.*

ANSWER—In geology, the term "anticlinal" refers to the ridge and the term "synclinal" to the basin formed where the strata have been upheaved and depressed by geological disturbance. Both the anticline and the syncline are plainly marked in the accompanying



IDEAL GEOLOGICAL CROSS-SECTION

figure, which also shows the relative accumulation of water, oil and gas in the strata. These accumulate in permeable strata in accordance with their relative specific gravity, the water being the heaviest, the oil next and the gas the lightest of the three.

QUESTION—*How would you proceed to prospect for coal? What would lead you to think that there is coal in the territory you were prospecting?*

ANSWER—The surest method of prospecting for coal is to sink drillholes from the surface with a core drill. The work should be in charge of a competent driller and all the cores brought to the surface should be preserved and numbered. These holes should be sunk at numerous points on the property and a true record kept of the depth of the hole and the elevation of the surface and the thickness of the coal at each hole.

In searching for coal, it is necessary to have a knowledge of the geological formation and the coal measures. At times these may be studied from the outcroppings exposed to view by removing the drift. Where the coal measures outcrop on streams and waterways, there is generally to be observed a discoloration of the surface and the water in the stream, due to the presence of oxide of iron in the strata. More accurate information of the quality of the coal and thickness of the seam is generally to be obtained from adjoining workings.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

INSTEAD of waiting for some mysterious set of forces to restore good times, the people of the United States have settled down to the grim and sober business of working out their own salvation, writes Archer Wall Douglas, chairman of the Committee on Statistics and Standards of the Chamber of Commerce of the United States, in his monthly review of business conditions in the August number of *The Nation's Business*. While the return to better times is certain to be slow, he says, there can be no doubt as to the final recovery.

"The story of the present business depression," says Mr. Douglas, "is very similar to other depressions which have occurred during the past half century. The beginning of the end of speculation and overexpansion came with restriction of credit, which put a sudden crimp in the volume of business and started prices downward on their long journey of declines. Then followed the slowing down in industry, the incubus of much unemployment, and all the attendant evils of hard times. After the first shock there were a flood of forecasts of an early return to former conditions and the passing of those ills which afflicted the country. Invariably the prophecies came to grief.

"One of the earmarks of past depressions was the fantastic schemes advanced to prevent the return of such eras. These schemes included the stabilization of prices and doing something to the currency so that its purchasing power would always be the same. And there are those among us who take these theories seriously today just as our forbears did in their day. We have at least one consolation in this generation: that out of the welter of past misfortunes we have learned the lesson of a sound financial system as embodied in the Federal Reserve Bank.

"The chronicle in industrial life is one of better business in leather, especially in boots and shoes; lower prices in an increasing number of makes of automobiles, and of good business in automobile sundries; lower prices in oil, with the likelihood of consequent decreased production; continued dullness in mining; some improvement in clothing; production in steel and iron down to lower levels and with reduced prices, yet with slight increase in sales of some of the finished products; a generally good movement in summer seasonable goods; slow increase in construction as the costs of material and of labor decline in different sections, more particularly in the large cities; better wholesale trade in general but of smaller volume of retail business in the large centers."

Holiday Hurts Freight Loading

Railroad car loadings decreased 135,110 in the number of cars loaded on the principal railroad systems during the week ended July 9, as compared with the total of the preceding week, the American Railway Association announces. This reduction was attributed to the observance of the Fourth of July holiday throughout the country.

Idle freight cars on the roads of the United States numbered 369,925 on July 8, a decrease of 4,266 from the previous week, according to American Railway Association figures. The latest statistics compiled by the American Railway Association showed that the number of bad order cars in use on July 1 stood at 354,611, or 15.4 per cent of the total. On June 15 the total was about 246,000 and on June 1 approximately 340,000 cars. Some improvement, however, is expected to be shown in the figures since the first of the month, as some repair work has been started in the railroad shops since the July 1 wage cut became effective.

Union Pacific Re-employs 1,500

The Union Pacific R.R. announced July 17 that it had taken on 1,500 workers, who were laid off with the slump in business, on the Mountain division. The re-employment of the men is taken to indicate the revival of business, and it is expected more will be taken back if economic conditions continue to improve.

2,500 Laid Off at Fore River Yard

The Bethlehem Shipbuilding Corporation announced July 15 that 2,500 of its employees at the Fore River yard would be laid off indefinitely. The 1,500 other workers will be put on a part-time basis.

Locomotive Shop Reopens

The locomotive department of the Chicago Great Western shops at Oelwein, Iowa, reopened Monday, July 18, after two months' idleness, employing several hundred men.

Arms Plant Closes for a Month

The Smith & Wesson Co., of Springfield, Mass., firearms manufacturers, announces that its factory closed July 16 for one month, part of which time will be devoted to inventory. The concern has been running full time and with a full quota of employees.

Danbury Felt Mills Running Again

The Danbury Felt Mills, of Danbury, Conn., have resumed operations at nearly full capacity, after a prolonged period of inactivity. This company completed the erection of its mills about a year ago.

Big Order for Canadian Car Co.

The Russian Soviet Government has given the Canadian Car & Foundry Co., Ltd., a $2,000,000 order for 500 50-ton tank cars, W. W. Butler, president of the company, announced July 19 on his arrival from Europe.

Buyers Swarm to New York

More buyers for retail and jobbing establishments were registered in the wholesale textile and apparel market in New York City July 23 than has been the case at any time this year. The buyers are coming principally from the Middle West, South and East.

Automobile Sales Increasing

Statistics compiled by the Automobile Chamber of Commerce for companies producing about 75 per cent of the country's output show that shipments during June were about 8 per cent in excess of those of the previous month and 60 per cent in excess of those of June last year.

OFFICERS NATIONAL COAL ASSOCIATION
1921

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SECRETARY

Cushing Asks Reconsignment Data of Wholesalers in Laying Traffic Foundation

GEORGE H. CUSHING, managing director of the American Wholesale Coal Association, on his return from the Chicago meeting (July 11 and 12) of the reconsigning committee of the National Industrial Trade League issued a questionnaire on reconsigning to the trade, accompanied by the following statement to the membership of his association under the caption "Laying a Traffic Foundation," in which he explains why he is asking for these data:

"At the convention in June it was decided to organize a traffic department. Traffic, to *some* wholesalers, means, *mainly*, reconsigning.

"The managing director has just returned from a meeting of the reconsigning committee of the National Industrial Traffic League in Chicago, where the principles of reconsigning were discussed with the railroad men of the nation. To lay the foundation for the traffic department and to assist in clarifying some matters which came up at the Chicago meeting, some information is desired. It is really necessary.

"This information is asked reluctantly because it seems to be burdensome upon the membership to supply data. That is, we had 600 members last fall when we sent out a questionnaire the returns on which were of vital importance to the membership. Out of 600 members, we got *only 76 reports. . . .*

"If you do not reconsign or if you do reconsign only coal in distress, at least that will tell us that the subject is not vital to you. That is something which we ought to know.

Wants Data to Make Reply to Railroads

"What it is desired to do is to have some concrete figures to answer some specific statements made by the railroad gentlemen. We want to know, first, how many cars of coal—all kinds—you handled in the first six months of this year. Then we want to know how many of those cars you reconsigned. If we have those two figures, it will be easy to calculate what percentage of the coal business of the wholesaler is handled on reconsignment.

"If you could go further, we would like—in the space marked for 'remarks'—to know how many of those cars were bought from other wholesalers or sold to other wholesalers and hence were subject to a second reconsignment. This other piece of information is not specifically requested, but it would be mighty valuable if we could get it. How many of the cars were bought on one railroad and consigned to another railroad; how many of the cars consigned to the second railroad would probably have to have a second change of destination before they could pass on to the ultimate consumer.

"After we have this information about the relation between the reconsigned coal and the total movement by your company—*whether the amount is very large or whether it amounts to practically nothing*—it is desirable that we have some further information which will help us to analyze the reconsigning situation. That is, the railroads say that a certain number of cars are ordered 'held for reconsigning' before they reach the first billed destination. How many of those cars are there?

"We want to know how many cars are reconsigned before they reach the first billed destination; how many are reconsigned after reaching the first billed destination and before the expiration of twenty-four hours; how many are reconsigned after the expiration of the free time; how many are reconsigned after placement—rejected coal, this means—and other important items.

"In order to make it easy for you to supply these data, a printed form is inserted in this bulletin. All it willl be necessary for anyone to do is to take this form out, turn it over to a clerk with instructions to fill in the report. Let's see if we can't get more than 76 answers to this appeal.

"The traffic meeting at Chicago was interesting but not highly important. Two years ago we joined the National Industrial Traffic League. Last spring your managing director was appointed a member of the committee on reconsigning and diversion. The league committee was called to meet in Chicago on Monday, July 11 and held a meeting with the traffic men on Tuesday, July 12. We were not then discussing any specific tariffs covering reconsigning coal and coal coke, fruits and vegetables, grain, lumber or any other specific tariffs. We were discussing only the general principles of reconsigning. Some minor concessions were granted, the most important one of which was:

Seek Right to Change Destination on Each Road

"If a car is 'held for reconsigning,' the charge for holding the car still has to be paid but the penalty charge does not begin to run for twenty-four hours after the notice of arrival has been given by the carrier. A matter of some importance is that the railroads now agree to notify the shipper where the car is held, when he requests that a car shall be held short of the first billed destination for reconsigning. We asked also that the rules be changed to allow a change of destination on each road. Our theory was—and is—that no railroad can file a reconsigning tariff for a connecting carrier and that the fact of one charge of destination on one road does not bar us from a change of destination on a connecting road. The railroads would not pass upon this question at once. It was put over for further consideration.

"We asked for a general reduction in reconsigning charges. Specifically we asked that the charges, which are now $3 and $7, should, uniformly, in future be no more than $2.50 and $6.50. We asked this without prejudice to our rights to ask later for a further reduction. The railroads took this under advisement also. We asked for a definition of what is a 'reshipment.' There was much discussion of this and it brought out the need for a general drafting of definitions which it was recognized would take considerable time and discussion. This also was deferred to a later meeting with the understanding that there should be a great deal of correspondence on the matter meanwhile. It is to get ready to draw these definitions and to answer the questions raised in this discussion that the information hereinbefore outlined is desired."

Bituminous Coal Loaded Into Vessels at Lake Erie Ports During Season to End of June*

(In Net Tons)

Ports	Railroads	1921 Cargo	1921 Fuel	1921 Total	1920 Cargo	1920 Fuel	1920 Total	1919 Cargo	1919 Fuel	1919 Total
Toledo	Hocking Valley	1,661,310	42,441	1,703,751	430,429	6,306	436,735	1,723,987	51,978	1,775,965
	Toledo & Ohio Central	452,256	12,487	464,743	273,447	18,074	291,521	473,666	13,179	486,845
	Baltimore & Ohio	930,561	26,178	956,739	166,456	7,924	174,380	752,545	16,503	769,048
Sandusky	Pennsylvania	505,505	14,594	520,099	205,543	3,791	209,334	534,094	15,455	549,749
Huron	Wheeling & Lake Erie	730,318	19,403	749,721	538,335	39,157	577,492	697,994	22,451	720,445
Lorain	Baltimore & Ohio	1,192,473	42,729	1,235,202	746,049	71,306	817,355	1,208,862	59,492	1,268,354
Cleveland	Pennsylvania	993,390	33,531	1,026,921	85,741	26,972	112,713	873,302	98,013	971,315
	Erie	236,821	7,460	244,281	.....	.....	.....	70,754	2,481	73,235
Fairport	Baltimore & Ohio	.....	.....	.....	.....	.....	.....	16,692	12,954	29,646
Ashtabula	New York Central	630,706	24,347	655,053	204,936	59,783	264,719	761,279	48,078	809,357
	Pennsylvania	1,238,816	38,013	1,276,829	180,162	30,208	210,370	764,811	30,170	794,981
Conneaut	Bessemer & Lake Erie	412,201	5,887	418,088	709,702	14,033	723,735	534,607	1,755	536,362
Erie	Pennsylvania—West	403,889	12,183	416,072	17,243	932	18,175	300,502	14,055	314,557
	Pennsylvania—East	72,730	9,459	82,189	8,807	26,096	34,903	99,767	4,876	104,643
Totals		9,460,976	288,712	9,749,688	3,566,850	304,582	3,871,432	8,812,862	391,640	9,204,502

* Compiled by Ore & Coal Exchange, Cleveland, Ohio. H. M. Griggs, Manager.

Mingo Operators Allege Union Conspiracy of Violence

Mines Now Running 96 Per Cent Normal—Twenty-Seven Men Killed Either for Working at Mines, Maintaining Law or Protecting Workmen—Keeney Alleged to Have Called Sixty-Three Strikes—Kirkpatrick Declares Operators Staged Sham Battle

IN the opening investigation of the disorders in the coal fields of Mingo County, West Virginia, before the Senate subcommittee of the Committee on Education and Labor, Chairman Kenyon asked if unionism was not the real issue in the dispute. Witnesses for the mine workers said that the mine owners are determined to keep the mines idle forever rather than submit to unionization. Fred Mooney, of the miners' union, denied that any part of the union's $2,400,000 relief fund had been spent in the purchase of arms and ammunition.

Neil Burkinshaw, attorney for the mine workers' union, said that the union demanded its rights to public assembly and union membership. Colonel Z. Tyler Vinson, of Huntington, presented the views of the mine owners. "We emphatically assert," he said, "that all the trouble, violence and murder that have occurred in Mingo and Pike counties for the past year have been directly caused by the activities and criminal practices of the United Mine Workers' organization, which for years past has pursued a policy that is criminal in its character, and under and in pursuance of such policy this organization is attempting by means criminal and unlawful to substitute for law and orderly government the policy and practices of that organization."

Mines Now Running 96 Per Cent Normal

The further assertion is made that there is "no industrial controversy and no strike involved between the mine owners and their employees, for the reason that the mines are being operated by men enough to produce all the coal that can be sold, and are actually producing 96 per cent of the normal output of the field, notwithstanding depressed market conditions. These men are working of their own free will and accord, and desire to continue to work, as will be fully proven before this committee.

The real question at issue, according to his statement, is "Shall men be forced to join the union, contrary to their wishes, before they are allowed to work in the mines? Shall the mine owners be denied the right to employ such men as desire to work for them, when such men are not members of this union? Shall the right of individual contract be preserved?

"The production of coal, if all miners are organized in one union," said Colonel Vinson, "is put at the mercy of the officers of that union, as illustrated in the strike of 1919, when the government and the people were forced to depend on this and the few other unorganized fields for fuel."

Use State Line to Avoid Authorities

Attention was called to the physical situation of the coal field in question, where the mines are located along a front of some fifty miles on Tug River, a narrow stream which divides West Virginia from Kentucky, some of the mines being in one state and some in the other, thus rendering law enforcement difficult. This field, it was declared, has been for years the refuge of miners who, not wishing to work under union rules and regulations, have come here to find employment.

Colonel Vinson also charged that in furtherance of the attempts to hinder the production of coal and destroy the business of the mine owners, the union advised its members "to retain possession of the company houses in which they live," and to refuse to "vacate them upon the termination of their employment," with the object of preventing the mine owners from furnishing "their necessary employees proper housing facilities."

It was pointed out that the houses owned by the mine owners are for housing their employees and not for the purpose of renting to tenants; that they are incident to the business of coal producing and that for non-workers to hold them is to defeat the purpose for which they are provided and to prevent the operation of the mines.

It was averred that of the hundreds of houses occupied by the miners who went on strike, only about a score were secured by the owners through evictions made without first obtaining judgment of a court of competent jurisdiction, and that these few evictions were made "without any remonstrance or resistance on the part of those evicted, and without any breach of the peace."

A short résumé was given of the cases of "murder, arson, dynamiting and shooting from ambush into defenseless mining camps occupied by women and children, and at passers-by on public highways and at officers of the law, including United States troops in uniform, West Virginia State police and members of the Kentucky militia, as well as workers at the mines. All but five of the victims of all these acts were men either endeavoring to work or officials seeking to protect them in their right to work, and but five of them were at the time members of the United Mine Workers of America." The five persons members of the United Mine Workers of America were killed while engaged in murderous assaults upon others.

He averred that the United Mine Workers of America are responsible "for the death of twenty-seven persons in Mingo County. Many of these deaths were cold-blooded murder, the victims in several instances being shot in the back by men concealed in the woods or hiding in ambush." Two of the victims were important witnesses in the trial of men for murders for which the organization was responsible. Three were state police, "all of whom were shot in the back by means of this organization." One was a Kentucky militiaman. Ten of the deaths were in what is known as the Matewan battle.

Burn and Blast Buildings, Attack Workers

Charges were made by Colonel Vinson of the use of explosives and of incendiary fires in a dozen or so instances in which tipples, headhouses, bridges and other property at the coal mines was destroyed. The union was charged also with responsibility for scores of "vicious and cowardly assaults committed by members of the organization upon workers, the sole reason for these assaults being to intimidate, terrorize and punish men for working and not obeying the commands of that organization."

It was charged that the mine workers are responsible for "firing at and into troops of the United States in uniform in at least five separate instances," and that the mine workers are responsible also for insulting, intimidating and annoying people in no wise connected with this controversy, "whose sole offense consisted in being found on the highways and trains in this field, and in being suspected by the miners' organization of desiring to work at the mines, or of being in sympathy with those working."

Fred Mooney, a mine-union official, and Frank Ingram, a miner, gave details of disturbances which had occurred. Appearing as counsel for the operators in the hearing were Captain S. B. Lewis, of Charleston; C. L. Greever, of Tazewell; Harry Scheer, Judge Damron, and Randolph Bias, of Williamson.

Harry Olmsted, of the labor committee of the Williamson Coal Operators Association, described on July 18 the difficulties of mine operation since July, 1920, when the strike began.

When Sid Hatfield, chief of police of Matewan, against whom six charges of homicide are now pending, testified as to the Matewan gun fight with Baldwin-Felts detectives in the coal fields, his counsel, who also is counsel for the miners, waived immunity. Hatfield said he sought to serve the warrants of the Mayor of Matewan on the detectives, the

purpose being to stop the eviction of the mine workers' families. He said that seven of the thirteen in the detective party were killed in the pitched battle which ensued. Hatfield said he had asked the Mayor to issue the warrants, as the detectives were violating the town ordinances by carrying weapons.

Hatfield Sells Guns in Mingo County

S. B. Avis, of the operators' counsel, asked Hatfield if he had been instrumental in bringing rifles into Mingo, and Hatfield said he was operating a store which sold guns, although he did not pose as a gunman. He said the cost of his legal defense from the homicide charges was being defrayed by the mine workers' union.

C. F. Keeney, mine union president in the district of which Mingo is a part, denied, as had Fred Mooney before him, that any of the two and a half million dollars spent by the miners' union in connection with the strike was used for procuring arms, the money being expended in the support of the tent colonies in which 11,000 miners and their families lived.

Counsel Avis, for the operators, brought out the fact that even when operators consented to deal with the mine workers' union that organization habitually broke its contracts. He said that sixty-three strikes had been called by Keeney in one field alone; Keeney declared, however, that "Your figure probably is too high," and insisted that many of the strikes were bred by the secret-service men of the operators, who were employed in the mines. Counsel pointed out that the mine guards and volunteer state police were high-class citizens, such as dentists, doctors, bank officials and merchants, and that most of them had been ex-service men, but Keeney said they were gunmen and some thugs.

Senator Sterling, of South Dakota, asked if the union men did not use violence, intimidation and threats to force nonunion men into the union and Keeney denied the insinuation, saying that it was not the policy of the mine workers.

James Kilpatrick, a deputy sheriff, said he had received a salary from the union as well as his official pay and named half a dozen men he said the coal operators employed. He said, however, that the system was no longer in effect.

Keeney Wants Miner to Get Excess Profit

In reply to questions from Chairman Kenyon, Mr. Keeney said a miner should receive all the wealth he creates after paying the running expenses, transportation and a fair return to the men who own the property. He said this did not mean taking the property away. He said the union is endeavoring to get that method of compensation adopted rather than the present system.

Albert Kirkpatrick, of Portsmouth, Ohio, charged that a sham battle was staged by the coal operators in order to force the declaration of martial law. As a mine foreman for the Burnwell Coal Co., at Chattaroy and Sprigg, W. Va., he had plotted with mine officials to stage the sham battle so that martial law could be declared. While he was working at the mouth of the mine Kirkpatrick said other men went across the mountains and fired at him. There were no casualties but the plot was successful and troops arrived in thirty minutes. Counsel for the operators endeavored to disprove his story but Kirkpatrick said it was true. He said he told it because he had been treated "dirty" by Jake Henry, the superintendent of the company.

Made Miners Buy Goods at Company Store

W. E. Hutchinson, a coal miner, said that miners who refused to trade at mine stores were discriminated against and given "scrubby" jobs in the mines. He said the prices charged at the mine stores were higher than others and were advanced when the miners received a wage increase last November.

Hutchinson was one of the leaders of the movement to unionize the mines in Mingo County and gave a history of the union movement there. The organization of the men was accomplished in secret among employees of the Burnwell company. When the company learned of the men joining the union they were discharged and refused further use of the houses provided by the company. He quoted President Pritchard of the Burnwell company as saying he would never permit the unionization of his mine. Hutchinson testified that his furniture was removed by armed detectives and is now "rotting against the company store."

Mingo's Martial Law Recognized in Court

COUNSEL for the United Mine Workers of America made an ineffectual effort at Charleston, W. Va., to obtain the release of their mine leaders through writs of habeas corpus, attacking at the same time the legality of the Governor's proclamation of martial law, under which David Robb and eight others had been taken into custody.

The Supreme Court of West Virginia refused the application for writs of habeas corpus and the union men were remanded without bail to the custody of the military authorities. When the Supreme Court handed down its decisions attorneys for the petitioners gave notice of their intention to appeal to the Supreme Court of the United States. The court in its opinion held, by inference at least, that the newly-organized militia in Mingo County constituted a military force.

Confronted with the alternative of going back to the jail at Welch or of leaving the state permanently under deportation orders, four of those who had been arrested chose the latter, and an agreement was reached between Major Thomas B. Davis, acting as the personal representative of Governor Morgan and as head of the military forces in Mingo County, and Angus W. Kerr, of Chicago, of counsel for the United Mine Workers, that Robb and others of his colleagues who were not residents of the state should depart as soon as they were able to turn over the administration of the union relief stations in Mingo County to resident union men. Those ordered to leave the state and who agreed to do so were David Robb, international financial agent; John Brown and Robert Gilmore, members of the international board of organizers, all of whom were given until Monday night, July 18, to make their preparations to leave. The fourth man ordered to leave the state will be either Herbert Halls or Jasper Metzer, as Major Davis may determine. Whether it be Halls or Metzer, however, he will be given an additional week to perfect his arrangements.

West Virginia Mine Fatalities Increased In May, Despite Reduced Operation

DESPITE constant warnings on the part of the Department of Mines to observe greater care, the death rate in West Virginia mines during the month of May, 1921, was much higher than for the preceding month, although operations were reduced in every part of the state. There were thirty-six fatal accidents in May and all but six were the result of mishaps inside the mines. Eighteen mine workers were killed in the most common form of accident inside the mines—falling roof, timbering, coal and slate. Mine-car accidents were more frequent than usual, there being nine deaths from that cause. McDowell County led all others in the number of accidents, there being eleven in that county alone. Six fatal accidents were charged against Logan County and five against Raleigh. In the mines of Fayette County three were killed and in the mines of Wyoming County two were killed. In the counties of Kanawha, Clay, Mercer, Ohio, Monongalia, Marion and Brooke there was one fatal accident each. Most of the casualties were in the southern part of the state. Among those killed during the month was Robert Smith, assistant superintendent of the Panther Coal Co., who came in contact with a live wire, 33,000 volts passing through his body.

PRESIDENT HARDING purposes doing everything possible to arrange his affairs so as to permit his attendance at the International First-Aid and Mine Rescue contest to be held at St. Louis, Sept. 1 to 3. The President is not in a position to make a definite promise at this time but has expressed keen interest in the invitation extended him by H. Foster Bain, Director of the U. S. Bureau of Mines.

Central Penna. Operators Meet to Formulate Policy with Mine Workers; Business Goes to Non-Union Fields

THE Central Coal Association, made up of coal operators in the Central Pennsylvania Bituminous coal field, held a meeting in the rooms of the Central Pennsylvania Coal Producers' Association on Wednesday afternoon, July 20. Following the meeting, which was held behind closed doors, the following statement was given out:

"At a meeting of the Central Coal Association held in Altoona today and attended by about one hundred coal operators, there was several hours' discussion on an important resolution affecting their future policy with the United Mine Workers of America. At the conclusion of the discussion, owing to the fact that a number of the operators desired to consult with their Board of Directors before pledging themselves to support the resolution, the meeting was adjourned to meet in the Lincoln Trust Building, Altoona, Thursday, July 28, at which time final action will be taken.

"The reports indicated that central Pennsylvania had lost during the month of June of their normal share of the business of the country, based upon the average they have maintained for the last five years, 3,000 carloads, or 150,000 tons. This business has gone to districts outside of central Pennsylvania that have made the wage adjustment. In addition, it was disclosed by a survey of the union and non-union mines operating within the district, that a shift in the business had occurred whereby the non-union mines operating in the district had taken 7,000 carloads more than their normal average of the business during the month of June, or 350,000 tons that the union operators lost, the total loss of the union operators for the month of June of their share of the business of the country being 500,000 tons.

"In Somerset County the operators producing about 6,000,000 tons reduced their wages to the 1917 scale, effective Saturday, July 16. This additional tonnage on the adjusted basis will be in competition with central Pennsylvania union mines henceforth, and the conditions in central Pennsylvania union mines will steadily grow worse and the result in July will be much worse than the result in June."

Colorado Coal Output Recedes 20 Per Cent

PRODUCTION of coal in Colorado during May fell off 25 per cent from the rate of Jan. 1 according to a report by James Dalrymple, state coal mine inspector. During the first five months of the current year only 3,743,966 tons were mined, as compared with 5,028,501 tons during the same period last year, a decrease of 1,284,535 tons.

Of the nineteen coal-producing counties of the state only three show an increase in production over 1920. These are Weld, Jefferson and Pitkin. Las Animas and Huerfano, the chief coal counties of the state, show, between them, a loss of more than 850,000 tons over last year.

Lack of orders is reflected by that part of the report dealing with employment in the mines, which shows that out of 151 possible days the miners, on an average, worked only 66.7 days, or about four days out of every ten. During May only 12,445 men were employed in and about the mines, as compared with an average of 13,920 during the entire first five months of the year.

Coal production during May by counties, total production since Jan. 1, and the increases and decreases are as follows:

Counties	May Production	Total Tonnage	Increase	Decrease
Boulder	48,043	384,699	.....	129,772
Delta	5,477	34,799	.....	12,980
El Paso	15,677	133,257	.....	22,637
Fremont	56,058	255,813	.....	111,099
Garfield	1,065	5,935	.....	3,960
Gunnison	35,468	182,649	.....	48,440
Huerfano	150,834	659,865	.....	382,335
Jackson	2,500	15,545	2,256	.....
Jefferson	7,719	52,530	.....	15,468
La Plata	5,122	38,742	.....	15,793
Las Animas	224,838	1,264,758	.....	478,938
Mesa	4,097	34,063	.....	35,049
Moffat	38	571	.....	1,085
Montezuma	90	1,192	204	.....
Montrose	233	597	.....	7
Pitkin	81	364	364	.....
Rio Blanco	160	1,888	.....	452
Routt	79,848	278,952	.....	77,689
Weld	36,550	397,747	38,351	.....
Totals	673,898	3,743,966	.....	.....

Union Man Becomes Official Conciliator

EDWARD STEWART, former president of district No. 11, United Mine Workers of America, Terre Haute, Ind., has been appointed a national labor conciliator by Secretary of Labor Davis, according to announcement received at Indianapolis recently. For the present time Mr. Stewart will work out of Terre Haute as headquarters, but will be subject to call to any part of the country. The duties of the office will be to influence the settlement of labor disputes by acting in an advisory capacity.

Mr. Stewart served as district president of the mine workers' union, with headquarters in Terre Haute, for three terms, or six years, being always known as a "conservative" leader. This year he was defeated when he appeared for re-election for the fourth term. He won a large percentage of the joint-appeal cases that came before the tribunal in which he and the operators' association were the adjusting judges, and in a number of arbitration cases in the district where disinterested persons were to make decisions he did not lose a single case.

Pennsylvania's Anthracite Output in 1920 79,364,000 Tons; Value, $436,488,000

SECRETARY WOODWARD, of the Pennsylvania Department of Internal Affairs, has made public figures with respect to the production of anthracite in 1920 as ascertained by the state. The following statistics are taken from his report:

	1919	1920
Gross tons produced	79,512,200	79,364,000
Value of output	$364,801,000	$436,488,000
Number of plants reporting	178	187
Total employees	151,812	144,551
American employees	67,264	67,632
Foreign employees	84,548	76,919
Wages paid	$209,452,900	$237,302,900

A table showing the number of employees engaged in anthracite mining in 1920, the amount of wages paid, the tonnage and value by counties follows:

Counties	Total No. Employees	Total Wages	Tonnage Produced	Value of Production
Carbon	5,314	$9,057,700	3,051,700	$15,651,100
Columbia	1,266	1,993,800	987,100	4,471,500
Dauphin	1,679	2,715,100	807,900	4,292,000
Lackawanna	32,620	53,774,200	16,853,400	97,764,600
Luzerne	54,659	90,431,600	31,198,100	178,231,400
Northumberland	12,640	20,480,700	6,303,900	32,514,600
Schuylkill	33,963	54,884,800	18,688,300	94,477,900
Sullivan	736	1,058,200	464,800	2,494,200
Susquehanna	913	1,475,400	440,100	3,175,100
Wayne	761	1,431,400	569,300	3,415,600

Strike for Equal Share of Available Work

MINERS at a coal mine three miles east of Petersburg, Ind., operated by the Gladstone Coal Co., recently quit work as a protest against the company giving certain men more opportunity to work than others. No trouble accompanied the walkout. Efforts will be made to settle the differences. The big Atlas mine, owned by the Pike County Coal Co., just east of Petersburg, which shut down because of a misunderstanding about syndicate work, is still idle. Many miners are leaving Petersburg.

A MINE RESCUE STATION at Terre Haute, Ind., is provided in a bill which has been introduced by Representative Sanders of Indiana.

May Form Federal Board to Settle Mine Disputes as Result of Mingo Probe

A FEDERAL board to adjust coal-mine labor disputes may be recommended by the Senate sub-committee on education and labor which has concluded the taking of testimony in Washington on the strike in Mingo County (W. Va.) coal fields. At the close of the ten-day hearing when representatives of the operators and miners were heard Chairman Kenyon of the investigating committee indicated that such a recommendation would be made to the Senate.

A summary of the testimony introduced shows that the strike was the outcome of a bitter struggle against union domination of the mines by organized labor, the operators refusing to yield to the union because it would mean the entering wedge for union control of the coal industry. Charges that operators in other coal fields had conspired with the miners to check production in the Mingo field did not materially impress the committee. Senator Shortridge, of California, said strong evidence would have to be presented to convince him on that point. The committee will not make its report to the Senate until it analyzes the testimony already taken and determines whether to continue the hearings in the strike-affected region or to close up the case at this time.

Ohio Utilities Commission to Hold Hearing On Reasonableness of Freight Rates

THE Ohio Utilities Commission has set Aug. 2 for a hearing at Columbus on the question of the reasonableness of all freight rates in the State of Ohio. The action was taken as a result of a widespread agitation against high freight rates, especially on heavier commodities such as coal. It is announced that the first part of the hearing will be devoted to rates on road-building materials and later to rates on all heavy commodities.

The action of the Ohio Utilities Commission has no bearing on the hearing scheduled for Sept. 12 before an examiner of the Interstate Commerce Commission at Columbus on the question of the differential on coal freight rates from Ohio fields as compared with the inner and the outer crescent fields of West Virginia. It is expected that the two hearings will run largely along the same lines, however. The Southern Ohio Coal Exchange is backing the hearing before the Interstate Commerce Commission.

Henry Ford, who some time ago purchased the Detroit, Toledo & Ironton R.R., announced a flat reduction of 20 per cent in freight rates, asserting that the time had come for such reduction. While this is not a "coal road," the announcement threw a bombshell in the camp of traffic managers of various railroads.

A suit attacking coal-freight rates for 30-mile and shorter hauls in Ohio has been filed with the Ohio Utilities Commission by the New York Coal Co. against the Hocking Valley Railway Co. While the suit has been filed by an individual concern against an individual railroad, the complaint is of such a general nature that its determination will have a general application in the Buckeye State. Increases of as high as 425 per cent over the rates of 1917 are charged in the bill of complaint. The complaint avers that for both local and remote hauls the rates are excessive, unreasonable and unlawfully discriminatory and in excess of rates charged on Eastern railroads.

It is asserted that the whole freight-rate system was thrown out of joint when the Interstate Commerce Commission authorized an increase of 15c. on all rates in 1917. Since that time an increase of 25 per cent and one of 40 per cent have been authorized. An instance is given where a rate of 25c. for a two-mile haul in 1917 was increased to 40c. and then by the two other increases to 84c.

E. E. Clark Resigns from Commerce Commission: F. I. Cox Appointed

EDGAR E. CLARK, chairman of the Interstate Commerce Commission, has resigned from that body. It was announced at the White House that Chairman Clark feels he must forsake the government service in order to recoup his private fortunes. He is to enter business. Frederick I. Cox, of New Jersey, was named July 22 to fill the vacancy caused by Mr. Clark's resignation.

Mr. Clark entered the railway service in 1873 and in 1889 became Grand Senior Conductor of the Railway Conductors of America, serving as Grand Chief Conductor from 1890 to 1906. President Roosevelt appointed him to the Anthracite Strike Commission in October, 1902, and on Aug. 28, 1906, he joined the Interstate Commerce Commission.

Charleston Section, A. I. M. E., Will Hold Organization Session

A MEETING of a committee appointed to arrange for the formation of the Charleston Section of the American Institute of Mining and Metallurgical Engineers was held at the office of Carl Scholz, chairman, Professional Building, Charleston, W. Va., Saturday, July 23, 1921, at 2 p.m., at which the following members of the institute were present: Carl Scholz, J. S. Cunningham, E. M. Merrill, O. Cartlidge and J. M. Clark, resident members, and Thomas H. Claggett, a member from Bluefield, W. Va.

At that meeting the committee decided to hold a meeting for the organization of the Charleston section, on Tuesday, Sept. 6, 1921, at which time officers for the balance of the current year will be elected and bylaws adopted. A banquet is to be served at the close of the session.

Tidewater Coal Exchange, Inc., Makes Changes in Pooling Rules

AT A MEETING of the members of the Tidewater Coal Exchange, Inc., held in New York July 21 several changes in the rules were adopted. Rule 1 was revised to provide for an initiation fee of $300 for shippers who join on or after Sept. 1. Payment of this fee will be waived in the case of those joining previous to that date. Another change in this rule gives the exchange broader control over members' credit and makes possible the covering of any losses to the exchange.

Rule 6 was recast and now provides substantially that all bituminous coal for transshipment at tidewater ports shall be graded and classified in designated pools by a classification committee appointed by and under the direction of the Executive Committee. Limits and tolerances for each pool will be established and published to members at such times as the Executive Committee shall designate. This change will be effective Aug. 1.

Rule 18, relating to the method of allocating demurrage charges, was modified so that in the future detention will be figured on the same basis as the railroads render bills, allowing the benefit of the exchange on free time, but charging members their exact detention. The change will become effective Aug. 1.

AS A PART OF A GENERAL PLAN the National Coal Association is giving increased attention to an effort to convey to the public more information on the whole question of coal. The association is anxious that other businesses understand some of the problems of coal production and at the same time is desirous of acquiring a better understanding of the problems of other businesses. In furthering that plan, J. D. A. Morrow, vice-president of the association, has gone to Evansville to address the Rotary Club of that city. In this same endeavor T. W. Guthrie recently addressed the Chamber of Commerce, Pittsburgh; T. T. Brewster spoke in St. Louis and T. W. Watkins has made a number of addresses at Pennsylvania points.

Despite Widespread Use of Coke and Cordwood for Fuel, Sweden Is a Promising Market for American Coal

By Dr. Henry M. Payne*

THE coal situation in Sweden is of interest to American coal exporters not only because of the opportunities for supplying American coal but because the efforts made there to burn coke and to utilize cordwood as fuel on a large scale, and extensive hydro-electric developments have clearly defined the cost conditions to be met. According to a recent report of Trade Commissioner Klath to the Bureau of Foreign and Domestic Commerce, the average annual imports of coal into Sweden before the war were about 5,000,000 tons, of which 300,000 tons were consumed in the manufacture of illuminating gas.

Up to 1920 Great Britain controlled the Swedish market. Subsequent to that time, due to the English strike and its corresponding increase in cost, together with uncertain deliveries, English coal has become less and less a factor, 1,250,000 tons of coal and coke having been imported from the United States during the past year. At the present time only light shipments are going to Sweden from the United States, due to the slowing down of industry there and the large stocks still on hand.

The Swedish market is not dependent wholly on coal, due to the vast forests in the northeastern part of the country. During the war when coal prices were as high as 250 kroner per ton, many of the large industries used cordwood exclusively. In certain sections today firewood is cheaper than coal, and some of the lesser lines of the State Railways burn wood or combine coal with peat. Sweden also is rapidly developing her water-power resources and constructing huge hydro-electric plants and electrifying her railways. To lessen the cost of gas, and to increase the coke output, Pocahontas and New River coals are mixed.

The Oxelösund Jarnerksaktb was established at Oxelösund in 1913, with a capital of $2,750,000 to make coke, having an annual capacity of 125,000 tons. The restriction of the iron and steel industry, however, caused a heavy deficit in 1920.

Large Lump Used for Both Gas and Steam Purposes

The trade has been accustomed to large lump coal for both gas and steam purposes. Much complaint is heard about American coal breaking up in handling, and even screened coal, for which premium prices were paid, has contained much slack on arrival. To meet this condition, stoker grates are being introduced and in some cases crushers are being installed.

During the war English export regulations required a certain percentage of fines to be taken with screened coal, which, coupled with the increased use of American slack, would indicate a steady market for this grade of coal. There seems to be little preference expressed as between high- or low-volatile coal for steam purposes. Smoke consumers are practically unknown, and smoke ordinances are rare.

The English coal formerly used for gas purposes ran about 1.5 per cent sulphur. The general equipment of purifying boxes is ample, and there are no legal restrictions on the amount of H_2S which may exist in the gas furnished by public utilities. All types of retorts are used, the horizontal retorts being hand-fired while the vertical and inclined retorts usually are charged mechanically. The expected yield of gas is from 5 to 5½ cu.ft. per pound of coal.

The manufacture and sale of all the usual byproducts is prosecuted vigorously, with special reference to high-grade coke, which is not only used in the steel industry but also for domestic heating. About 100,000 tons of coke are imported annually. On account of this great demand for coke, nothing but a good coking coal is acceptable.

Scientific studies also are being made into the effects of the fusing point of ash, and in the near future, if indeed not at present, it will be essential for the American exporter to know the definite characteristics of the particular coal he proposes to ship to Sweden to obtain orders.

The State railways and a few of the larger industrials charter their own ships and buy their coal direct. The smaller consumers buy through the various Swedish importing houses. During the war Great Britain required cash against documents on all Swedish coal cargoes. Before that time ninety days' credit was allowed, with a discount for cash.

One of the criticisms repeatedly made of American coal exporters is their unwillingness to supply less than cargo lots. English shipments of 400-500 tons are the rule rather than the exception. Under the present fluctuating prices for coal, a falling market with a large cargo en route may mean serious loss. On account of ice which closes many of the harbors from the middle of December to the beginning of May, the bulk of coal is imported during the summer months. Storage facilities are excellent. Port terminal equipment is ample for prompt discharge and little demurrage difficulty is encountered. A recent shipping bulletin gives the following port capacities for Swedish and Danish ports: Malmo, 1,000 tons per day; Copenhagen, 1,000 tons per day; Stockholm, 800 tons per day; Gothenburg, 1,000 tons per day.

Complementary Details in Successful Coal Trade

Coal trade with England was built up on the basis of return cargoes, advantageous freight rates, less-than-cargo-lot shipments to individual consignees, and 90-day credits with discount for cash. The United States was never a normal source of supply for Swedish coal until war emergencies and English mine strikes made necessary the development of a new source.

One of the most plentiful return cargoes is timber and pulpwood. Iron ore also is available but not in demand here. American cargo ships, therefore, usually obtain cargoes of timber from the Gulf of Bothnia, Finland or the Baltic States for transportation to England or the Continent, and there take on other cargo for the United States, making a triangular voyage.

The freight rates on coal from, and wood to, England are governed by supply and demand. With no coal from England and a decreased amount of mine timber being used there, an entire readjustment of cargoes and rates is inevitable. The future of the Swedish market for American coal depends upon (a) the future cost of English coal, (b) American willingness to comply with the desires and special requirements of Swedish customers, (c) credit terms as favorable as those of competitors—usually ninety days from date of sailing, with discount for cash.

There appears no logical reason why any responsible source of supply in America should not, with these facts in mind, send his direct representative to Swedish purchasers of coal and enter into negotiations for shipments of American coal of recognized quality, with Tidewater Coal Exchange certificate of inspection and loading, and in this way build up a permanent market for his product.

How It Looks to Some.—The frantic effort of coal barons to prevent the publication of profit statistics indicates that they are still making expenses.—*Providence Journal.*

COAL AGE INDEX

The indexes to "Coal Age" are furnished free to all who ask for them. The index for the first half of 1921 will soon be ready for distribution, and a copy can be had by addressing a postcard to the subscription department of "Coal Age."

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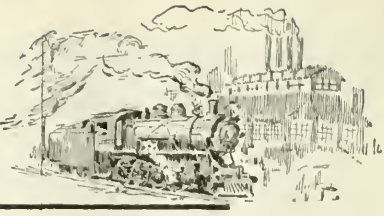
Production and the Market



Weekly Review

PRODUCTION of bituminous coal, as forecast in this review two weeks ago, continued to decline throughout the first half of July and promises to drop still further. Output in the week ended July 16 was 7,359,000 net tons, compared with 7,658,000 in the last full-time week, that of July 2. The decrease in two weeks has been 4 per cent. This condition is attributable to the drop in Lake and Tidewater movements and is not indicative of further decrease in either general industrial or domestic coal demand.

Soft Coal More Active Than Most Industries

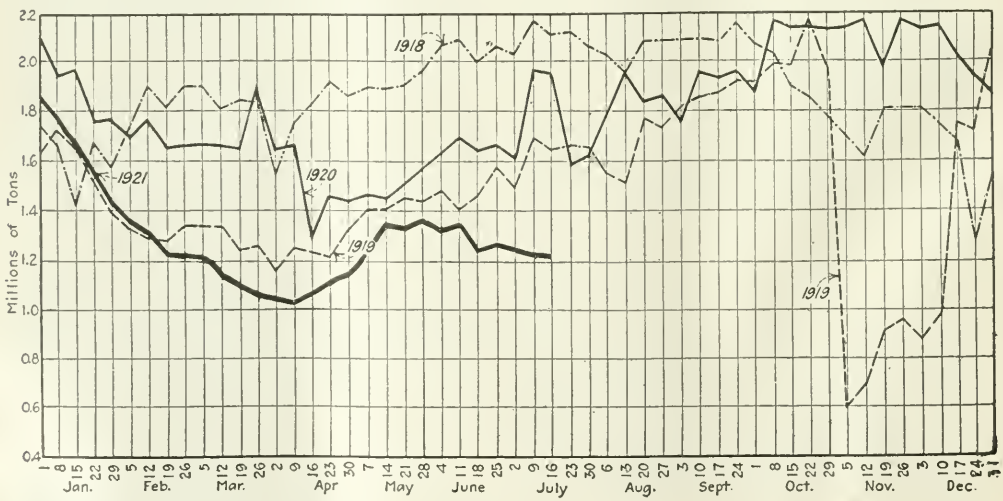
The full effect of the summer dullness has not been felt and although it is a gloomy view, if it be considered by itself, the prospect is for the rate of production to shrink still further before it starts up. Our Boston correspondent notes that even in the deadest of dead summers before the war more coal was sold than now. Other sections show conditions to be equally dull. But, despite this outstanding lethargy, the soft-coal industry is going at better than 40 per cent of full-time operation, and even though it drop to 7,000,000 tons a week it will be doing nearly 60 per cent of its top-notch record. Not many industries can boast of such a record in these days.

Prices continue largely nominal, representing rock-bottom levels at the present rate of demand. The level, as indicated by *Coal Age* index of spot prices, which has now stood at 89 for two consecutive weeks, is fixed at an almost irreducible minimum by production costs. Of course, the cost of production is not the determining factor in prices, and the average cost is a poorer measure, but it is certain that, just as one high-cost mine after another has closed and the level of prices has followed down with the cost of operation of those properties still going, so will prices inevitably mount when demand is such as to call forth more tonnage than the mines now at work can furnish. For any given field there is a definite relation between output and price, and even in such uncertain times as these this relationship still exists. In other words, if demand should drop to 6,000,000 tons the price will fall still more, but when demand is for eight, nine or ten million tons, as it most certainly will be before snow comes, prices will surely go up.

Good Omens Seen Outside Coal Trade

One turns outside the coal trade to find omens of better times. The financial markets are reported as continually more optimistic—not in the way of whistling to keep up courage, but in a sound, reasoned, way. Steel looks better—the bottom on orders is said

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

to be at hand. The railroads will soon have some money. Textiles are moving. The improvement in business, when it comes, will slide in unannounced, and be on the country unawares. The signs are accumulating, but when the pick-up will gain sufficient headway to raise steam coal from the slough of despond, one cannot say.

BITUMINOUS

Production from Jan. 1 to July 16 this year has been 211,928,000 tons, compared with 235,021.000 tons in the same period of 1919 and 278,721,000 tons in 1920. In other words, business has failed by 23,000,000 tons of demanding the coal it took in 1919 during the worst of the post armistice slump and by 67,000,000 tons the total bought last year.

Even with coal production at its present low level, the margin of available cars is not great. If the plan looking to the placing of road contracts in the fall, instead of in the spring, should go through and there should be even a moderate revival of business this fall the point soon would be reached where all the idle open-top cars would be in use.

In addition to 372,050 surplus cars, of which 173,617 were coal cars, reports just published by the Car Service Division of the American Railway Association show that on July 1 there were also 354,611 freight cars out of repair, or 15.4 per cent of the cars on line, an increase from 346,861 on June 15. Another disquieting feature of the situation is that 25 per cent of the locomotives of the country are in bad order.

Lake business is falling off. Loadings at the mines are very much less now than three or four weeks ago and dumpings at lower Lake Erie ports have declined from the high point of around 1,200,000 tons per week the first of July to little more than 700,000 tons three weeks later. The total Lake coal dumped up to July 25 was 12,627,000 tons, approximately the same as in 1919 but more than twice that of last year. Shippers are freely predicting that after Aug. 1, when the 28c. per ton seasonal freight reduction is applied to points other than those now affected (Superior and Michigan north of the Illinois-Wisconsin state line), there will be a belated revival in the Lake cargo business. Preliminary figures for the week of July 25 show 695,285 tons of cargo coal dumped and 24,429 tons of vessel fuel, a total of 719,714 tons, the lowest since the second week of May.

INCREASE IN EXPORTS DUE TO BRITISH STRIKE

Exports of bituminous coal in June were 3,710,000 net tons (3,314,513 gross tons), compared with 3,510,000 net tons (3,132,253 gross tons) in June, 1920. There were substantial decreases compared with June, 1920, in exports to Cuba, Argentina, and Chile on this side, and to France, Italy, Netherlands, Sweden and Switzerland on the other side. The increase came in shipments to the United King-

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

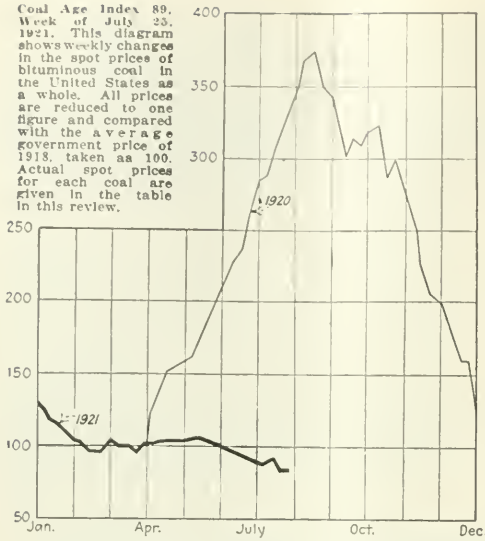
Low-Volatile, Eastern	Market Quoted	June 21, 1921	July 12, 1921	July 19, 1921	July 26†, 1921
Pocahontas lump	Columbus	$5 50	$5 75	$5 65	*$5 25@$5.50*
Pocahontas mine run	Columbus	3 40	3 25	3 15	3 00@ 3 25
Pocahontas screenings	Columbus	2 40	2 15	2 30	2 15@ 2 40
Pocahontas lump	Chicago	5 65	5 00	5 00	**4 75@ 5 50**
Pocahontas mine run	Chicago	3 15	2 65	2 75	**3 00@ 3 25**
*Smokeless mine run	Boston	6 15	5 90	5 85	*5 60@ 6.75*
Clearfield mine run	Boston	2 25	2 05	2 00	*1 70@ 2 15*
Cambria mine run	Boston	2 85	2 70	2 70	2 35@ 3 00
Somerset mine run	Boston	2 10	1 90	1 80	*1 50@ 2 00*
Pool 1 (Navy Standard)	New York	3 45	3 10	2 90	**3 00@ 3 25**
Pool 1 (Navy Standard)	Philadelphia	3 25	2 80	2 80	2 75@ 2 85
Pool 1 (Navy Standard)	Baltimore	2 95	2 60	2 60	*2 50@ 2.50*
Pool 9 (Super. Low Vol.)	New York	2 85	2 55	2 50	2 35@ 2 60
Pool 9 (Super. Low Vol.)	Philadelphia	2 85	2 40	2 40	2 30@ 2 50
Pool 9 (Super. Low Vol.)	Baltimore	2 70	2 40	2 35	*2 15@ 2 25*
Pool 10 (H. Gr. Low Vol.)	New York	2 50	2 25	2 20	2 10@ 2 35
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2 45	2 20	2 20	2 00@ 2 35
Pool 10 (H. Gr. Low Vol.)	Baltimore	2 35	2 15	2 00	2 00
Pool 11 (Low Vol.)	New York	2 35	1 95	2 00	*1 80@ 2 00*
Pool 11 (Low Vol.)	Philadelphia	2 10	1 90	1 90	1 75@ 2 00
Pool 11 (Low Vol.)	Baltimore	2 10	1 85	1 75	1 70@ 1 80
High-Volatile, Eastern					
Pool 54-64 (Gas and Steam)	New York	2 00	1 95	1 70	1 70
Pool 54-64 (Gas and Steam)	Philadelphia	1 85	1 75	1 75	1 75
Pool 54-64 (Gas and Steam)	Baltimore	1 75	1 65	1.50	1 35@ 1 60
Pittsburgh se'd. gas	Pittsburgh	2 50	2 95	2 95	2 85@ 3 00
Pittsburgh mine run(steam)	Pittsburgh	1 85	2 10	2.10	2 00@ 2 15
Pittsburgh slack (gas)	Pittsburgh	1 60	1 45	1 45	1 40@ 1 50
Kanawha lump	Columbus	3 45	3 25	3 30	*3 00@ 3 25*
Kanawha mine run	Columbus	2 15	2 15	2 00	**2 00@ 2 25**
Kanawha screenings	Columbus	1 20	1 15	1 20	1 10@ 1 30
Hocking lump	Columbus	3 15	3 25	3 25	*3 00@ 3 25*
Hocking mine run	Columbus	2 15	2 15	2 15	2 00@ 2 25
Hocking screenings	Columbus	1 20	1 20	1 25	**1 20@ 1 35**
Pitts. No. 8 lump	Cleveland	3 25	3 25	3 25	3 00@ 3 50
Pitts. No. 8 mine run	Cleveland	2 10	2 25	2 20	$2 15@$2 25
Pitts. No. 8 screenings	Cleveland	1.25	1 25	1 25	**1 25@ 1 40**
Midwest					
Franklin, Ill. lump	Chicago	3.65	3 55	3 55	3.00@ 4 05
Franklin, Ill. mine run	Chicago	2 90	3.15	3.00	**2 70@ 3 55**
Franklin, Ill. screenings	Chicago	1 95	1 90	1.95	*1.75@ 2 00*
Central, Ill. lump	Chicago	2 65	2 65	2 50	2 00@ 3 00
Central Ill. mine run	Chicago	2 40	2 40	2 40	*2.00@ 2 50*
Central Ill. screenings	Chicago	1 65	1 65	1 75	*1 40@ 1 75*
Ind. 4th Vein lump	Chicago	2 90	2 90	2 80	**3 50@ 3 65**
Ind. 4th Vein mine run	Chicago	2 50	2 50	2 50	**2 90@ 3 25**
Ind. 4th Vein screenings	Chicago	1 70	1 70	1 85	**2 00@ 2 25**
Ind. 5th Vein lump	Chicago	2 75	2 75	2 75	**2 75@ 3 00**
Ind. 5th Vein mine run	Chicago	2 40	2 40	2 40	**2 50@ 2 65**
Ind. 5th Vein screenings	Chicago	1 70	1 70	1 75	**1 75@ 2 00**
Standard lump	St. Louis	2 15	2 25	2 25	2 25
Standard mine run	St. Louis	1.75	1 75	1 70	1 70
Standard screenings	St. Louis	0 90	0 85	0 85	**1 00**
West Ky. lump	Louisville	2 55	2 70	2 75	**2 50@ 3 30**
West Ky. mine run	Louisville	2 00	2 10	2.25	**2 00@ 2 65**
West Ky. screenings	Louisville	1 45	1.40	1 60	*1 05@ 2 00*
South and Southwest					
Big Seam lump	Birmingham	3 65	3 40	3 65	*3 00@ 4 05*
Big Seam mine run	Birmingham	2 50	2 15	2 15	2 00@ 2 25
S. E. Ky. lump	Louisville	3 65	3 50	3 40	*2 75@ 3.50*
S. E. Ky. mine run	Louisville	2 25	2 25	2 20	1 85@ 2 50
S. E. Ky. screenings	Louisville	1.45	1 40	1 50	*1 00@ 1 65*
Kansas lump	Kansas City	5 25	5 40	5 50	5 50
Kansas mine run	Kansas City	4 40	4 25	4 40	4 40
Kansas screenings	Kansas City	3.15	3 25	3 25	3 25

* Gross tons, f. o. b. vessel, Hampton Roads.
† Advance over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	July 12, 1921		July 19, 1921		July 26, 1921†	
			Independent	Company	Independent	Company	Independent	Company
Broken	New York	$2 61	$7 85@$8 15	$7 40@$7 75	$7 75@$8.00	$7 40@$7 75	**$8 00@$8 25**	$7 40@$7 75
Broken	Philadelphia	2 66	8 00@ 8 20	7 55@ 7 85	8.00@ 8.20	7 55@ 7 85	8 00@ 8 20	7 55@ 7 85
*Broken	Chicago	5 62	12 75	12 70	12.75	12 45	*12 40*	12 45
Egg	New York	2 61	7 80@ 8 25	7.40@ 7 75	7 75@ 8 00	7 40@ 7 75	*7 55@ 7.85*	7 40@ 7.75
Egg	Philadelphia	2 66	8 00@ 8 20	7 55@ 7.85	8.00@ 8 20	7 55@ 7 85	8 00@ 8 20	7 55@ 7 85
*Egg	Chicago	5 62	12 60	12 70	12 60	12 45	*12 40*	12 45
Stove	New York	2.61	8 40@ 8 50	7 70@ 8 10	8.00@ 8 25	7 70@ 8 10	8 00@ 8 25	7 70@ 8 10
Stove	Philadelphia	2 66	8 25@ 8 70	7 90@ 8 25	8 40@ 8.50	7.90@ 8 25	8 40@ 8 50	7 90@ 8 25
*Stove	Chicago	5 62	13 20	12 95	13.20	12 70	*12 70*	12 70
Chestnut	New York	2 61	7 80@ 8 25	7 70@ 8 10	7.65@ 7.90	7 70@ 8 10	*7 50@ 7 75*	7 70@ 8.10
Chestnut	Philadelphia	2 66	8 25@ 8 60	7 80@ 8 25	8 25@ 8 60	7 80@ 8 25	8 25@ 8.60	7 80@ 8.25
*Chestnut	Chicago	5 62	12 95	12 95	12 95	12 70	*12 70*	12 70
Pea	New York	2 47	4 75@ 5 00	5.95@ 6 45	4 50@ 5.00	5 95@ 6 45	4 50@ 5 00	5 95@ 6 45
Pea	Philadelphia	2 38	4.50@ 6 25	6.00@ 6 20	4.50@ 6.00	6 00@ 6 20	4 50@ 6 00	6 00@ 6.20
*Pea	Chicago	5.62	10 90	11.20	10 90	11 20	*11 10*	11 20
Buckwheat No 1	New York	2 47	2 60@ 3 00	3 50	2 65@ 3.00	3 50	**2 50@ 3 25**	3 50
Buckwheat No. 1	Philadelphia	2 38	2 50@ 3.00	3 50	2 50@ 3 00	3 50	2 50@ 3 00	3 50
Rice	New York	2 47	1 60@ 2 00	2 50	1.60@ 2.00	2 50	1 60@ 2 00	2 50
Rice	Philadelphia	2 38	1 75@ 2 00	2 50	1.75@ 2 00	2 50	1 75@ 2 00	2 50
Barley	New York	2 47	0 60@ 1.25	1.50	0 60@ 1 25	1 50	0 60@ 1 25	1.50
Barley	Philadelphia	2 38	0.75@ 1.25	1 50	0.75@ 1 25	1 50	0.75@ 1.25	1.50
Birdseye	New York	2.47	....	2.50	.....	2.50	.....	2 50

* Prices and freight rates net tons; quotations f.o.b. cars, Chicago.
† Advances over previous week shown in **heavy type**, declines in *italics*.



Coal Age Index 89. Week of July 23, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1913, taken as 100. Actual spot prices for each coal are given in the table in this review.

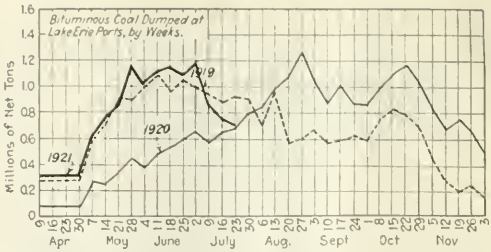
dom, England being the destination of 536,074 gross tons, Scotland 7,019 gross tons, and Ireland 217,246 gross tons, a total of 750,339 gross tons; all clear gain.

Exports through Hampton Roads declined during the second week of July to 323,186 net tons (233,548 tons of cargo and 89,638 tons of bunker) from a total of 373,737 net tons the week ended July 9 and 616,869 tons the week of July 2. Save only for three weeks early in April, bituminous coal moving through Hudson River gateways was the lowest (2,444 cars) during the week of July 16 of any time in the past year and a half.

ANTHRACITE

Predictions have been rife for the past six weeks that anthracite was due for a fall at once. It is remarkable how, when folks are not taking the coal into their cellars and the retail yards are all full, the hard-coal producers still find places to put the large output they are consistently sending forward. Coming back strong from the holiday week, production in the week of July 16 went to 1,876,000 net tons, greater even than the 1,868,000 tons the week before the celebration of the Fourth.

Reports from the anthracite consuming cities, however, are more disquieting this week than at any time this year and the pressure has begun to be felt at the mines. Production cannot indefinitely be maintained with but three or four sizes going on the market and the remainder backing up at the breakers. Prices of anthracite are being held firm by the companies, but independents are offering concessions even below company circular.



Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

(NET TONS)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date (a)
July 2(a)	7,658,000	198,383,000	10,286,000	258,182,000
Daily average	1,276,000	1,279,000	1,714,000	1,659,000
July 9(b)	6,186,000	204,569,000	9,659,000	267,841,000
Daily average	1,237,000	1,278,000	1,932,000	1,668,000
July 16(c)	7,359,000	211,928,000	10,880,000	278,721,000
Daily average	1,227,000	1,276,000	1,813,000	1,673,000

(a) Less two days' production during New Year's week to equalize number of days covered for the last two years. (b) Revised from last report. (c) Subject to revision.

ANTHRACITE

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date (a)
July 2	1,868,000	46,109,000	1,778,000	44,608,000
July 9(b)	1,525,000	47,634,000	1,541,000	46,149,000
July 16	1,876,000	49,510,000	1,840,000	47,989,000

(a) Less one day's production during New Year's week to equalize number of days covered for the last two years. (b) Five-day week.

BEEHIVE COKE

Week Ended July 16 1921(a)	Week Ended July 9 1921 (b)	Week Ended July 17 1920	1921 to Date	1920 to Date (c)
43,000	35,000	363,000	3,475,000	11,631,000

(a) Subject to revision. (b) Revised from last report. (c) Less 2 days' production during New Year's week to equalize number of days covered for last two years.

English Coal for German Ports

A Hamburg coal importer, speaking on behalf of the northern German coal trade, points out the importance of English coal for consumers located at the German seaboard, where before the war 95 per cent of the local demand was supplied by English collieries and where even German lignite briquets could not compete with foreign coal. Although American coal can be had at 600 to 700 marks per ton, it will never play an important rôle in German economic life, since English best smalls can be obtained at about 20s. per ton and English coal exporters are now offering at prices lower than the pre-strike quotations.

That German reparation coal has not only been going to the United Kingdom but also to Scandinavian countries is revealed by the offers submitted by a Dutch firm to Swedish consumers, the fuel in question being rough coal, 16 to 20 per cent volatile matter, 6 to 10 per cent ash, which is quoted at 23 florins, f.o.b. Rotterdam. Unusual activity is also noted in the South-German coal markets, large shipments of Saar coal for Scandinavian and English account having recently been made.

WESTPHALIAN AND UPPER SILESIAN OPERATORS have requested permission of the government to increase the price of their coal, basing this request on the additional cost caused by the new duties on coal.

SPANISH COAL MINERS in the district of Asturias are threatening a strike for higher wages. The men are demanding an increase which would raise annual production cost 24,000,000 pesetas.

United States Coal Exports in June

Exports of coal and coke, as reported by the Department of Commerce for June, 1921, revised figures for June, 1920, are as follows, in gross tons:

	June, 1920	June, 1921
Anthracite	511,951	495,896
Bituminous	3,132,253	3,314,513
Exported to:		
France	258,877	147,333
Italy	344,243	258,735
Netherlands	175,189	86,031
Sweden	173,721	5,189
Switzerland	117,751	.....
Canada	1,193,767	1,412,497
Panama	10,167	8,522
Mexico	7,003	17,830
British West Indies	5,210	7,525
Cuba	107,609	71,750
Other West Indies	10,828	14,421
Argentina	120,267	92,727
Brazil	64,055	57,127
Chile	35,077	1,935
Uruguay	19,829	15,861
United Kingdom:		
England	.....	536,074
Scotland	.....	7,019
Ireland	.....	217,246
Other countries	488,660	356,691
Coke	55,420	19,911

Foreign Market And Export News

Continental Coal Markets Dull

British Output Gaining—Inland Consumers Replenishing Stocks—Exports Begin—Outlook Not Favorable to Higher Prices—Export of Belgian Coal to England Ceases

(By Cable to Coal Age)

Unofficial reports show a considerable improvement in the production of coal in Great Britain during the week of July 23. No official figures of output are available, it having been announced in London last Saturday by the Department of Mines that it is not yet possible to collect figures of weekly output since the resumption of work by the miners, the reason assigned being the difficulty of getting the data from the coal operators, who are disinclined to divulge their figures.

Unofficial estimates place the production last week (July 18-23) at seventenths of normal, but it is obviously necessary to discount this figure, which would indicate something over 3,000,000 gross tons, because not covering operations in outlying fields. Nevertheless, each day sees larger quantities available for export, for which, despite the softness of the market, prices are firm. Best Admiralty large coal, f.o.b. Cardiff, is unchanged from last week at 47s. 6d.@50s.; best Cardiff smalls unchanged at 25s.@30s.; best Durhams, 45s.@50s., but Tyne primes dropped from 40s.@42s. 6d. last week to 38s. 9d. @40s.

From Antwerp it is announced that as a first sign of return to normal, the exportation of Belgian coal to England has ceased, and the importation of British coal has begun.

American coal was quoted last week at Rotterdam at 27 guldens per gross ton compared with 25 guldens for Welsh coal.

Exports to Britain at End—French Coal Prices Due to Drop

(Paris Correspondence of Coal Age)

Prices are very firm in the Nord and Pas-de-Calais as well as in the central districts, especially for bituminous and sized coals, for which there is a persistent inquiry. The smaller sizes, however, are difficult to dispose of. Exports to the United Kingdom are now at an end and it is expected that prices for home-produced coal will come down as soon as a few cargoes of British coals reach French ports. There also is much likelihood of wages being reduced ere long in the French mines. A reduction had been contemplated in the Loire district to operate from July 15, this reduction being necessary to permit reducing the price of these coals, which are more and more difficult to dispose of.

With the coming holiday period things are rather quiet and only house coal dealers are in the market for rather important quantities, which the mines cannot always supply fast enough. It should not be overlooked that the reason for these important purchases of house coals in summer months is that in order to avoid heavy stocks the mines grant fairly important reductions for coals lifted during July, August and September. The coals are loaded in barges which make a long journey, and consequently the coals thus cheaply bought and paid for on a three months' basis are not burdening the yards of the big dealers too early before the cold sets in.

English coals are being freely offered for shipment during August and September, but very little business is done, buyers here having become used to seeing prices drop when they hold off buying, which, under the present circumstances, is rather easy. French buyers also think that British exporters hasten to book as much business as possible at present prices, feeling themselves that prices are bound to come down.

AMERICAN COALS—Anthracite operators who can produce a clean sized commodity should study the possibility of sending coals to France. There has been a heavy shortage of this much-used commodity for years. Coals should not exceed 8 per cent maximum volatile matter and keep around 5 to 7 per cent ash.

GERMAN COALS — Nothing fresh to report here. Negotiations are going on to hurry supplies up to the mark of Germany's compulsory deliveries, which of late have not been anywhere near attained.

C.I.F. Prices, American Coal, Gross Tons, July 23

River Plate, including Buenos Aires, Rosario and Montevideo: Low volatile, $10 40@$10.60; high volatile, $9.55@$9.75.

West Italy, including Genoa, Palermo and Naples: Low volatile, $10.90@$11 10; high volatile, $10.05 @$10.25.

East Italy ports, including Venice: Low volatile, $11 40@$11 60; high volatile, $10 60@$10 75.

Rotterdam: Low volatile, $10 65@$10.85; high volatile, $9.95@$10.15.

French Atlantic ports, including Marseilles, Havre, and Bordeaux: Low volatile, $10.65@$10 80; high volatile, $9.95@$10.20.

Scandinavian ports: Low volatile, $11 90@$12.10; high volatile, $11.10@$11.35.

Petrograd: Low volatile, $12 65@$12.85; high volatile, $11.85@$12.

Foreign Coal Shipments Slump at Hampton Roads

Business at the Hampton Roads piers during the week continued dull, dumpings remaining at approximately the same figure as for the preceding week. A total of approximately 375,000 tons of coal passed over the piers, while vessel tonnage awaiting cargo increased slightly during the week. No appreciable change in coal prices was noted, Pools 1 and 2 being offered at $5.75@ $6, and other pools from $5 to $5.25 per ton, f.o.b. the piers.

PIER SITUATION

	Week Ended July 14	July 21
Norfolk & Western Piers, Lamberts Point:		
Cars on hand	3,450	2,793
Tons on hand	162,774	135,076
Tons dumped	135,315	182,047
Tonnage waiting	54,375	48,850
Virginian Ry. Piers, Sewall's Point:		
Cars on hand	1,984	2,111
Tons on hand	99,200	105,550
Tons dumped	38,586	59,039
Tonnage waiting	696	5,673
Chesapeake & Ohio Piers, Newport News:		
Cars on hand	2,224	2,502
Tons on hand	111,200	125,100
Tons dumped	144,230	132,725
Tonnage waiting	40,605	80,800

The foreign shipments of coal slumped appreciably during the week, less than twenty vessels having sailed abroad with coal. This is in strict contrast to the business of June and early July, when all berths at the three local piers were practically filled all the time and the piers were working three shifts per day.

Freight rates during the last two weeks have declined considerably, in the majority of cases having dropped $1 per ton or more below the rates which obtained during the rush of business in May and June. Vessels on the spot here appear eager to get cargoes at any reasonable figure to pay expenses and to save demurrage.

CLEARANCES

		Tons
For Africa:		
Br. SS. Heathfield	for Dakar	6,880
Br. SS. Egremont Castle	for Haifa	6,781
For Brazil:		
Br. SS. Trecarne	for Buenos Aires	6,366
Dut. SS. Zaandijk	for Buenos Aires	4,686
Br. SS. Nilemede	for Buenos Aires	5,381
For Cuba:		
Swed. SS. Gothia	for Havana	2,858
For France:		
Jap. SS. Thames Maru	for Marseilles	7,254
Br. SS. Bankdale	for Marseilles	5,516
Fr. SS. Cambronne	for Nantes	4,391
Nor. SS. Urd	for St. Nazaire	4,520
For Gibraltar:		
Br. SS. Volumnia		7,685
Nor. SS. Stiklestad		9,167
Br. SS. Dunclutha		5,354
For Greece:		
Br. SS. Clan McIntosh	for Piraeus	5,773
Jap. SS. Jufuku	for Piraeus	2,095
For Italy:		
Ital. SS. Attivita	for Naples	7,943
For Russia:		
Span. SS. Pepita Mumbru	for Petrograd	5,981
Dut. SS. Salabangka	for Java	2,215
Br. SS. Dront	for Rosario	4,021
Nor. SS. Belvernon	for Santiago	723

Eighteen Shipping Board vessels which were brought here from the alleged "graveyard" in Camp Eustis during the height of the coal shipments to Great Britain have been ordered back to their anchorage without having moved from port. None of them was con-

signed, the settlement of the British strike having come too quickly for them to load their cargoes.

Ruhr Production Declining

Ruhr output in June, according to the final official figures, published last week, was 7,753,000 metric tons. In the week ended July 9 output was 1,574,000 tons, a drop of about 200,000 tons from the weekly rate in June. Stocks at the mines are slowly but steadily decreasing and deliveries to France under the treaty terms are considerably short of the mark set.

In view of the entangled situation in Upper Silesia, the increase of production in the Ruhr district has become a very pressing problem. The coal tribute to the Entente countries is causing increased difficulty, as a sharp control is now exercised with regard to the quality of the coal supplied. The truckloads of coal refused on the ground of deficient quality are now averaging over one hundred per day. The simple expedient—to increase the production by extra shifts—which has worked quite satisfactorily, had, at least for the time being, to be discarded, the miners having by a large majority ruled it down. A new agreement has come into force with the miners of the Ruhr district, providing a considerable increase of wages.

Reports From the Market Centers

New England

BOSTON

Acute Midsummer Dullness Prevails—Market Being Carefully Combed Over—Rumors of Lower Wage Scale — Less Pessimism Among Shippers of High Grades — Hampton Roads Coals Accumulate—Anthracite Demand Falls Off Sharply.

Bituminous—There is no life whatever to the present market. Shippers make every move open to them and still only a minimum tonnage is being absorbed in any direction. A few sales are made from day to day, but in the deadest of summer seasons before the war more coal was being placed than is going forward in 1921. Purchases are confined, as for several weeks past, to the more conservative steam users, and even some of these who were buying a few weeks ago have found their stocks accumulating much faster than they expected. In other words, current consumption continues on a very light basis, due generally to slack industrial conditions and partly to the unexpected flow of water. A large number of the textile mills particularly can rely upon water power to move a fair share of the machinery; many of them are using barely 30 per cent of the fuel used a year ago. To the trade it seems as if every element in the present situation were unfavorable.

This territory, however, is being canvassed more closely than ever. Not only are the established local houses very active, but New York and Philadelphia agencies are sending men here periodically in the effort to move coal. The effect could not be more unfortunate, for long after the market improves buyers will lag all the more because of the way they are being pounded this summer. It is only the irreducible minimum fixed by operators themselves that prevents prices from dropping to much lower levels.

Rumors of a possible readjustment of wages in certain of the districts served by the B. & O. have been received here recently with a great deal of interest. Should similar efforts meet with support in central Pennsylvania and in the West Virginia smokeless districts the trade would realize that a return to more nearly normal conditions would be on its way. The 1917 scale has been suggested and coal people everywhere will watch developments with real concern. Buyers here feel that spot quotations now are too high and those who are themselves running mills almost solely to furnish work for operatives are firm in their prediction that steam coal will have to sell for less next year, if not during the present season.

Pocahontas and New River continue extremely quiet. The slump in offshore business has resulted in cargo accumulations at the Hampton Roads piers. Many of the agencies have been embargoed, and this seems to have fallen more heavily upon those in less close touch with export and bunker trade. Coastwise there is next to no business; when an inquiry turns up there is the keenest kind of competition to land the order.

Marine freights from Norfolk, Va., to Boston are easy at $1.20@$1.25 on bottoms down to 1,500 tons, and when this moderate figure is added to $5.60@$5.70 per gross ton f.o.b. Hampton Roads, it is easy to see that the old Tidewater zone, within 25 to 50 miles of rehandling plants at Providence, Boston and Portland, is again susceptible to the smokeless coals, so far as differentials are concerned.

Anthracite — The producers are rapidly finding themselves without orders. One unfailing sign of quiet times is the effort of "independents" to interest retailers in their output at considerable concessions below company figures. Few distributors are in any position to take advantage of such offers, but if they were, the tendency is strong toward the factors who try to stabilize conditions rather than disturb them without warrant or thought for the effect upon the public.

Retail trade is still in the doldrums. Small householders continue to withhold purchases, stocks have accumulated in the yards, and there is little hope of any sustained demand until after the vacation season.

Tidewater—East

NEW YORK

Anthracite Trade Conditions Shift in Favor of Buyers — Independent Premiums Vanish — Some Mines on Part Time — Bituminous Demand Spotty — Prices Sag Steadily.

Anthracite—In the anthracite trade conditions are steadily changing in the favor of buyers. On independent coal premiums have practically disappeared, even in the cases of sizes in best demand, while the balance of the list can be had at some concessions from circular. Individuals are cutting company prices on pea coal and smaller all the way from 50c. to $1 a ton.

In the domestic sizes stove coal is the only size for which there are still a good number of orders and even that size is not universally wanted, for many dealers have practically all they need at present in their yards. Many cancellations and requests for deferred shipments are being received, though these are accounted for in many instances by the fact that retail dealers who would be pleased to take straight stove have no room for other sizes which they are obliged to accept in order to get stove.

Egg has backed up rapidly during the past week or so and is becoming almost as difficult to move as chestnut, the principal difference being that egg constitutes only about 15 per cent of the production, while chestnut tonnage represents about 25 per cent. Most of the companies have begun to stock the latter size, though only on a small scale. It is doubtful if the companies will put any great amount of any of the domestic sizes on storage, for the stocking places are well filled with steam sizes.

There has been some improvement at tide and the situation is in little better shape as regards the number of distress lots being forced for sale.

Bituminous—Some of the bituminous coal shippers report that they have been selling a little more coal lately, while others say they have observed no picking up in demand. In view of these conflicting stories, it is rather difficult to size up the situation, except to say that spotty improvement of this sort in the past has often turned out to be the forerunner of a more general revival.

Contract asking prices have been lowered along with spot prices, although

many operators are not keen about entering into long-term obligations at this time. It is possible to buy Pool 10 coal on contract to April 1, 1922, at $2.50, and Pool 9 at $3 and in some cases at $2.75. This is about a dollar below what producers were holding for in April this year. Low grades have been forced out of the market to a large extent by the competition of higher grades. With Pool 10 selling close to $2 and Pool 9 around $2.35, Pool 11 has been forced so far below the $2 mark that most producers of that classification and lower have closed down.

There appears to be more distress coal in the regions than at Tidewater. Shippers have sustained such heavy losses by sending coal to the piers on consignment that they have discontinued the practice to a large extent, but it is quite a fad with some operators to load all cars their sidings will hold and then send out a general S. O. S. to the wholesale trade. This accounts for some of the extremely low quotations heard of.

PHILADELPHIA

Anthracite Demand Recedes—Independents Curtail Productions — Retail Prices Slightly Off—Pea Price Being Cut—Steam Sizes Dormant—Bituminous Deliveries Light — No Contract Business.

Anthracite—More ground was lost in the retail anthracite trade this week. Any number of yards have reached the point where they are not putting out enough coal to meet expenses. Shippers also received further cancellation of orders and it is only a matter of days now when some of the largest producers will have to curtail production. This week several of the independents skipped a day or so, and others are finding it convenient to close down for repairs to breakers.

Should closing down become general the trade expects some criticism as to the continuance of high prices, for it is a foregone conclusion that two of the larger companies who adopted the plan of a 10c. increase will continue it. Even now there is murmuring that the operators are trying to hold up prices by cutting production. It is conjectured that the independents will not make any further increases, being satisfied to hold present prices, which they are doing only with greatest difficulty.

Some independent shippers have been shading prices on all sizes from egg to pea inclusive, but rarely going below company circulars. The greatest recession is in pea coal, which all interests are having difficulty in moving. Quite a few cars of this size are standing on demurrage at the mines and while heretofore the independents' lowest price has been about $5.50 there is quite a little good coal of this size coming out at $5.25, and some of the low grades are going at much less than that.

The highest quoted retail prices this month, per gross ton, with 50c. added for carry, are: Egg, $14; stove and nut, $14.25; pea, $11.50. It is reported however, that coal is being sold at least 25c. less than this. Despite this tendency to shade retail figures less coal has been delivered in the last ten days than at any time since the spring trade opened, and the tendency is still downward.

The market is glutted with steam coals and cut prices are no inducement to the consumer. All companies are fast filling their available storage space, and some of the large producers are now filling storage yards that have not had any fresh-mined coal for five years.

Bituminous—Extremely light local deliveries rule the market, with no signs of an early improvement. The producer is urging the consumer to take in fuel and avoid a possible shortage in the autumn, and while the former sees little tangible results he is at least on record should his predictions prove to be half true.

The market is tending more than ever to a quality basis, with most of the sales being made on Pools 1 and 9 grades, with Pool 10 being fairly well in demand, but Pool 11 coal is close to a minimum of orders. Some consumers are inclined to complain of slow delivery. This is due to their having allowed themselves to almost run out, and the producer operating only when he receives a sufficient run of orders to make it worth while.

Some producers with contracts intimate that their customers are taking little or nothing, believing that the consumer continues to take advantage of the market, which is about true, for with contracts on a basis of $3.50@$4 there is much temptation to buy similar coal at $3, and occasionally less than that. This condition of low prices has persisted for so long that many consumers are less than ever interested in contract figures, and it usually is these concerns that are doing light stocking.

The prices on spot coal have changed little from those recorded during the past two weeks, and it is thought now that the fall season will easily be reached without further general recessions.

BUFFALO

Shippers Find Consumers Hard to Please—Volume of Business Seems to Shrink—Anthracite Trade Slowing Up.

Bituminous—"The worst season that the operator has ever seen," is the comment of a shipper who acts in the capacity of both operator and jobber. He admitted that the jobbers were doing something, for they would not handle coal unless there was at least some margin of profit in it, while the operators have such a heavy overhead expense, as a rule, that they can sometimes operate at a loss that is less than the loss incurred while standing still.

The jobber has to work very hard to put his sales through, even after he thinks he has made them. This is always the case in extremely dull times and maybe it is necessary to the proper seasoning of the middleman. At any rate he is getting it, and at the same time is decidedly better off than the operator is. And they are now saying that it probably will be spring before trade is back to normal and maybe before it begins to recover. It is pretty generally agreed that the volume of coal business is running down. Jobbers say so of their trade and reports from the mining districts confirm their views.

Bituminous prices consequently are sagging and unsteady. Nobody quite agrees with another as to what they are, but a fair average is $3 for Youghiogheny gas lump, $2.75 for Pittsburgh and No. 8 steam lump, $2.60 for Allegheny Valley mine-run and $1.75 for slack, adding $2.36 to Allegheny Valley and $2.51 to other coals to cover freight. Slack is not so weak as it was on account of the falling off of Lake shipments, which cuts down the surplus.

Anthracite—The movement is as slow as ever. Coal-delivery trucks are a rarity on the street. Nobody pays any attention to the warnings. The hold-offs are of the sort who still look in the almanac for their weather. They believe the stories that coal is coming down, rather than the warning from the authorities that it is risky to delay. Coal comes this way from the mines in good quantity and the rail-line demand holds up pretty well.

Lake shipments are still good. The amount for the week is 120,900 net tons, of which 62,000 tons cleared for Duluth and Superior, 19,500 tons for Milwaukee, 14,500 tons for Chicago, 11,000 tons for Fort William, 9,800 tons for Sheboygan, 2,900 tons for Marquette and 1,200 tons for Marinette.

Freight rates are easy at $1 to Marinette, 65@70c. to Chicago, 60c. to Milwaukee and 50c. to Duluth, Marquette and Fort William.

Coke—Negotiations are on for quite a big block of furnace coke, as one of the idle iron factories is preparing to start up soon temporarily, but otherwise the situation is not improved The outlook is for no stir right away and if there is a fall trade in either iron ore or coke the carriers at least will be surprised. It will be the first let-up of the sort, though, in the history of the lake trade. Coke prices remain at $4@$4.50 for 72-hour Connellsville foundry, $3@$3.25 for 48-hour furnace, and $2.75 for stock, with a little domestic, chestnut size, moving at $5@$5.25, to which add $3.64 to cover freight.

BALTIMORE

Unsatisfactory Conditions Still Reign in Soft Coal — Boom in Exports First Half of Month, Lighter at Present Writing — Hard-Coal Buying Practically Suspended Pending Grand Jury Agitation.

Bituminous—The conditions in relation to bituminous coals remain practically unchanged in this section, which means that they are entirely unsatisfactory to the trade. If there is any change to be noted it has to do with

increasing sales of coal below the recognized market level. The unevenness of wage scales in some sections, with one mine working along old lines and the next-door neighbor working along a new schedule, is in part responsible. There has been a failure in many cases of the producers of better-grade steam coals to hold them to $2.50 a net ton f.o.b. mines or better.

Considerable of Pool 9 coal is now offering in this market at around $2.25 a net ton, and there have been not infrequent sales as low as $2. Pool 10 is offering widely at $2, with occasional cuts below that figure, and Pool 11 is selling at a mine basis of $1.70@$1.80. Gas coals are just as weak, best Pennsylvania screened being offered in this market at $2.25 a net ton mine basis generally and below in individual cases. Run-of-mine coals can be obtained down to $1.35, with a general run around $1.60.

After a smashing big movement for the first twenty days of July there came a curious sharp lull in foreign movement from this port. Up to that date there had cleared a total of forty-two ships with export coal, 262,039 tons cargo and 29,307 tons bunker. Then for five days there was a complete collapse, not a ship clearing from this port with foreign-bound coal. At present there is a gradual resumption, but it is not marked. The fact that seventeen of the ships were destined for England and four for Ireland in the opening days of the month, whereas that movement has now stopped completely, explains part of the condition.

Anthracite—Hard-coal buying at retail in this section remains practically suspended pending the action of the Grand Jury which has been investigating the operations of the Baltimore Coal Exchange. The extremely unfortunate impression seems firmly rooted in the public mind that lower retail prices will result. All the talk of coal men in the world that now is the low-buying period before winter does not change this view. Some drastic education is needed, otherwise the buying public will be treated to a disastrous experience during the coming fall and winter when the coal companies will be unable to promptly move the needed fuel.

Northwest

DULUTH

Accumulations of Both Soft and Hard Coal Grow on Docks—Trade Extremely Dull as Depression Has Finally Hit Duluth.

Constantly increasing piles of coal on the docks, with outward shipments growing daily less and less, is the condition of the Duluth-Superior harbor, and dock men here frankly admit that unless the "break" comes, docks in the harbor will be filled in two weeks. This has been predicted before, but has not happened this year, as inbound shipments have either fallen off or outbound shipments have increased in time to prevent a calamity. At present more than 4,000,000 tons are piled high on docks throughout the circle of the harbor, more coal is coming from lower Lake ports and outbound shipments are virtually at a standstill. The maximum capacity of the docks is 5,000,000 tons.

Railroads, of course, are taking some coal, but on contracts made last year. This outward shipment is merely a drop in the bucket compared with the coal which is coming in, and dealers both in the city and throughout the Northwest generally are unable to help out because of financial conditions.

Last week forty-eight cargoes were received at this port, of which seven were anthracite. Fourteen cargoes are reported on the way, of which three are anthracite, but these started late last week and are nearing port, and no new shipments are reported. Instead of bettering, the industrial market here is worse now than it has been in some months. Duluth did not feel the acute industrial depression at the same time as did the remainder of the country, and now, when other parts of the country are on the mend, Duluth is in the trough.

MINNEAPOLIS

Local Advertising Being Used to Urge Buying—Receipts Lake Coal Fall Off as Docks Fill Up.

It is a hopeful sign that there is some increase in the tonnage moving off the Lake Superior docks. The increased orders at the docks, if continued, will make room for more cargoes from the lower Lakes.

Efforts are being made, locally, to persuade consumers to buy. Last Sunday's papers, in both St. Paul and Minneapolis, contained lengthy articles describing the situation as to coal. While the stories display the usual confusion between hard and soft coal and assume some things which may not develop during the autumn, on the whole they are calculated to help present the matter of distributing delivery over a wider period.

The soft-coal situation to the steam user has shown a considerably better decline, with purchases being made at not far from half of some of the 1920 prices. Purchasing of soft coal is far from active. The buyers' strike is working as well as ever, in both wholesale and retail lines. This is the point upon which emphasis must be laid when urging the purchase of coal. Steam users are the ones who will make trouble during the coming autumn and winter, if there should be any serious tie-up to the coal movement.

It is a question whether there will not be a kickback to the gloomy predictions, if the expected rush of business does not materialize. People are overly suspicious of coal trade predictions, having been fed up for a number of years on prognostications that missed fire. If it should develop this autumn, as it has in the past, that there was no serious danger to those who were late in ordering, this situation will strengthen the feeling, already widespread, that the whole cacophony of early solicitation is merely propaganda to help business.

MILWAUKEE

Coal Trade at Standstill—Hot Weather Helps to Paralyze Business — Yards Heavily Stocked — Receipts by Lake Slowing Up.

The coal business at Milwaukee continues at a standstill. Extremely hot weather has increased the backwardness of buyers, and very little coal is moving out of the dock yards, which are filled almost to capacity. A concerted effort is being made in city and country to induce consumers to put in their winter supplies, as the yards must be relieved of some of their present loads to provide room for a normal winter accumulation. The storage yards of the coke plants likewise are glutted. Solvay coke producers are circularizing dealers urging them to press coke sales with a guarantee against any decline from the present price of $14 per ton for range and chestnut. Coal prices continue unchanged. An advance of 25c. per ton on anthracite is predicted Aug. 1, 15c. on account of the Pennsylvania coal tax and 10c. being the regular monthly advance. Lake receipts have begun to slow up and the receiving yards are not as busy as they were. Receipts during July thus far aggregate 72,910 tons of anthracite and 254,311 tons of soft coal, making the season's receipts up to this writing 473,391 tons of anthracite and 1,388,826 tons of soft coal. Last year during the same period the record was 339,063 tons of the former and 503,273 tons of the latter.

Inland West

COLUMBUS

Slight Improvement in Demand for Domestic Sizes Reported—As Lake Trade Falls Off, Demand for Screenings Improves and Prices Rise Appreciably.

The best feature of the Ohio coal trade is a slight increase in the demand for lump and other prepared sizes. This does not amount to much, but is sufficient to give more encouragement to producers and distributors alike. It is believed that the improvement would be much more noticeable if it were not for the freight-reduction agitation, which has the effect of holding up business to a large degree. The belief is still widespread that there will be substantial reduction in freight rates, and consequently consumers and dealers are playing a waiting game. Retail stocks are fairly good, as householders are slow in stocking up for the coming winter. In some instances the consumer has not the money to pay cash and dealers are

insisting on cash payment. Despite these bad features, trade shows some signs of improvement and there is a more optimistic feeling shown. Retail prices are fairly steady at the levels which have prevailed for some time. Hocking lump is selling around $6.50 delivered, while west Virginia splints sell for about $7.50@$7.75.

The Hocking Valley docks at Toledo during the week ending July 16 loaded 165,763 tons, as compared with 200,538 tons the previous week, making a total of 2,105,842 tons for the season. This is far ahead of the record last year at this time, when but 699,338 tons were loaded up to July 17. During the same week the T. & O. C. docks loaded 28,853 tons, as compared with 52,632 tons the previous week, making a total of 527,408 tons for the season.

Steam trade is slow in every particular and there are no signs of immediate improvement. Many of the larger consumers have full bunkers and adequate reserves. There is little if any resumption in manufacturing and this has had the affect of curtailing the demand for steam sizes. On the other hand, a reduction in lump production has had the effect of reducing the supply of slack, which is reflected on stronger prices for that grade. Railroads are not taking much tonnage, as little improvement in freight movement is reported.

CINCINNATI

Smokeless Prices Being Cut — Slack Shows Signs of Life as Output Declines —Retail Prices Firm.

Restricted demand for block and lump coal from all quarters has forced down the price for prepared sizes, while steam users and others needing nut, slack and screenings who have been buying on the open market have been forced to pay higher prices. Smokeless coal continues soft and spotty with most of the big companies holding up the price and smaller concerns inclined to make concessions in order to move accumulated tonnage. Big advertising campaigns carried on in local papers, using Hoover's latest declaration of a possible car shortage in the fall, have not resulted in any great rush on the part of domestic or other consumers to take on coal. River business is still active, heavy rains in the upper valley annulling need of an artificial wave to bring down 25,000 tons of coal for four Cincinnati retail concerns early in the week.

Kentucky slack showed a straight advance of 10c. to 25c. a ton and is quoted at $1.10@$1.35. West Virginia slack is firmer and quoted $1.50@$1.75, with mine run from both states at $1.75@$2. Lack of lump orders and better call for slack resulted in a drop on West Virginia lump to $2.75@$3 and on Kentucky lump to $3 in some sales, although most of the mines still want and are getting $3.50 for better grades.

Lump and block from New River are being offered at $5, though larger companies there and in the Pocahontas field want and are getting $5.50; egg is quoted $5@5.25 with some spot sales at $4.75; nut, very dull at $4.25@$4.50; run-of-mine, $3@$3.50; slack, $1.75@$3.

The retail market is steady despite changes in mine prices. July prices are still maintained as follows: Smokeless, lump, $9.50@$10; run-of-mine, $7.25@$7.50; slack, $6.50; bituminous, lump, $7.25@$7.75, with highly advertised grades up to $9; run-of-mine, $6.25@$6.75; slack, $5.50@$6.

DETROIT

Demand Lacking for Steam or Domestic Sizes of Bituminous—Shipments of Small Volume—Little Free Coal in District.

Bituminous—Detroit consumers of steam sizes of bituminous have not yet cast off the lethargic attitude that has been a prominent characteristic through the greater part of the year. While some purchases are made the buying is of small proportions compared to what has been regarded as a normal business in previous years. Buyers show no haste in acting on the advice of government officials and others to stock up now, if they would avoid a coal shortage next winter.

West Virginia lump is given a nominal quotation of $3.25@$3.50 per net ton; mine-run, $2.25@$2.50; nut and slack, $1.75@$2; Ohio lump, $3@$3.25; mine-run, $2@$2.25; nut and slack, $1.15@$1.25; smokeless lump and egg, $5.25@$5.50; mine-run $3@$3.50; nut and slack, $2@$2.25. The quotations, it is explained, are not an accurate portrayal of the market situation.

Anthracite — Excessively high temperatures and reluctance of consumers to pay what they regard as high prices are factors in holding back sales of anthracite prepared sizes to household consumers. Distribution has been very slow and retail dealers are warning their customers that unless a larger proportion stock up now, some may find it difficult to get coal next winter.

ST. LOUIS

Screenings Show a Little Improvement —Domestic Buying at Standstill— Country Demand a Trifle Better.

Domestic buyers continue indifferent in spite of evidence showing what the future is likely to be both as to price and supply. The country dealer finds it a little different. Those who have money are ordering coal—most of the farmers are waiting for crop money and the unemployed are without funds.

Such as is moving in soft coal is Carterville. Apartment needs of Standard coal are pretty well in. Mt. Olive is slow. Some anthracite is moving and a little of gas and byproduct coke. Steam picked up on Standard screenings, both local and for Chicago. They moved up from around 85c. to over $1 at the mines. No steam market to speak of in the country.

The first signs of a car shortage in the near future is noticeable in the fuel shipments to the Frisco R.R. from the Illinois fields. Up to the present cars have been furnished. Now the mines are permitted to load any kind of cars because the Frisco hasn't the equipment needed.

CLEVELAND

Coal Trade Watching Signs of Improvement in Steel Industry—Lower Rates for Lake Coal Effective Aug. 1.

Bituminous—The best news that has broken for the coal trade in this district for some time is that which concerns the signs of betterment in the iron and steel industry. While there has been some demand for coal from public utilities, public schools and municipal departments, real activity at the mines awaits renewal of industrial activity.

For some months the steel industry has been running at about 25 per cent of capacity. Lower prices, more active competition and prospects of buying by the railroads when the government helps straighten out their financial difficulties are expected to combine to increase steel-mill operations to at least 50 per cent by autumn. This will be significant for the coal industry in this district.

Any increase in industrial activity would certainly bring about some buying of coal, in the opinion of leading operators. This is true because of the general depletion of stock piles. During the period of excessive curtailment and extreme uncertainty plants have been buying entirely from hand to mouth. More steady operation and better prospects will mean freer laying in of coal supplies, it is believed. Not, however, until the freight rate outcome becomes clearer will buying go forward normally. In the last few days industrial leaders in this district have heard it whispered that some of the most powerful railroad executives have completely changed their attitude and are now convinced that lower rates are essential to a greater volume of traffic and better earnings. This change of sentiment among the railroads may have some important consequences before long. In the meantime the coal market remains inactive and prices have shown no material change.

With the diminishing operations by reason of reduced shipments to Lake, the volume of slack coal available in the spot market has been considerably reduced, accompanied by a decided stiffening in the price, it being stated that some small quantities are being sold at $1.60 per ton, as compared with the low price of $1@$1.10 a week or so ago. However, industrial activity remains at a low ebb and operators advise that the general trade is quiet, with both contract and spot inquiries negligible.

Receipts of bituminous coal at Cleveland for Cleveland industries and retailers for the week ended July 16 amounted to 688 cars; divided, industrial, 553; retail, 155 cars; as compared with a total of 598 cars the preceding week, thus showing an increase of 135 cars over the low record of the year established last week.

South

BIRMINGHAM

Little Activity in Steam or Domestic Market—Demand Light for Steam and Quotations Unstable.

There is nothing to report in the way of improvement in trade conditions here, as trade requirements are very light and provided for in the spot market for the most part, where the buyer can almost name his own price. Consumers are not anticipating their needs far ahead, and there is no contract business worth mentioning.

During the past week the Empire Coal Co. closed a contract with the Cotton Belt for its fuel requirements in Texas territory for the year beginning Aug. 1, shipments to be made at the rate of 10,000 to 12,000 tons per month. Quotations on steam coal f.o.b. mines are reported as follows, but limited quantities can be bought from 25c. to 50c. lower in the spot market:

	Mine-Run	Washed
Big Seam	$2.00@$2 25	$2 25@$2 45
Carbon Hill	2 00@ 2 75	2 65@ 2 75
Pratt	2 50@ 2 75	
Cahaba	2 85@ 3.25	3 00@ 3 25
Black Creek	2 75@ 3 00	3 00@ 3 45
Corona	2.50@ 2 75	

Although domestic quotations have not changed since the first of the month there is little inquiry and shipments from the mines on contracts are being held down materially. Dealers report little activity in the retail market and most yards have taken very nearly all the coal they can stock. Prices range as follows f.o.b. mines per net ton:

	Lump and Nut
Big Seam	$3 00@$3 25
Big Seam (Mt. Carmel)	3 50@ 4 05
Carbon Hill	4 05
Black Creek	4 82@ 5 70
Cahaba	4 75@ 6.95
Montevallo	6 15@ 6.95

LOUISVILLE

General Business Quiet—Much Complaint from Jobbers and Operators Concerning Slow Movement.

There has been a good deal of price cutting reported in the past few days, and some eastern Kentucky coals have been reported as selling at very low levels. These sales do not represent distress or demurrage coal, but are the result of operators needing business temporarily and being willing to mine coal at no profit or even at a loss. Some of the operators today are at a point where they feel that there will be a heavy and higher-priced demand later, and that it is now necessary to hold together their organizations while awaiting this demand.

Railroad and industrial buying continues slow as a whole, while demand for gas and byproduct coal as such is still off. Eastern Kentucky is quoting Harlan district at $3@$3.50 for prepared, $2@$2.50 for mine-run and $1.40@$1.65 for screenings. The Hazard district is asking $2.75@$3 for prepared, $1.85@$2.25 for mine-run and $1@$1.25 for screenings. Elkhorn and West Virginia are fairly close to Hazard in price, while Straight Creek and Jellico are taking Harlan rates.

Retail prices in Louisville are being maintained regardless of the slump in prices at the mines, as there has been a freight-rate increase absorbed by the retailers, and present prices are not expected to hold very long.

News From the Coal Fields

Northern Appalachian

ANTHRACITE

Conditions Worse Than Any Time Since the War—Broken, Stove and Egg Move More Readily Than Other Sizes.

Conditions in the anthracite fields are at about the worst that they have been since before the war. Although only a few of the independent companies are not operating it is exceedingly difficult to move the coal at the present time. It does not even seem to be a matter of price for it does not seem possible to move it, no matter what the price.

Broken, egg, and stove coal move more readily than do the other sizes. One of the large coal companies has approximately 350,000 tons of chestnut coal in one yard. Buckwheat No. 1 seems to move more readily than any of the steam sizes.

PITTSBURGH

Pittsburgh Steam Coal Undersold by Non-union Districts — Pittsburgh Gas Coal Presents Fair Market.

The condition of there being scarcely any market for Pittsburgh steam coal continues on account of the competition of non-union districts, particularly the Connellsville region. With the additional reduction made July 1 by two of the independent operators in the Connellsville region and followed soon after by the other independents in the region, there is a wide difference in the mining costs. Connellsville operators could make a profit and still sell at less than the cost to the Pittsburgh district.

Pittsburgh district gas coal still has a fair market, as there is little if any coal from non-union districts of comparable grade, and as Pittsburgh producers of gas coal would rather leave the coal in the ground than sell at cost or less they are making some profit, although on a limited tonnage since even for gas coal the demand is quite restricted.

The steel industry's operations have not decreased farther and in the Mahoning and Shenango valleys there has been a slight increase in operations in the past week or ten days. The average operation for the whole steel industry, however, is hardly over 20 per cent. The mills are taking more coal from the Connellsville region for steam purposes and are drawing but little on the Pittsburgh district.

Prices for Pittsburgh coal are practically nominal for steam grades, as there is hardly any buying, on account of competition from non-union districts, but gas coal has an open market. Prices are approximately as follows: Steam mine-run, $2@$2.15; steam or gas slack, $1.40@$1.50; gas mine-run, $2.30@$2.50; screened gas, $2.85@$3, per net ton at mine, Pittsburgh district.

UNIONTOWN

Lack of Demand Restricts Output—Substantial Coke Market in August Unlikely—Prices Remain at Former Level.

The Connellsville coke region is devoid of market features either for coal or coke. There continues to be no demand and output therefore remains restricted. With the approach of August it seems unlikely that there will be any substantial coke market during the last month of summer inasmuch as furnaces, were they contemplating resuming operations, would have covered their coke needs. There is so little business going that quotations are becoming difficult to obtain, not sufficient tonnage moving to justify a quotable market. Prices therefore remain at the former level, scaling downward from $2 for coal, with $3 and $3.25 for furnace coke and $1 more for foundry coke.

CONNELLSVILLE

Furnace Coke Contract at New Low Price — Low-Phosphorus Coke at Premium — Production Better, but Still Very Light.

It is understood that the inquiry of the Wickwire-Spencer Steel Co., Buffalo, for 15,000 tons of furnace coke in August and the same amount in September, mentioned in the last report, resulted in a purchase from the largest independent operator at $2.75 per net ton at ovens. The price is, if anything, below the lowest guess that had been made as the probable price, but the furnace interest was in the position that it would not blow in the furnace involved unless a very close price was made, and presumably there was, moreover, competition of by-product coke.

The Robesonia Iron Co., which makes low-phosphorus pig iron, has bought 7,500 tons a month for a short period from the Connellsville Central Coke Co., the reported price being $3.25. Especially good coke, low in phosphorus, is requisite, and it is said that only two or three plants in the region can meet the requirements, also that a contract with this furnace made recently with another operator had to be given up because the requirements could not be met. At the time that contract was made it was understood the price was about $3.60.

Spot furnace coke of standard grade

seems to be at about $3, there being reason to believe that reports of $2.85 and $2.75 coke being available refer to coke that is decidedly off. One operator is getting $2.75 for soft coke, cullings in the manufacture of a high-grade foundry coke, this coke being low in sulphur and ash, while some soft coke is to be had at much less. Foundry coke is in considerably better demand, there having been practically no demand early in July.

The market is quotable at $3 for spot furnace, $2.75@$3 for contract furnace, depending on length of contract, and $4@$4.50 for spot foundry according to brand, per net ton at ovens.

The *Courier* reports production in the Connellsville and Lower Connellsville region in the week ended July 16 at 7,900 tons by the furnace ovens, an increase of 1,700 tons, and 13,500 tons by the merchant ovens, an increase of $1,380 tons, making a total of 21,480 tons, an increase of 3,080 tons.

EASTERN OHIO

Production Declines—Spot Price of Slack Stiffens—Tonnage at Lake Docks Reduced.

A further decline in the volume of tonnage mined and a stiffening in spot prices on slack coal are the prominent features in the eastern Ohio mining industry during the week ended July 16, 1921. Production for the week was 365,170 tons, or 58.6 per cent of rated capacity, a decrease of some 33,000 tons from the last full-time week, the lowest of any week since early in May.

Figures given out by the Pittsburgh Vein Operators' Association indicate that mines worked 51 per cent of possible full time, compared with 55 per cent the previous week, producing 56.4 per cent of rated capacity. The output for railroad fuel account continues at a minimum, the percentage being estimated at 35.

It is the consensus of opinion that shipment of Lake cargo coal will show decreases henceforth, at least for six weeks, and that there will be no new life in that trade before Sept. 1. Stocks on hand at the lower Lake docks are now being reduced by reason of the fact that clearances from the docks are greater than arrivals from the mines. Docks are dumping around 2,500 cars per day, as compared with over 3,500 several weeks ago.

There are rumors that the railroads, in order to stimulate the Lake trade, will widen the destination territory to which the 28c. per ton reduction applies on Lake cargo coal.

UPPER POTOMAC

Most Mines Closed Down — Buying in Open Market Limited — Prices Remain Low.

Most mines in both the Upper Potomac and Georges Creek regions were either closed down entirely or limited to a few days' operation last week. Buying in the open market was also limited, not much coal moving on such a basis. Only a few large companies were operating and their mines were running only about half the time. Prices in consequence remained on their previously existing low level, with Pool 9 coal far off color in price, as it had been sold as low as $2.35 and $2.45 a ton.

FAIRMONT AND PANHANDLE

No Pronounced Recovery After Holidays—Many Mines Idle and No Spot Sales to Help Prices.

FAIRMONT

If production were on any larger scale in northern West Virginia during the weekly period ended July 16 it was only because there were but five days in the preceding week. Toward the end of the week production was speeded up to some extent, but in general mine idleness was very pronounced, there being 238 mines out of commission on the 16th with only about 57 at work. Although a few producers were getting inquiries for coal to be shipped on a three-months basis to the New York market, no spot buying was in evidence. Tidewater shipments were light and Lake shipments were even lighter. Mine run was not commanding more than from $1.75 to $2 and slack was averaging between $1 and $1.10.

NORTHERN PANHANDLE

Not more than 50,000 tons of coal were produced in the Northern Panhandle region during the period ended July 16, for no demand existed for any grade of coal. There was a general slowing down of shipments to the Lakes and many mines in the region were being closed down. The range on prepared sizes was from $2.40@$2.60, with mine run averaging not over $2.25 and slack at about $1.25.

Middle West

INDIANA

Cooler Weather Helps Retail Trade—Mines Affected Only Slightly—Purchasing Agents Active — Talk of Lower Freight Rates Discouraged.

The cooler weather of the past week has had a sort of psychological effect on the domestic consumer, and retail dealers all over the state are reporting more sales. The retail sales, however, have had only a slight effect at the mines. Operators are inclined to believe that if cooler weather continues for a couple of weeks some increased demand will be noticed. The very fact that prices in steam coal are so low is creating a little demand from those utilities and industries who are buying for future use.

There is a generally-accepted belief in Indiana that industrial conditions are due for a considerable improvement as cold weather approaches and purchasing agents are doing some buying and making a lot of inquiries. This source of demand is so steady and the buying is done so quietly that it is hardly noticeable in production and not noticeable at all in market prices. Screenings still may be purchased at from $1.80 to $2, depending on just how badly the operator wants the order and the amount of coal sought. Railroad officials here are discouraging all talk of lower rates and operators are not looking for any betterment in this respect until after the first of the year, and there are many who do not believe a reduction will be made then.

The general custom now on the part of the operators seems to be to get the best price possible, but move the coal. Every mine track in Indiana is loaded with coal, so that unless some is sold, the mine cannot operate. Many sidings also are stored with coal. The railroads are continuing to put back into first class condition their coal cars in preparation for some real business when it does start.

SOUTHERN ILLINOIS

Slight Improvement in Steam in All Fields—General Condition Not Satisfactory—Indications Not Good for Immediate General Improvement.

There was a slight change in the Carterville field with the beginning of the week in the movement of steam sizes. Otherwise there is nothing different from the situation of the past few weeks. Of the mines that are working some work one day a week and others get as much as four. Railroad tonnage shows a slight improvement especially on the Burlington. Domestic sizes are slow, and such as is moving is going North and Northwest with a little to Indiana. The St. Louis territory is not taking much.

Price conditions are peculiar. A few of the big operators still maintain the circular price of $4.05 on domestic sizes but with steam coal the price is whatever the market will bring. The independents picked up a little on domestic from $3@$3.25 on lump and egg, nut is still $3, mine-run $2.75, and screenings $1.50@$1.75.

In the Duquoin field prices are with one exception about the same as Independent Carterville and working time not as good. Mt. Olive district shows no change in conditions or prices.

The Standard field developed a little strength on screenings; not that there is any more demand, just a matter of sales strategy, strange as it may seem. They moved up from 85c. to $1 and better. No change otherwise from last week and nothing to indicate anything soon.

WESTERN KENTUCKY

Larger Operators Hold Firmly for Advanced Prices on Prepared Coal—Movement Rather Quiet, with Operations Averaging About Two Days a Week.

Western Kentucky operators in some instances have not made much money this year, and it is asserted that some of the smaller ones have lost a little money in their effort to hold organizations and keep going. As a result a number of the larger operators after close figuring of costs have advanced prices on lump coal to $3.25 a ton, and are holding firmly for that figure,

whether they ship much coal or not. Some of the smaller concerns and beginners are shipping coal at $3 a ton, but in some cases the quality is not of the best.

Quotations on western Kentucky coal show an average on prepared of $2.80, ranging $2.50@$3.30; mine-run, average of $2.30, ranging $2@$2.65; screenings, average $1.60, ranging $1.05@$2. It is held that more mine-run is selling at around $2.40 than at any other price, and a considerable amount of screenings are selling up to $1.50@$1.75.

Western Kentucky is doing business on a real business basis this year, and deserves much credit for its strong efforts to get a fair value for its product.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Production About the Same—Nut and Slack Active—Inquiries Increase—Operators Not Anxious to Make Contracts.

Production in the Pineville district continues about the same, the mines running three to four days per week, with several of the smaller ones down entirely.

Considerable activity has been noted in the nut and slack market during the past two or three days, especially for Straight Creek. Most of the operators report that they are sold up and are not taking any business on prices which have prevailed during the past week or so. Block continues extremely dull and hard to move.

Prices on Straight Creek for 4-in. block are $3.75@$4; 2 x 4 round, $3.10 @$3.25; nut and slack, $1.60@$1.75; mine-run, $2.40@$2.50 and No. 2 mine-run, $2.

Several brokers and operators report an increase in inquiries, especially from the South for contract, indicating that consumers are beginning to see that coal is as low as it can be expected during the winter, but the operators are not jumping over themselves to make contracts at this time, as they have weathered the long months of dullness and are willing to take chances on a better spot market rather than to tie up their coal now at low prices.

Middle Appalachian

HIGH-VOLATILE FIELDS

Stagnant Market and Midsummer Dullness Combine to Depress Output—Lake Shipments Provide Only Outlet.

KANAWHA

Production in the Kanawha field was at a very low ebb the middle of July. The combination of a stagnant market and of the usual midsummer dullness was such as to still further curtail production in the region, there being at times during the week not more than 8,000 tons a day produced. Some of the old contracts have expired and that made for further dullness and for the shutting down of additional mines. There was no market for coal at Tidewater or the Lakes. Prices on mine-run ranged all the way from $1.50@ $2.10, with slack moving at about $1 a ton. Even prepared sizes were not bringing more than $3 a ton.

LOGAN AND THACKER

There was so little demand extant in the Logan field that producers were not making much of an effort to dispose of any coal. In the first place, there was a very light demand even for prepared sizes, which have heretofore been marketable, and mine-run could hardly be sold at all at any prices. The market for prepared sizes was $2.75@$3.00 and not more than $2.00 at the maximum for mine run. Slack, however, was fluctuating between $1.15 and $1.50 a ton. Many of the mines in the field were closed down entirely because of no market for their coal.

Conditions remained virtually unchanged in the Thacker field, there being about a 50 per cent output in that section, the production of the field hovering between 85,000 and 90,000 tons per week. All coal shipped, or nearly all of it, was being moved on contract.

VIRGINIA

In the Virginia field production continued to hover between 50 per cent and 60 per cent of capacity with many of the mines in the field out of commission as the result of a poor demand. Less coal than ever is being marketed on a spot basis and yet prices remained fairly firm, mine run commanding in the neighborhood of $2.50 a ton. Only the larger plants were in operation.

NORTHEASTERN KENTUCKY

Operations were greatly restricted in in the Northeast Kentucky field during the second week of June owing to poor market conditions, there being a production of not more than from 25 to 30 per cent, with most of the mines in the district closed down because of lack of orders. The only outlet at all for coal from this field was through the Lakes and even Lake shipments were being greatly curtailed. There was a feeble demand for domestic sizes but none for slack. Prepared sizes were not commanding much more than $3.00 a ton and mine run about $2.00 a ton.

LOW-VOLATILE FIELDS

Demand Feeble — Production Curtailed — Prices Weak — No New Contracts Coming In.

NEW RIVER AND THE GULF

Production was greatly reduced in the New River field during the week ending Saturday, July 16, as the result of a very feeble demand. Business in slack has absolutely gone to pieces and producers are literally giving it away when they let go of it at all. It is selling as low as $2@$2.25, with run-of-mine as low as $2.50 a ton. Lump and egg have dropped to $4 per ton.

The market for the coal produced in the Winding Gulf region had vanished almost completely by last week. It was not possible to ship much coal to Tidewater or to inland markets either for that matter, and prices are weak, being about on the same level as those in the New River region.

POCAHONTAS AND TUG RIVER

Production in the Pocahontas region was somewhat above that for the holiday week but was still far from normal owing to heavy "no-market" losses. Virtually all the mines in the region were in operation but not on a full-time basis. About the only orders they had to fill were being applied on contract since spot orders were few and far between. A comparatively large volume of coal was moving to Tidewater, some of it for export. There was a feeble demand for mine run at $2.50@$3.

Contract orders are enabling mines in the Tug River field to continue in operation at a fairly steady rate. There is little open market buying, however, and no new contracts are coming in. Much of the output of the field is being moved to Tidewater points. Prices were about on a par with those in the Pocahontas region.

West

UTAH

Situation Unchanged—Prices to Go Up Aug. 1 or 15—June Production Less Than Half for That Month a Year Ago.

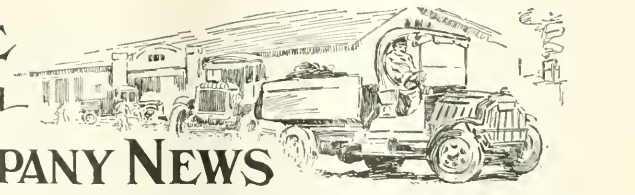
There is no improvement in the coal situation here. One dealer thinks there is a slight tendency on the part of the consumer to purchase winter coal, but practically all the coal men here—dealers as well as producers—are unanimous in saying the situation is unchanged.

The Independent Coal & Coke Co. has notified its customers that prices will go up "either Aug. 1 or Aug. 15." The new prices will be: Lump, $5.50; stove, $5.25; egg and nut, $5; mine-run, $4.50; slack, $2.75. The circular contains no particular argument for the increase, merely observing that the company recognizes its inability to take care of the abnormal demand which will be made upon it next winter if buying is longer postponed. None of the other companies have agreed to change their prices, but our correspondent had a feeling, after calling on several of the representative companies, that they would do so.

Coal production in June amounted to 220,941 tons, or less than one-half that of June last year. The total production for the year is 1,729,456 tons, as compared with 2,863,450 during the first six months of 1920.

The labor situation is satisfactory and men show a disposition to stay with their jobs, even though they are working less than half time.

MINE And COMPANY NEWS



INDIANA

In announcing tax lists for this year the County Board of Review has rated the New Albany property of the **River Coal & Supply Co.**, at $39,980; and that of **Finger Brothers' P. & K. Coal Co.**, at $27,000. These are the two largest coal corporations in the city.

KENTUCKY

The Millers Creek Excelsior Coal Co., with mines at Auxier, has been incorporated with the following officers: H. W. Faught, president; T. B. Lane, vice-president and general manager and Wheeler Boone, treasurer.

The Pittsburgh Fuel Co., is completing work on installation of a new dumping pit and third elevator at its River Yards in Louisville, where it is now equipped for fast handling of river or rail coal. The pit is for dumping cars, and a locomotive crane has been installed.

It is reported that the **Holley mines of the S. S. Porter interests**, at Lackey, are pushing development, with the idea of having much increased tonnage ready to move when the market improves.

The Blue Diamond Coal Co., on First Creek, planning to enlarge its force when business improves, is erecting additional miners' homes, and getting things in first-class shape for larger production.

The George B. Miller, Jr., Coal Co. has filed suit against the **Clay County Coal Co.** and **Wilson Coal Co.**, the latter having been sold to the former by F. B. Moses, who failed to pay claims for coal sold to him before he sold the concern. The Miller suit is for $192.53 and asks for a judgment voiding the sale of the Wilson company to the Clay County company. Another suit naming Moses as defendant, is for $600 and was filed by the **Joseph Schildt Coal Co.**, in which it is alleged that Moses failed to pay for coal delivered him prior to his leaving the coal business.

MINNESOTA

A consolidation has been effected of the retail business of the **Reeves Coal Co. Yards, Inc.** and of the **City Fuel Co.**, of Minneapolis. Arch. Coleman, president and founder of the City Fuel Co. becomes president of the new Reeves Coal Co. Yards, Inc. which is the business title of the new concern. The McKnight Building office of the City Fuel Co. will be the main city office of the new company, but the West Hotel Lobby office, will also be maintained. The general offices will continue to be in the Lumber Exchange Building, where they have been for some years for the Reeves Coal Co. Fred W. B. Coleman retired from active connection with the business, although retaining his interest.

The City of St. Paul has awarded a contract to the **C. Reiss Coal Co.** to furnish Youghiogheny lump and mine run and Pocahontas screenings for various city bureaus for the coming year. The contract amounts to $70,000. **The M. A. Hanna Coal & Dock Co.** received a contract for hard coal, amounting to $17,000.

OKLAHOMA

The Mullen Coal Co., has been organized at McAlester, for the purpose of engaging in wholesale and retail coal business. The company is capitalized at $50,000 and the incorporators are: Peter I. Olinger, W. P. Mullen and Guy L. Andrews, all of McAlester.

The Hughes Coal Co., has been organized at McAlester, with a capital of $25,000. Incorporators are: R. E. Jones and J. H. Gordon, of McAlester and L. T. Sammons of Oklahoma City. The company will engage in a general retail and wholesale coal business.

The State Board of Affairs of Oklahoma has awarded contracts for 63,000 tons of coal to supply the state's needs for next winter. Contracts were awarded to several companies in the McAlester and Lehigh coal fields, and the price averaged $4.06 a ton f.o.b. shipping point.

Extensive development of coal deposits in Craig County, is planned and several new companies are preparing to carry forward the work in this newly discovered coal section. Large deposits have been found at comparatively shallow depths, and it is predicted that in a few years the section will be one of the most important coal mining districts of the Southwest.

The Central Coal and Lumber Co., a Texas corporation, has recently purchased for $400,000, large tracts of coal lands at Welch, Centralia, Timber Hill and elsewhere in Craig County, and is now preparing to spend about $400,000 in mine equipment. Modern electrically-driven machinery will be installed and several mines will be opened at once.

PENNSYLVANIA

The Oak Hill Coal Mining Co., of Washington, is opening up a new mine at Avella, on the P. & W. V. R.R. This mine will have a capacity of 1,000 tons daily and together with the Knox mine at Studa will give this company a daily output of about 2,000 tons. The output of both mines will be handled by the **Bixler Coal & Coke Co.**, of Pittsburgh.

The Spruks Construction Co. has been awarded a $200,000 stripping contract by the **Hudson Coal Co.** The stripping operation is to be opened at Greenwood, a short distance south of the Scranton & Lackawanna township line.

The Melcroft Coal Co. of Pittsburgh has ordered a hand operated Nolan feeder for the mine at Coxton, Ky.

Sixty-eight men were killed in and about the coal mines of Pennsylvania during May. This is shown in reports from state mine inspectors filed with the Bureau of Mines. The fatalities represent more than 43 per cent of all that occurred in the United States during May, there being 158 deaths from mining accidents throughout the entire country during the month. Forty-one deaths occurred in anthracite mines of the state, while twenty-seven were in the bituminous regions.

TEXAS

The Winfield Ligoite Coal Co. has been organized at Winfield, Titus County, for the purpose of developing an extensive lignite bed that has been discovered in that county. The company is capitalized at $20,000 and the incorporators are: C. B. Richburg, G. W. Anderson and J. W. Richbourg.

Development of lignite beds that underlie the country around Smithville, is soon to be undertaken by a company now being organized in that city. The company will have sufficient capital to install the most modern equipment and it is planned to begin active mining at an early date.

With the discovery of a vein of good grade coal just under the surface of the ground in Coleman County, plans for development are already under way.

The Rockwall Feed and Fuel Co., of Rockwall, has been organized to engage in a general retail coal business. The company is capitalized at $5,000 and the incorporators are: W. M. Nickles, G. F. Holt and S. S. Dudney.

UTAH

Permission has been granted by the State Securities Commission to the **Castle Dale Coal and Oil Association** to sell 10,000 shares of treasury stock, on condition that organization stock be escrowed properly

Owners of land in Iron County who desire to transfer mineral rights in their property to the state that they may thus avoid payment of taxes, can make such a transfer only by warranty deed, according to the terms of agreement which have been completed by the Attorney-General's Department. This deed will mean that although the party making the transfer quits all title to the land he must guarantee to the state that his title is clear. The completion of the deed, it is believed, will mark the end of a problem which has occupied the attention of the State Board of Equalization for a long time. For several years the owners of these lands have protested any assessment of value for taxation purposes on the ground that they were without value.

WEST VIRGINIA

Thomas Love, prominent in Connellsville coal circles has acquired all the properties formerly owned and operated by the **Stone & Scott Coal Co.** in Eagle and Clay Districts of Harrison County. These properties embrace about five mining operations on Bingamon Creek, together with much real estate. The consideration is said to have been about $70,000. The property acquired by Mr. Love will probably be transferred to a company which he represents and in which he is interested, for development and also for the purpose of operating the mines now in existence.

Suit has been instituted by the **New River Collieries Co.** of Sun against the **Sugar Creek Coal Co.** for $200,000, it being alleged by the plaintiff that the defendant company mined coal from a barrier separating the mines of the two companies and that the plaintiff's property has become damaged by water. Suit has also been instituted in the circuit court of Fayette County by the **Lynchburg Colliery Co.** against the Gauley & Eastern Ry. Co., the plaintiff alleging that the defendant in building its road on the opposite side of Gaulev River permitted rock to be blasted into the river in sufficient quantity to divert the course of the stream and that during high water the property at Vanetta was damaged and that several houses have been washed away. The plaintiff asks for damages to the extent of $50,000.

The Siler Coal & Land Co. has leased seventeen tracts of coal land to tenants living on the leases controlled by the company. The tenants are given the right, under the leases, to mine coal for themselves or for other tenants under certain conditions conforming to the mine laws of the state. The mines are to be kept in good condition and no supports are to be removed. The leases run for a period of five years, renewable at the end of that time by the month, and to expire upon a notice of 30 days.

Uniontown business men who are the principal owners of the **Buckhannon River Co.** of Adrian, having the largest operation in Upshur County, inspected the Adrian property about the middle of June and at the same time held a directors meeting. Members of the party included J. D. Lackey, J. B. Bute, Iden Vail, W. H Binns, R. B. Otto, T. S. Dunn, Walter Williams, Samuel McClain and J. G. Binns.

It has been found possible to resume operations at the plant of the **Chesapeake Coal Co.**, at Barrackville, which was put out of commission several weeks ago during a storm when three transformers were dismantled by a bolt of lightning. Old transformers are being used temporarily until the receipt of new ones ordered

BRITISH COLUMBIA

At the annual meeting of the **Crow's Nest Pass Coal Co.** held recently at Fernie, it was shown that the net profits for 1920 from all sources made a total of $497,165.03 and that four dividends had been paid, making a total of 6 per cent for the year and amounting to $372,688.50. During the year the company spent $40,813.01 on improvements and development work. The coal mined during the year amounted to 779,924 tons as against 536,543 tons produced in 1919 and the coke produced totaled 75,928 tons in 1920 compared to 63,915 tons in the previous year.

Traffic News

The complaint of the **Hood Coal Co.** has been assigned for hearing by the I. C. C. at Columbus, Ohio, Sept 7.

In the complaint of the **Fairmont & Clevehand Coal Co. vs. the B. & O. R.R.**, the I. C. C. decides that the practice of the railroad in distributing cars to mines of complainant for coal loading are unreasonable and prejudicial, and prescribes reasonable and non-prejudicial rules for the future.

In the complaint of the **Federal Valley R.R. vs. the Toledo & Ohio Central**, an I. C. C. examiner recommends that the divisions accorded the complainant since Dec. 20, 1920, out of joint rates on coal from mines on its line to points in Illinois, Indiana, Michigan, Missouri, New York, Ohio, Pennsylvania, West Virginia and Wisconsin are not unreasonable.

In the complaint of the **Empire Iron & Steel Co.** the commission decides that the maintenance by the Central R.R. of N. J. of junction point rates on coal to points on the Morristown and Erie R.R., while refusing to maintain such rates to points on the Mount Hope Mineral R.R. is not unduly prejudicial.

In the matter of intrastate rates on bituminous coal in Ohio the commission has consolidated the following cases: **Southern Ohio Coal Exchange**, relating to rates on bituminous from Ohio groups to Central Freight Association territory, and the complaint of the **Michigan Paper Mills Traffic Association**, relating to rates on coal from Ohio and inner and outer Crescent fields to Indiana and Michigan.

Redmond Stephens, receiver for the Chicago & Eastern Illinois R.R. Co., recently filed a petition with the Interstate Commerce Commission for authority to abandon the Chicago & Indiana coal railway division of the C. & E. I. This division is usually known in Indiana as "the coal road." It runs from the state line near Morocco to Brazil and from Percy Junction to Lacrosse. The authority of the Hoosier commission to take a hand in the proceedings is not clear to the commission, but it is investigating, and may act to prevent the abandonment. The State Chamber of Commerce may also oppose the proposal.

An announcement recently made in southeastern Kentucky was to the effect that contracts have been placed by the **Interstate R.R.**, for construction of a twenty-mile extension of this road, to connect the Southern at Norton, Va., with the Carolina, Clinchfield & Ohio, contract being let to Brooks-Calloway Co., Atlanta, and calling for some real mountain road building, including many fills, cuts, three tunnels and seventeen bridges.

The United States Steel Corporation's subsidiary, the **U. S. Coal & Coke Co.**, at Lynch, has offered to pay for half of the cost of a twenty-mile stretch of concrete road from Lynch, to Appalachia, Va., which will give a road outlet to Virginia and also to Knoxville, Chattanooga and other points. Indications point to the early building of the road.

The Interstate Commerce Commission has suspended until Nov. 29 proposed reductions on anthracite coal from points in Pennsylvania to destinations on the Buffalo, Rochester & Pittsburgh R.R and the Pittsburgh, Shawmut & Northern railway.

In the complaint of the **Wertheim Coal & Coke Co.**, the Interstate Commerce Commission has decided that rates on anthracite coal from the Lehigh and Wyoming regions of Pennsylvania to Jersey City from 1906 to 1911 were unreasonable.

Personals

A. H. Land, president of the Dickinson Fuel Co. and treasurer of the West Virginia Coal Association, was in California on a vacation during the early part of July. Mr. Land makes his headquarters in Charleston.

F. J. Kerner, manager of the export department of W. A. Marshall & Co., has returned from several months tour of Europe during which time he made a special study of the export situation.

Among visitors from the zone of operations who were in the Queen City were **John H. Costard**, manager of the Bluefield branch of Dexter & Carpenter and **George E. Merryman**, sales manager of the Bob-lo Coal and Sales Corporation of Charleston.

R. D. Jeffers, manager of the Columbus office of the West Virginia Coal & Coke Co. was a recent visitor at the general offices of the company at Elkins, W. Va.

C. T. Denly, president of the Schroeder-Kelly Coal Co., of Cleveland, accompanied by his son, were visitors in Fairmont, W. Va early in July.

Conrad W. Troll, president of the C. L. Ayers Coal Co., and the Troll Coal Mining Co., and also one of the most prominent bankers in eastern Ohio, is suffering from severe injuries as a result of having been struck by an automobile on June 29. Mr. Troll is president of the Second National Bank, St. Clairsville, Ohio; the Belmont Stamping and Enameling Co., New Philadelphia, Ohio, and the Belmont Casket Co., of Columbus. He, however, maintains a residence in Cleveland.

Fred B. Strumm, of the Carbon Coal & Coke Co., at Great Falls, Mont., was a recent visitor in the Charleston, W. Va., field.

E. S. McCullough, labor commissioner for the Northern West Virginia Coal Operators' Association, left Fairmont recently, accompanied by his wife, for a visit as the guest of his brother at Saginaw, Mich., where he expects to spend some time.

Charles F. Sutherland, former mayor of Morgantown, W. Va., and president of the Sutherland Coal Co. of Morgantown, has been elected city manager by the city council of Morgantown.

Robert A. Johnston, of the Crescent Fuel Co. of Fairmont has recovered from an attack of acute indigestion which confined him to his home for several days.

Samuel D. Brady, head of the Brady Coal Corporation, with headquarters in Fairmont attended the commencement exercises at Cornell University, Samuel D. Brady, Jr. being graduated from that school.

Benjamin Bissell of Baltimore, general manager of the Century Coal Co., was a recent visitor in the Fairmont region, also paying a visit to the mines of the company at Century, W. Va.

A recent visitor in the Fairmont region was **C. L. Ball**, of Pittsburgh, representing the Pioneer Coal & Coke Co. of that city.

R. M. Lambie, chief of the West Virginia Department of Mines has returned from a visit to Washington, D. C. and to Cumberland, Md. While on this trip Chief Lambie was accompanied by **V. E. Sullivan**, inspector for the 14th district.

Frank R. Lyon, vice president of the Consolidation Coal Co. has left Fairmont for a trip to Europe expecting to be absent from this country for about six weeks.

A visitor in the Marion field during the latter part of June was **T. H. Johnson**, of Bellaire, Ohio, president of the Chesapeake Coal Co. which has a plant at Barrackville, W. Va.

Prof. H. H. Stoke of the mining department of the University of Illinois, is in the East on his annual summer inspection trip.

Association Activities

National Coal Association

The Foreign Trade Committee of the Association, appointed June 1, 1921, is composed of the following:

Watkins, T. H., (Chairman) Pennsylvania Coal & Coke Corp., New York City.

Bockus, C. E., president, Clinchfield Coal Corp., 24 Broad St., New York City.

Barnum, Walter, treasurer, Pacific Coast Co., 50 Church St., New York City.

Bonnyman, Alex, president, Blue Diamond Coal Sales Co., Knoxville, Tenn.

Burrows, L. E., Castner, Curran & Bullitt, 1 Broadway, New York City.

Caperton, G. H., president, New River Coal Co., Charleston, W. Va.

Calloway, A. W., president, Davis Coal & Coke Co., Baltimore, Md.

Coleman, G. Dawson, Nanty Glo Coal Mining Co., Nanty Glo, Pa.

Cunningham, W. H., vice-president, Cartright, Wimmick & Cunningham, Inc., 115 Broadway, New York City.

Farrell, T. F., second vice-president, Pocahontas Fuel Co., Inc., New York City.

Grant, Robert, president, New England Coal & Coke Co., Boston, Mass.

Gross, R. H., president, New River Co., Boston, Mass.

Ickes, Moroni, vice-president, United States Fuel Co., Salt Lake City, Utah.

Hood, Kuper, general manager, Houston Coal Co., Cincinnati, Ohio.

Jamison, R. H., president, New Alexandria Coke Co., Greensburg, Pa.

Knode, R. H., vice-president, Stonega Coke & Coal Co., Philadelphia.

McCandlish, Lindsay, second vice-president, Hutchinson Coal Co., Philadelphia, Pa.

Puckett, W. M., president, Cabin Creek Consolidated Coal Co., Charleston, W. Va.

Steinbugler, J. L., secretary, Wm. C. Atwater & Co. Inc., New York City.

Sweet, F. A., president, Standard Coal Co., Salt Lake City, Utah.

Walsh, J. P. vice-president, Pittsburgh Coal Co., Pittsburgh, Pa.

Wilshore, F. W., vice-president, Consolidation Coal Co., 67 Wall St., New York City.

Industrial News

Cincinnati, Ohio. — The National Coal Mining News, successor to the West Virginia Mining News is now located at 834 Union Trust Bldg., instead of Charleston, W. Va.

New York, N. Y.—The Allied Machinery Co., of America, has been appointed the foreign representative in all countries except the United States and Canada for the Universal Crane Co. of Cleveland.

Washington, D. C.—In connection with the proposed electrification of industry between Washington and Boston, through the development of water power, the Census Bureau has issued a report as to fuel consumption in this territory. It shows that 95,884 manufacturing establishments, mines and quarries in the area consumed 20,910,000 tons of anthracite, 34,669,000 tons of bituminous and 5,661,000 tons of coke in 1920.

Obituary

Harry J. Huntzieger died recently at his home in Uniontown. He was formerly an engineer for the H. C. Frick Coke Co., later operating the Olive Coal Co. independently until he sold his interests about five years ago, when he helped organize and became general manager of the Liberty Coal Co., with mines at Newcomer, Pa.

Coming Meetings

The Huntington Coal and Industrial Exposition will be held in the Chamber of Commerce Building, Huntington, W. Va., Sept. 19 to 24 incl. Chairman of committee, Thomas A. Palmer, Huntington Chamber of Commerce, Huntington.

American Institute of Mining and Metallurgical Engineers will meet at Wilkes-Barre, Pa., Sept. 12 to 17. Secretary F. F. Sharpless, 29 West 39th St., New York City.

National Association of Cost Accountants will hold its annual convention at Cleveland, Ohio, Sept. 14, 15 and 16. Secretary, S. C. McLeod, 130 West 42d St., New York.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The twenty-fourth annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

The West Virginia-Kentucky Association of Mine Mechanical and Electrical Engineers will hold its annual meeting at Huntington, W. Va., from Sept. 20 to 23. Secretary-treasurer, Herbert Smith, Huntington, W. Va.

The following first-aid meets will be held during August: The Davis Coal & Coke Co., first-aid and mine rescue meet at Thomas, W. Va., on the 3d. The State of Iowa will hold its annual first-aid and mine-rescue meet on the 6th at Albia. At Birmingham, Ala., state first-aid and mine-rescue meet on the 6th. Under the auspices of the Colorado Fuel & Iron Co. a local first-aid and mine-rescue meet will be held at Pueblo, Col., on the 20th. The Stonega Coal Co. will hold its annual first-aid meet at Stonega, Va. on Aug. 8. The Lehigh Coal & Navigation Co., field day and first-aid meet on Aug. 13 at Greenwood Park, Hauto, Pa.

New York State Coal Merchants Association, Inc. will hold its annual convention at Richfield Springs, N. Y., on Sept. 8, 9 and 10. Executive secretary, G. W. F. Woodside, 250 Arkay Bldg., Albany, N. Y.

Canadian Institute of Mining and Metallorgy will hold its annual Western meeting at Edmonton, Alberta, Canada, Sept. 14, 15 and 16. Convention secretary, T. B. Williams, 10,610 83d Ave., Edmonton, Canada.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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Right to Exclude and to Hire

JOHN L. LEWIS is much troubled about the mysterious workings of martial law. The union, of course, has nothing against law of that kind, only it must work for the union and not against it. When David Robb and other representatives of the international union, who had gone to the Tug River region ostensibly to manage union funds but really to foment trouble, were compelled to leave the State of West Virginia, John L. Lewis naturally enough said, "It is brutal work," speaking, of course, of the action of the state authorities and not of any union activity.

The union had nothing to say, however, when early in 1914 Secretary of War Garrison during a reign of martial law in Colorado forbade the hiring of any new men at the mines or the opening of any plants that were not in operation before the Ludlow battle.

The union can handle its affairs through citizens of Mingo County as readily as by outsiders, and the court does not want to interfere with the union but merely to prevent the invasion of Mingo County. The officials guarding that region believe that the best way to keep order is to prevent persons coming in to reinforce the union, which started the strike and has supported it. They particularly oppose their meeting together for united action. Nothing is clearer than the right of the government under martial law to exclude whom it will and to regulate assembly, though the right to work and to operate works has almost never been denied. This, however, was done in Colorado.

Danger in Inaction Based on False Security

RUNNING through the mind of the men in the coal industry there is a lurking suspicion that amounts almost to fear that the ghost of regulation has not been permanently laid. By prodigious effort the Calder and then the Frelinghuysen legislative proposals were shelved, but no one really thinks that the matter has been finally settled for all time, and the idea is current that but the spark of another period of high prices for coal is needed to start the train of powder that leads to the magazine in Congress. The time to dig a cyclone cellar or build an ark is between storms. The chances of there being another flood at Dayton are remote, mathematically speaking, but since 1913 the people in the Miama Valley have been developing a series of dams to protect them from a recurrence of that disaster.

Putting hobbles on business is not a normal procedure for our national legislators. Congress, in the main, does only those things that it is forced to do. Tremendous pressure and, generally, years of persuasion are required to accomplish those things that appear to many as obviously proper, and drastic laws are adopted only when they at least appear to represent the popular will. To mention only some of the more prominent steps in our legislative history it is only necessary to refer to abolition of slavery, regulation of the railroads, prohibition, woman suffrage, the Federal Reserve system, to realize that Congress acts in large matters slowly. Congress knows that the country is today reacting away from the theory of regulation of business and therefore Congress is not going to regulate business.

The danger to coal, however, is that the public has set coal aside and apart from business and has put it in a class with at least two other industries, the railroad and the packers. These the public have come to view not as business but as particular enemies. It is very difficult for the coal man to appreciate this. You know that you are conducting your affairs according to the best of your ability, that you have for years had a hard time to make a profit in your undertaking and that for some years you have had the opportunity with other business to make good profits, but that times are bad again. You cannot see why coal should be one of the few lines of effort singled out for chastisement, for you can name a score of other lines of activity that have much the same record as coal.

It is a condition, not a theory, that confronts the coal industry. It is told that a debating society in the backwoods once considered the question, "Resolved, that whereas the present ratio, 3.1416, between the diameter and circumference of a circle is a cumbersome and arkward figure, the ratio should be changed to 3." It is further related that the pros won the decision. It is not necessary to argue the question of the public attitude on coal, but to study it and seek to meet it by education. Coal may dig fire trails, beat out sparks and start backfires, but everyone who has seen a real forest fire in action knows that the flames jump the trenches, the sparks come to life and backfires fail at times. The thing that saves the day is a change in the direction of the wind. Place no confidence in a calm.

A serious fire has swept over the coal industry. Some of the underbrush is charred but the sound timber is not hurt. The sparks are still glowing, though the wind has fallen. Antagonisms have been engendered by the viciousness of some of the backfires. Some people are so busy turning over the embers trying to find the incendiary who started the trouble that they cannot see that they are treading on hot coals. Some are coming out of the thicket with all the outer habiliments of a chimney sweep and would like to rub some of the black off on others.

Weeks, if not months, must elapse before there is any possibility of a recurrence of demand for coal sufficient to produce a car shortage and consumer bidding for coal at high prices. Quite possibly there will be no high prices this winter such as will fan the sparks to flame. The coal industry may not experience for another generation such a period of runaway market as has been recorded in recent years. There is danger, however, so long as a single spark of the last fire glows. The wind

can be trained to prevent the spread of the fire. Public opinion can be veered and further trouble forestalled. For one thing, the public cannot now see the big, sound timber for the underbrush. Without underbrush a fire makes little progress.

At this point we stand amended. Some one interjects that a rain would quench the fire. Yes, particularly if it were a rain of reason.

Now that the tumult and the shouting have subsided we may hear the quiet voices of those who have more moderate views, but who have been loath to wade into a bitter battle of words. These men, a surprisingly large number of them, are not content to fight public opinion with injunctions and with tactics that bear all outward semblance of trying to keep the facts from the government and the public. Some men, you know, casting an eye over the balance sheet of the past ten or twenty years, resent the idea that they are coal barons, and would like the consumer to become better acquainted with the facts. Permanent peace for coal lies along the direction of meeting the public and not fighting it. It is fundamental that the coal industry should recognize that it is one of a few singled out by the common people as deserving special treatment. The coal industry must, therefore, meet the situation by special treatment on its part.

Research Scholarships

NOTING how fortunate members of the United States Bureau of Mines and research men at universities have been in obtaining good places in the coal industry and in the industries by which the coal mines are equipped, it would seem strange that these organizations find it difficult to keep well staffed, but it is a fact that they are perpetually looking for men.

There is always room for men who know more about any given subject than does the industry they serve. The opportunity given to graduate engineers to experiment at a well-fitted station, with most of their living expenses paid by a scholarship, would seem exceedingly attractive. It is certainly a better opportunity than they enjoyed when attending college. The advancement undoubtedly will be faster, the information they will get, though distributed free to the world, can be sold at a higher figure, the opportunities for a thorough grounding in one of the arts will be more numerous, the acquaintance they will gain will be wider, their knowledge of research, in itself a valuable form of education, will be most advantageous and their general *savoir faire* will be increased.

The opportunity to obtain at such work a salary equal to that awarded in commercial life is not likely to present itself at universities for many years. Meantime let the engineer write down the loss of the larger salary as post-graduate expenses. It is indeed well worth the cost. The loss during the one, two or three years will be more than compensated during each of the years that follow if the man who surrenders the time is really worthy of advancement.

All-around engineers with nothing but ordinary practice rarely do as well financially as these abnormally trained men, except after years of waiting for the passing of engineers, who themselves lined up for advancement in the long queue many years before. Promotion comes but slowly where the well-trodden path is chosen, for the man who would progress finds the road blocked by numbers.

Good Engineering and Safety Are One

THAT economical practice in engineering is synonymous with safety is the dictum of C. P. Tolman, president of the National Safety Council. He holds that almost every improvement in safety will be found a source of revenue and that nearly every negligence in the care of men's lives and limbs not only maims and kills but wastes material and time. This dictum applies to protective electrical devices as forcibly as to any other form of safeguard. Most mines have a circuit breaker at the power house or substation and circuit breakers or fuses at the various machines, but none to protect any one of the many lines.

The circuit breaker at the generator is set to trip at a slight overload above the normal current consumption of the whole mine or the capacity of the generating equipment. When the current demand is low, as, for instance, at the noon hour, or at night, or as a result of a stoppage on the railroad tracks that halts the locomotives in the mine, or again because of the closing down of a heavy pump or the early quitting of the mine force, an overload can occur in some one section of the mine without tripping the circuit breaker.

This piece of equipment will, it is true, accomplish what it is designed to do—that is, it will trip at certain overloads—but all loads "look alike" to the circuit breaker. It matters not that the normal load is the sum of a light load in one or many sections and an abnormally heavy one in another; its arithmetical sum alone is what the circuit breaker considers. Something grievous may be happening as the result of a short-circuit, but of this the circuit breaker is sublimely unconscious. Of course, if the trouble is at a locomotive, a motor-generator set or an undercutting machine the circuit breakers or fuses of these various mechanisms take care of the overload. But if it is the result of trouble on the line and the grounding of the short-circuit passes through coal the mine may catch fire and the master circuit breaker and those at the machines may be serenely indifferent.

Before long every section of our mines will have its own circuit breaker, which will isolate it whenever the current flow becomes excessive, yet will close automatically when the demand becomes normal or less than normal. This is already the practice at the mines of the Ford Collieries Co., the Consolidation Coal Co. and the Wisconsin Steel Co., and there are many other mines not so well known that are introducing this method of protection, which is all the more necessary where top coal furnishes an uncertain support for the trolley wire and a fiery material should the roof fall.

At some of the smaller mines of the country there is not a single circuit breaker, the owners of the property being willing to rely on fuses, though devices of this character change their reaction to current as oxidation proceeds and are always likely to be fitted with impromptu conductors or over-large fuse strips by some too-zealous employee. Such a substitution effectually prevents the "fuse" from blowing, but it provides protection to neither line, generators nor power house. Moreover it adds an appreciable and totally needless hazard to mining. In the East the real fire hazard in coal mines arises from short-circuits. In the Middle West the danger of lights may equal that of electricity. In the West the main hazard probably is lights. But East and West where electricity is used it should be closely guarded by circuit breakers.

How the Kingston Coal Company Reduces Subsidence And Conserves Coal by Rock Filling and Silting

All the Wastes in Mining Returned to Workings—Four Volumes of Water Used for Each Volume of Solid Material Silted—Pipe Put Together with Oakum and Wood Wedges—Silt Walls Do Not Run

By D. C. Ashmead
Kingston, Pa.

ONE of the most difficult problems confronting the anthracite mine operator is that of supporting the surface after the coal has been removed. The need for such support becomes ever more pressing as the years go by, for only by second mining can the output of the older collieries be maintained.

In the so-called Upper Anthracite Region the coal lies nearly level and is under less cover than in other localities. In consequence the surface is easily disturbed when the coal beneath it is removed. Throughout most of this region also the population has rapidly increased, and the surface has almost everywhere been covered by buildings. This surface is rarely supported by solid coal. The pillars alone keep the roof from entire collapse. Hence it is obligatory to find a substitute for these pillars if the surface and the structures thereon are to be protected from subsidence.

How great is the magnitude of this problem may be appreciated when it is considered that the thickness of the beds of coal aggregates from 30 to 100 ft. If all this is removed and the surface let down the resulting subsidence doubtless will amount to many feet. Where the coal beds are deep this subsidence may be so controlled as to render it gradual and uniform, and consequently small damage will be done.

Subsidence from Mining Deep Beds Harmless

That this can be accomplished has been repeatedly proved, particularly in those localities where insufficient support has been left in the Red Ash bed and great squeezes have been brought on, which in some instances have caused the surface to settle as much as two or three feet without perceptible damage being done to either the surface or the structures thereon.

Where the coal beds lie near the surface, settlement cannot be readily controlled, and local falls occur underground which in many instances break through to the surface. These may cause total destruction of any building located where the break occurs.

Support may, of course, be provided by the use of gob pack walls, by the building of cogs or the setting of an unusual number of props. The timber used in such cogs and props, however, would require periodic renewal, and as a result the cost would be unreasonably heavy. Material should be used that will last forever and not be in any sense temporary.

At every anthracite mine large quantities of rock are produced in the mining of the coal and its preparation. This must be disposed of in some manner. At many operations it has been dumped upon the surface in great heaps or banks. This material and the rock obtained in brushing top and lifting bottom in the driving of tunnels has been brought to the surface at no little expense. All this material is available for supporting the roof in those areas where first mining has been completed.

This rock may be disposed of underground in various ways. The bottom, top and parting rock which a room affords may be built into pack walls for the support of its roof, and the rock from tunnels and headings that cannot be gobbed may be loaded into cars and dumped in worked-out chambers or elsewhere. Where steep-pitching worked-out chambers are available a horn dump may be installed at the upper end for the discharge of rock-laden cars. Such cars may also be unloaded by hand in level chambers. This material aids appreciably in filling part of the vacant spaces where the roof is to be supported by entirely filling the worked-out area.

An additional source of filling material is the rock or refuse obtained in treating the coal in the breaker. This must necessarily be brought to the surface with the coal with which it is mingled or to which it adheres. This material, being comparatively small in size, cannot be disposed of by hand with economy. The most efficacious method of transporting and stowing this small rock is by means of water through pipes, the process being variously known as "flushing," "slushing," "silting," "hydraulic filling" or "stowage." Where sufficient fine rock for this process is not immediately available, sand, gravel, ashes and clay have been used. This last-named material, however, is difficult to handle and does not yield as satisfactory results as are obtained with rock or sand.

In order to convey a general idea of this process the methods followed by the Kingston Coal Co. will be briefly described. While these may differ in slight details from those pursued by other companies it is believed that they are typical and representative. This firm was one of the first to employ this method for surface support and has worked out many of the problems it presents.

Waste Mixed with Four Volumes of Water

Rock obtained from the various jigs, picking tables and mechanical cleaners is passed through Jeffrey pulverizers and reduced so as to pass between screen bars ¾ in. apart. This pulverized material is next mixed with water in the proportion of four volumes of liquid to one of solid. This mixture of water and rock is then sluiced or piped to boreholes which extend to the workings underground. These holes are 6 in. in diameter and are cased as far as the solid rock with terra-cotta pipe 1½ in. thick.

A cast-iron pipe is cemented into the borehole where it enters the underground workings. To the lower end of this pipe another length is attached by means of a bell-mouth joint. This terminates in a long-radius

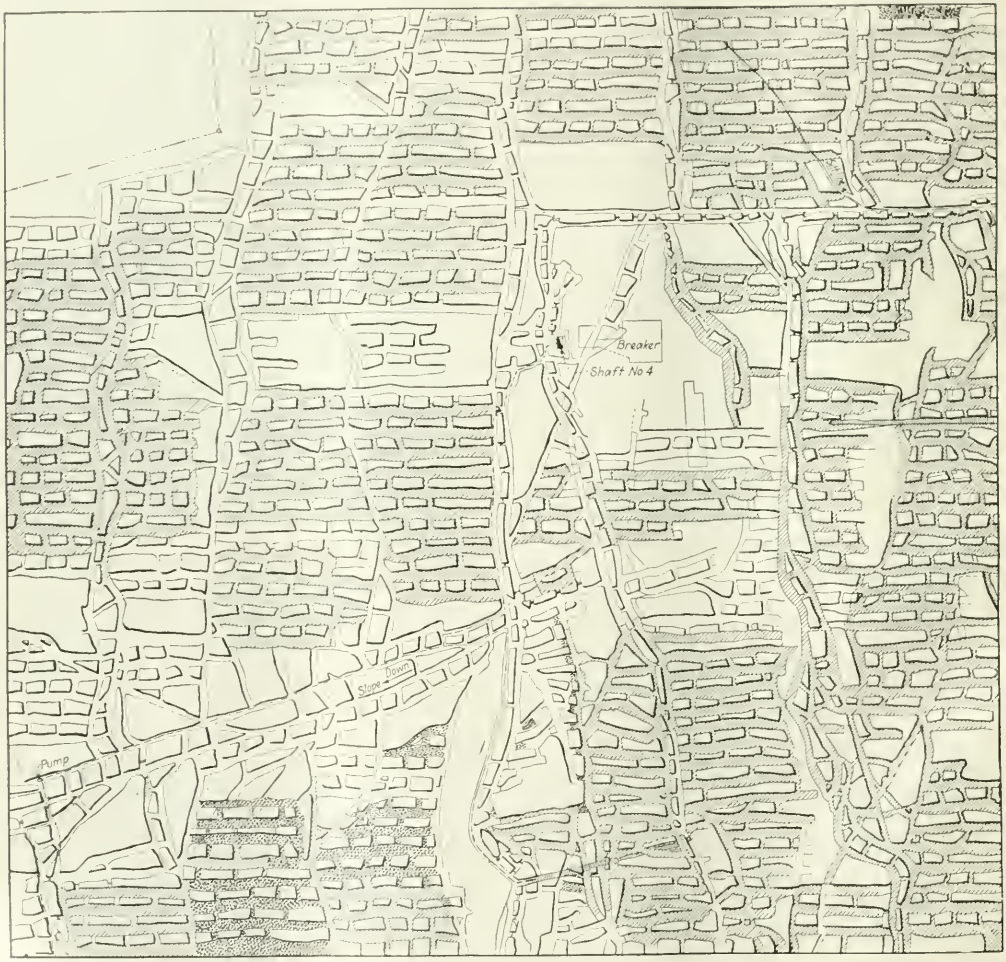
elbow connecting to the main silt line. The cast-iron pipes and fittings at this point are all of special design, as those of standard or ordinary pattern are too light to endure the wear.

Wood Wedges and Oakum Used in Pipe Joints

The main silt line is of extra heavy cast-iron pipe with bell and spigot joints. When silting was first tried the customary lead joints were made, but they were found to be expensive. Next cement was tried. This had the same drawback as lead. Moreover it rendered the joint hard to break, which was a decided disadvantage, as it was frequently necessary to take lengths apart in order to clean or shift the line. Accordingly, the joints are now made with wooden wedges. These are one inch thick and driven as close together as possible against a ring of oakum packing placed in the bottom of the bell. When silt is turned on, any openings between the wedges soon become filled with fine material which the swelling wood holds securely in place, rendering the joint watertight.

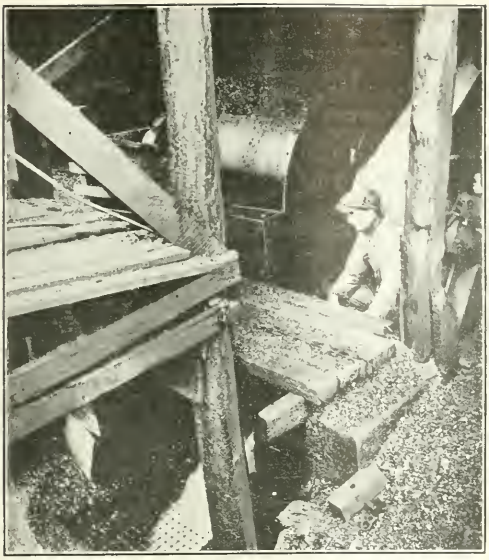
When for any reason the pipe line or borehole becomes plugged it is necessary to clean out the obstruction. If the plugging is in the silt line itself its exact location can be determined by tapping on the outside of the pipe. When located the adjacent joints in the line are broken by knocking out the wedges and the obstructing material is cleaned out by means of hoes or similar tools.

If the stoppage is in the borehole a ½-in. pipe in lengths equal to about the thickness of the coal bed are screwed together and pushed upward into the hole as far as the obstruction. Water under pressure is then turned on. This loosens and washes out the silt. In



SHOWING HOW EXTENSIVE HAS BEEN THE SILTING AT SHAFT NO. 4 OF THE KINGSTON COAL CO.

These workings are under the borough of Kingston, Pa., which, situated across the Susquehanna River from Wilkes-Barre and part of its trolley area, usually is regarded by the visiting stranger as no unimportant part of that growing city. Though the seam is over 700 ft. below the surface it is thought well to give the further protection that silting affords. The advantage of silting is that a roadway can be made through the silt without difficulty. Yet the artificial ribs thus formed will stand up almost as firmly as the coal they replace. In the map the round spots placed either on the blank spaces which represent coal extracted or on the areas covered by the hatched symbol for silting denote heavy posts which support the roof prior to the deposition of silt.



CRUSHER AT OLD SLOPE AND BOREHOLE FOR SILTING WASHERY WASTE TO MINES

All the waste from the washery is crushed to pass ⅜-in. mesh and, through pipe boreholes, is passed down into the mine with four times its volume of water. The boreholes are 6 in. in diameter and cased to solid rock with terra-cotta pipe 1½-in. thick. The screen over the hole can be seen in the foreground at the base of the illustration.

some instances the lower 400 ft. of the hole is cleaned in this manner, after which water is turned on from above and allowed to stand over night. This usually brings the desired results, but if not, the entire borehole is cleaned from the bottom, as above described.

Pipe Flushed with Water Night and Morning

Every day twenty minutes before silting is begun water is turned on and allowed to run down the borehole and through the pipe. This is repeated after the run of silt is finished at noon or evening. This washes the pipe clean and keeps it from clogging.

Strange as it may seem, the greatest abrasion on the silt line is at the top and periodically it is necessary to revolve the pipe through 90 deg., or one-quarter of a revolution, in order to equalize the wear. It is interesting to note that it is possible to cause the silt to flow uphill. In one portion of one of the Kingston Coal Co.'s mines the surface elevation of the top of the silt hole is 1,128 ft., and the elevation of the point where this borehole enters the underground workings is 591 ft. From the foot of the borehole the silt line extends for 2,500 ft. and its discharge end is at an elevation of 842 ft. Thus the point of silt efflux is 251 ft. above the bottom of the borehole.

Only small sections of the mine are silted at any one time. Suppose, for instance, that ten adjacent chambers are to be flushed. Silt batteries are placed at the lower ends of the rooms and necks leading to the gangway. If the room floors are level or nearly so box troughs or drains are laid through the center of the room. In the covers of these boxes, at intervals of about 10 ft., openings are provided which are covered by small-mesh wire screens. The silt pipe is led to the upper end of the chamber and the silt turned on.

This material flows down the room with the water and collects against the battery. Gradually it rises higher and higher, the surplus water flowing out through the drain after reaching the first mesh-protected opening. Eventually the silt fills the room completely from end to end and from floor to roof. As the water drains off this material packs solidly, so that there is but little shrinkage and the silt, particularly in places that pitch, even though the inclination be only slight, bears firmly against the roof.

In building a silt battery 12-in. timbers are set vertically and about 3 ft. apart. These are hitched into the floor and wedged against the roof. About half way from floor to roof a transverse timber is placed against the uprights. This is supported by posts from the floor and braced by timbers set in hitches cut into the roof. Usually three braces are thus placed. Two-inch hardwood planks are then fastened to the inner face of the uprights. All cracks are then stuffed with hay. This acts as a filter, allowing the water to run off but preventing escape of the silt.

Silt Is Fed From Near One End of Room

As soon as one chamber is filled silting of the next is begun, and so on until all have been treated. Silt leaving the pipe does not flow uniformly but is emitted in gushes or pulsations that may shoot 20 to 30 ft. down the room. It is supposed that this action is the result of air in the silt column. Ordinarily not more than about one joint of pipe extends into a room being flushed. If the room is level, however, it is often necessary to allow the pipe to extend inward for a third of the room length or more.

In the Red Ash bed of the Kingston No. 4 mine

CRUSHER AT WORK IN KINGSTON NO. 4 COLLIERY

A pipe, leading into the front of the crusher, delivers the water by which the broken rock is fed to the workings. Note the fence which protects the workmen from being caught in the belt.

FLUSH PIPE OF CAST IRON WITH WOOD-WEDGE JOINTS

This shows a silt line on No. 3 Ross plane in No. 3 shaft. The pipes are of extra-heavy cast iron with bell and spigot joints. At first lead was tried, then cement, but cement joints were hard to break and lead was too expensive. Wood wedges are now used against an oakum ring. They soon swell, and whatever leaks develop are rapidly stopped by silt.

a heading has been driven crossing the silted rooms at about their midlength. In practically every case where the silt was pierced it was found to be tight against the roof. Silt thus cut stands in a vertical wall and does not run as might be expected.

In the Orchard bed of No. 1 shaft of the same colliery the pillars of the silted rooms are being robbed. The first pillar removed was that which was farthest from the shaft and accessible from the lower entry, that roadway being kept open for this purpose. The pillar, which was 36 ft. wide, was slabbed 16 ft. along one side, a roadway 8 ft. wide being made by taking up bottom. Rock thus made was built into a pack wall and gobbed.

When the end of the pillar was reached the remaining 20 ft. of width of the pillars was taken on the retreat. Cogs were built in the room every 20 ft. for roof support. Props also were set at regular intervals to protect the men while at work. The roof during robbing was under tension and consequently no matter how solid it might have appeared it was likely to scale off.

Filling Found to Be Tight Against Roof

When the pillar was removed it was found that the filling was tight against the roof. When all the coal supporting the roof had been taken out, exposing the silt pillar, small pieces of coal were found adhering to it, thus giving it the appearance of being composed largely of coal. The ordinary procedure followed in robbing was pursued in this case—that is, when the robbing of one pillar was well started, work on the next was begun.

At the present time an area about 800 ft. long and 400 ft. wide has been completely robbed, the last pound of coal having been taken out of the area. The roof is thus supported entirely by silt pillars and a few cogs placed as the coal pillar was removed. No indications appear on the surface that settlement is taking place.

Where the pillars have been removed, however, the roof has settled slightly, but nowhere to exceed 8 in. In the pillars adjacent to this completely-mined area an increased weight made itself evident by the spauling of the coal. Little powder was used in mining the pillars, as the weight alone broke the coal down. Some explosive was needed, however, in the bottom bench, as this coal is harder than that in the top of the bed.

May Finally Replace Pillars by More Silt

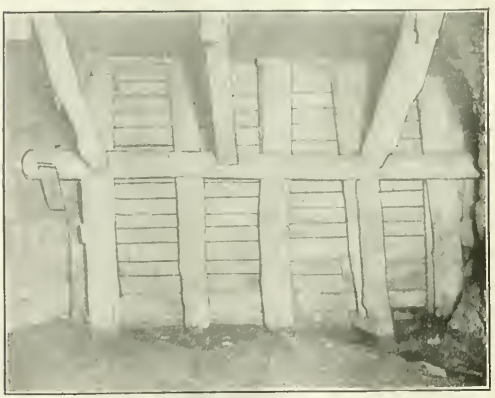
It is now possible to pass through all the workings where the coal has been entirely removed and observe how the silt filling is taking the weight formerly supported by the coal. Later on when enough silt is available it is possible that even the space formerly occupied by the coal pillars will be flushed. From present indications this hardly seems necessary, but the filling of all voids might safeguard the upper beds.

A heading is now being driven through the old workings that have been flushed. This passage cuts the old pillars diagonally and clearly shows how thoroughly the silting has been done. The partial filling of the rooms with mine rock and gob apparently materially aids the silting, as not only is less fine material required to completely fill a room but the silt fills the voids in the coarser material and if this has been piled properly it practically cements the individual pieces together, thus giving better support to the roof.

Not only is silt an excellent roof support but it may be advantageously used to stop a squeeze. If for any reason a squeeze is brought on, prompt silting of the rooms will stop it. Furthermore, by employing this method of roof support it is possible to obtain practically 100 per cent extraction of the coal in room-and-pillar workings. The only coal lost in such a case is the spillage from shovels and mine cars. This, of course, is only an exceedingly small proportion of the total bed content.

Silting Makes Possible Complete Extraction

The chief objection to silting is its expense. Of course it costs money to crush rock fine enough to be used in this way and to flush it down boreholes through pipe lines and into rooms. Against this expense, how-



BATTERY TO HOLD BACK SILT FILLING

Hay is used to make the barrier tight. The crosspiece is held in place by timbers which are secured against the roof by wedges driven into holes prepared for them. A box drain with a screen on top at intervals leads away the water toward the mine pumps. The timbers in the barrier are 12 in. in diameter.

Repairing Timber

In the Red Ash Bed, No. 4 mine. It looks like a place driven, as the English would say, "in the whole." Inspection, however, shows that only on the left do the walls reflect light. The others are dull and smooth. They are of crushed slate on which light falls without reflection. These walls appear straight and solid and indeed they are as perfect as they seem.

ever, must be weighed the benefits derived. Entirely aside from all considerations of surface support with the best of ordinary mining it is extremely doubtful if better than 95 per cent extraction is obtained. By silting it is of course possible to obtain a 100 per cent or total extraction.

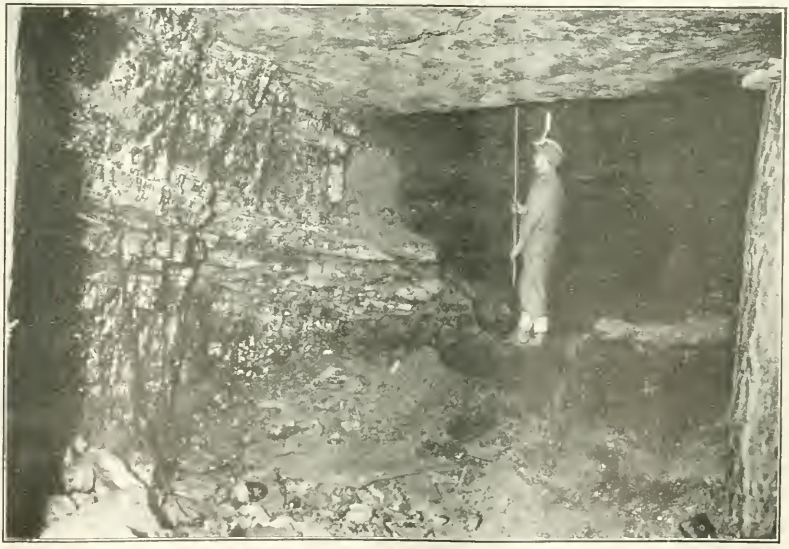
The total tonnage and life of a mine may thus be augmented at least 5 per cent by this means. This may more than counterbalance the expense entailed. Furthermore, as has been already stated, silting may be employed to prevent a squeeze. Throughout the anthracite region as well as elsewhere many hundreds of thousands of tons of coal have been irretrievably lost through squeezes. If the rooms in these mines had been silted such squeezes never would have occurred, and the coal lost could have been reclaimed.

Another and possibly the chief gain accruing to the coal company which utilizes this method of support is difficult to calculate accurately, but unquestionably it will amount to a large sum during the life of any colliery which operates in a thickly-settled region. This is the absolute protection of the surface from subsidence. The money saved by this means cannot be reckoned, but its aggregate is none the less appreciable.

PARENTS, NOT BEING DEPENDENT, COULD NOT COLLECT.—Judge Henderson, of the Superior Court of Pennsylvania, has affirmed the decision of the Court of Common Pleas of Luzerne County that Andrew and Mary Corcoran could not be regarded as dependent on their son who was killed by accident when working for the Pennsylvania Coal Co., and so were not entitled to receive compensation for his death.

Testing Roof

In Kingston No. 4 Mine. A heading is being driven through a silted area. The rear wall, which is the face of the tunnel, is of unexcavated silt. Note the layers of slate in the rib. Material like this is gobbed in rooms that have not been flushed, thus helping to supply material without which the silt would not be able to fill the large area needing support.



Conditions Under Which Bulk-Oil Concentration of Fine Coal Gives Best Results*

Ash Reduced 26 to 75 Per Cent—Sulphur Greatly Reduced in Anthracite, Little in Bituminous—Coal Should Not Be Ground Finer Than 200-Mesh—Treatment Usually Increases Softening Temperature of Ash

By G. St. Perrott† and S. P. Kinney‡

In making the tests of coal washing by the bulk-oil concentration method of the Trent Process Corporation described in the article appearing in last week's issue and entitled "By Mixing Fine Coal, Water and Oil, Grains of Oily Coal Are Formed with Elimination of Earthy Impurities" the coals used were those which are described in Table I. These coals will be referred to in the paragraphs that follow under the names given them in the column marked "Designation" in that table.

Table II gives averages of results with a number of typical coals of the United States. The coals were pulverized to 65 mesh and ground for six hours with an equal weight of water in a laboratory ball mill before treatment by the Trent process. The oil employed was in all cases a grade of navy fuel oil running 125 seconds on the Saybolt viscosimeter at 25 deg. C. The specific gravity of the oil was 0.875 (30. deg. Baumé) at 20 deg. C.

The results as set down are for the most part self-explanatory. It will be seen that ash reduction with most of the coals tested is good, varying from 30 to 75 per cent. Sulphur reduction is fairly good in the case of anthracite coals but low in the case of bituminous coals. With these latter coals just sufficient sulphur is removed to keep the sulphur content of the recovered coal about the same as that of the raw coal. Combustible recovery is with a few exceptions better than 95 per cent.

The removal of pyrite from coal by any process depending on the selective action of oils is considerably more difficult than the removal of other mineral matter, such as shale or slate. Pyrite is readily wetted by oil and, particularly when in a fine state of subdivision, tends to attach itself to the coal-oil agglomerates rather than to remain suspended in the water. It is more easily separated from anthracites than from bituminous

TABLE I. DESCRIPTION OF COALS TESTED BY TRENT PROCESS

Seam	Nature of Coal	Source	Designation
.....	Culm.....	Trent Process Corporation, Washington, D. C	Anthracite, culm I.
.....	Feed to concentrating tables..	Washery of Hudson Coal Co., Scranton, Pa.	Anthracite, culm II
.....	.....	Rhode Island.....	Anthracite, Rhode Island
Pittsburgh.....	Pulverized coal.	From plant of Oliver Iron and Steel Co., Pittsburgh.	Bituminous, Pittsburgh.
Upper Freeport	Run-of-mine	Avenue Mine of Allegheny Steel Co., Brackenridge, Pa.	Bituminous, Upper Freeport I.
Upper Freeport	Feed to washery	Mine of Inland Collieries Co., Harmarville, Pa.	Bituminous, Upper Freeport II.
Upper Freeport	Bone-coal refuse	Washery of Inland Collieries Co., Harmarville, Pa.	Bituminous, bone-coal refuse
No. 6	Run-of-mine	No. 1 mine Superior Coal Co., Gillespie, Illinois.	Bituminous Illinois I.
No. 6	Run-of-mine	No. 7 Mine Big Muddy Coal & Iron Co., Herrin, Illinois.	Bituminous, Illinois II.
No. 6	Run-of-mine	No 12 Mine, Vandalia Coal Co., Sullivan, Indiana	Bituminous, Indiana.
Lehigh	Run-of-mine.	No. 5 Mine Folsom Morris Coal Mining Co., Lehigh, Okla.	Bituminous, Oklahoma.
.....	Run-of-mine	Carsatmouth of mine, Wilkeson Coal & Coke Co., Wilkeson, Washington	Bituminous, Washington.
.....	Brazil coal.	Trent Process Corporation.	Bituminous, Brazil.
Blossburg	Waste from washery.	Phelps Dodge Co., Dawson, New Mexico.	Bituminous refuse, New Mexico.
Soddy.....	Washer refuse..	Durham Coal and Iron Co., Soddy, Tenn.	Bituminous refuse, Tennessee.
Black Creek	Washer refuse	Black Creek Coal Co., Nauvoo, Ala.	Bituminous refuse, Alabama.
.....	Run-of-mine	Bins at head of washery plus the bone from the picking table Pacific Coast Coal Co., Issaquah, Washington	Sub-bituminous, Washington.
.....	Run-of-mine	No. 1 Mine, Bertetti Coal Co., Lytle, Texas	Lignite, Texas
.....	Run-of-mine	McKissick Cattle Co., Ione, Cal.....	Lignite, California

*Second installment of an article entitled "The Use of Oil in Cleaning Coal," contained in Reports of Investigations, Bureau of Mines. The first installment appears on pages 132-134 in the issue of last week.

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TABLE II. SUMMARY OF RESULTS OF TRENT PROCESS

Kind of Coal	Oil Used, Gal. per Ton	Raw Coal: Ash, per Cent	Raw Coal: Corrected Ash, per Cent	Raw Coal: Sulphur, per Cent	Cleaned Coal: Weight, per Cent	Cleaned Coal: Ash, per Cent	Cleaned Coal: Sulphur, per Cent	Refuse: Weight, per Cent	Refuse: Ash, per Cent	Refuse: Corrected Ash, per Cent	Refuse: Sulphur, per Cent	Efficiency: Ash Reduction, per Cent	Efficiency: Combustible Recovery, per Cent	Efficiency: Sulphur Reduction, per Cent	Time of Agitation, Hours
Anthracite culm I	65	27 7	30 4	1 00	74 0	7 0	0 70	26 0	87 0	95 0	1 99	74 7	97 8	30	0 5
Anthracite culm II	65	31 4	34 8	1 63	69 0	6 5	0 85	31 0	87 0	95 6	3 05	79 2	98 0	48	0 5
Anthracite, Rhode Island	75	21 7	23 8	0 85	82 0	6 7	0 83	18 0	90 7	98 3	0 95	69 2	99 5	..	2 0
Bituminous, Pittsburgh	80	12 5	14 2	1 27	92 0	6 0	1 34	8 0	88 0	95 2	0 40	52 0	99 5	..	0 1
Bituminous, Upper Freeport	80	9 3	11 2	2 28	96 5	6 7	2 34	3 5	87 6	94 8	0 60	28 0	99 7	.	2 0
Bituminous, bone coal refuse	80	21 7	23 9	0 93	88 0	12 5	0 80	12 0	88 7	96 9	2 08	42 3	99 4	14	1 0
Bituminous, Illinois	80	16 6	20 7	5 33	85 0	7 4	5 28	15 0	69 7	76 6	2 25	55 4	89 8	1	3 0
Bituminous, Indiana	80	9 9	13 0	4 38	96 4	6 3	4 27	3 6	86 2	93 5	0 80	36 4	99 8	3	0 5
Bituminous, Oklahoma	80	19 5	23 6	4 74	69 0	5 7	3 08	31 0	50 5	59 0	8 50	70 8	83 5	35	2 0
Bituminous, Washington	80	22 6	24 7	0 49	87 5	13 6	0 50	12 5	85 0	92 1	0 50	39 8	98 7	..	0 5
Bituminous refuse, New Mexico	60	54 7	59 3	0 55	45 0	22 9	0 86	55 0	80 6	87 3	0 29	58 1	82 8	.	2 0
Bituminous refuse, Tennessee	50	63 5	69 4	1 64	31 0	20 6	1 48	69 0	82 7	90 2	1 65	67 7	77 8	10	2 0
Bituminous refuse, Alabama	80	23 5	26 2	1 60	80 5	6 6	1 76	19 5	92 8	100 7	0 90	72 0	100	..	1 0
Sub-bituminous, Washington	80	19 3	21 1	0 48	87 0	10 0	0 50	13 0	80 0	86 7	0 45	48 4	97 8	.	3 0
Lignite, California (a)	80	35 1	39 3	1 77	81 5	25 7	1 56	18 5	75 9	83 2	2 30	26 8	95 0	12	2 0
Lignite, Texas (a)	80	33 5	36 9	1 44	79 7	18 1	1 42	20 3	94 2	102 4	1 25	46 0	100	1	2 0
Bituminous, Brazil	60	35 6	39 7	2 47	66 0	9 4	2 32	34 0	86 0	94 4	2 71	73 6	97 0	6	4 0

(a) Carbonized at 500 deg. C

coals. This difference is shown clearly in the following analyses showing the percentage of total sulphur, sulphate sulphur, pyritic sulphur, and organic sulphur in a bituminous and an anthracite coal before and after treatment by the Trent process. It will be seen that in the treatment of anthracite coal, the pyritic sulphur almost disappeared from the recovered coal, whereas in treating the bituminous coal a considerable percentage of pyritic sulphur still remained in the cleaned product.

TABLE III. EFFECT OF PROCESS ON SULPHUR PRESENT

Coal	Condition	Ash	Analysis of Sulphur — Total	Pyritic	Sulphate	Organic
Bituminous, Oklahoma	Raw	19 5	4 75	3 01	0 36	1.37
	Recovered	7 9	3 75	2 10	0 15	1 50
	Refuse	46 3	6 50	4 85	0 35	1 30
Authracite culm, Il..	Raw	31 5	1 74	1 21	0 06	0.47
	Recovered	7 0	0 85	0 13	0 07	0 65
	Refuse	66 1	2 73	2 41	0 01	0 31

A study was made of artificially created, that is synthetic, mixtures of coal and pyrite for the purpose of determining definitely the percentage of pyrite which might be removed from a mixture in which the pyrite was known to be separated from the coal particles. It was found that with mixtures of bituminous coal and pyrite ground to pass a 200-mesh sieve, the sulphur could be reduced by the Trent process about 60 per cent. Practically no separation was possible when this mixture was ground to 600 mesh or finer. A more complete separation was obtained when anthracite was mixed with pyrite.

The pyrite refuse separated from the various mixtures always retained considerable quantities of oil, pointing to the fact that where the pyrite was separated in mixtures of coarser mesh this pyrite was mechanically separated from the amalgam by reason of its high density and still retained a film of oil. Coal pyrite containing about 46 per cent sulphur was used in the experiments. It was found possible to make an amalgam of the wet ground pyrite alone with very little of the pyrite remaining suspended in the water.

Results point to the desirability of preliminary water concentration of high-sulphur coals for removal of pyrite before treatment by the Trent process.

TABLE IV. SYNTHETIC MIXTURES OF COAL AND PYRITE

Coal Mixture	Mesh	Raw Coal Mixture Ash Per Cent	Raw Coal Mixture Sulphur Per Cent	Recovered Coal Weight Per Cent	Recovered Coal Ash Per Cent	Recovered Coal Sulphur Per Cent	Refuse Weight Per Cent	Refuse Ash Per Cent	Refuse Sulphur Reduction, Per Cent
Upper Freeport bituminous coal 80 per cent, pyrite 20 per cent	100	17 9	9 72	91.4	12 7	5 61	8 6	65 7	42 1
	200	17 9	9 72	85 5	10 3	3 89	14 5	66 2	60.0
	600	17 9	9 72	98.8	17 2	9 47	1.2	85 5	7.6
Anthracite culm, 80 per cent, pyrite 20 per cent	100	34 5	9 9	70.4	16.0	3 4	29 6	67.7	66.3
	200	34 5	9.9	60.2	10 7	1 4	39 8	69 9	86.0
	600	38.0	10.4	57.0	9.9	2 8	43.0	77.3	72.8

Any oil or organic liquid not miscible with water may be employed in the Trent process, provided its viscosity is not too great. The heavy topped crudes may be employed if the water used in the process is heated, thus reducing the viscosity of the oil. Certain commercial emulsions, such as water-gas tar or "B. S."[1] petroleum emulsions, have been successfully employed. Here again the viscosity must not be too great. B. S. refinery settlings of the consistency of cup grease were not found to be satisfactory at ordinary temperatures. An oil of viscosity equal to 135 seconds (at 25 deg. C.) on the Saybolt viscosimeter gives satisfactory results. When oils of viscosity equal to 400 seconds and upward are employed it is necessary to use heated water if the best results are to be achieved. Using an oil with a viscosity equivalent to 4,000 seconds Saybolt at room temperature it was found necessary to heat the water to 30 deg. C. to effect formation of the amalgam.

In Table V a series of test results are given in which liquids of increasing viscosity were used to clean the same coal.

TABLE V. ANTHRACITE CULM II WITH OILS OF VARIED DENSITY

Oil used — Kind	Gallons per Ton	Viscosity at 25° C. Seconds Saybolt	Raw Coal Ash Per Cent	Raw Coal Sulphur Per Cent	Recovered Coal Weight Per Cent	Recovered Coal Ash Per Cent	Recovered Coal Sulphur Per Cent	Refuse Weight Per Cent	Refuse Ash Per Cent	Refuse Ash Reduction Per Cent
CS_2	150	...	31 4	1 63	61 0	5 9	0 89	39 0	71 6	81 2
C_6H_6	150	4	31 4	1 63	63 0	6 5	0 86	37 0	73 9	79 3
CCl_4	150	...	31 4	1 63	62 3	6 5	0.91	37 7	72 2	79 3
Gas Oil	80	40	31 4	1 63	62 3	6 4	0 66	37 7	73 0	79 6
Fuel oil	64	135	31 4	1.63	66 7	8 6	0 90	33 3	76 8	72.6
Cylinder oil A	64	400	31 4	1 63	69 0	10 7	0 88	31 0	78 0	66 0
Cylinder oil B*	80	4,000	31 4	1 63	74 6	14 0	1.37	25 4	82.2	55 4

*Water heated to 70 deg. C.

Apparently the efficiency of ash separating begins to diminish when an oil greater in viscosity than about 40 seconds Saybolt is employed. The loss of combustible in the refuse is somewhat less with the more viscous oils. Considerably more of the liquids of low viscosity, such as benzol and carbon tetrachloride, must be used to obtain a coherent amalgam than of the oils of higher viscosity.

In the greater part of our work, oil has been used in an amount equal to 0.3 lb. per pound of dry cleaned coal. If a coal contains 25 per cent of removable refuse, it will be necessary to use 450 lb., or about 62 gallons, of light fuel oil per ton of raw coal treated. With coal ground to pass a 200-mesh screen, this quantity of oil produces an amalgam in granules about $\frac{1}{8}$ inch in diameter. If finer ground coal is employed, it may be necessary to use as much as 0.4 lb. oil per pound of dry cleaned coal. It is best to work with as small a quantity of oil as possible because the amalgam can be washed more thoroughly when the granules are fairly small, and the resultant cleaned coal contains less ash.

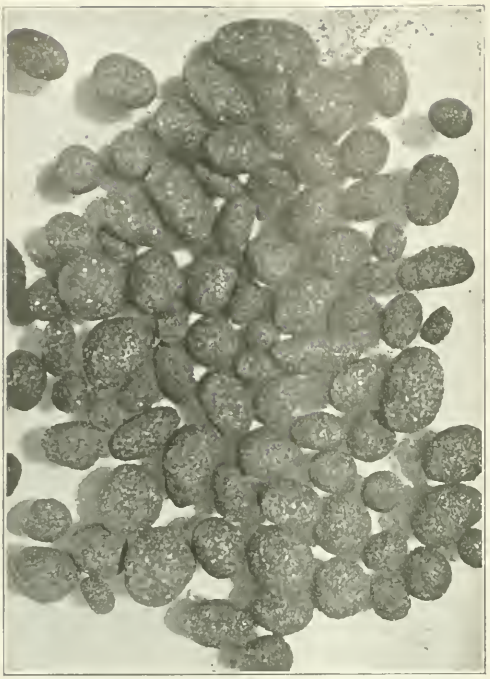
But Little Oil Is Wasted in Process

The ways in which oil possibly may be lost in the process of making the Trent amalgam are: (1) Emulsification in the water, (2) absorption in the refuse, (3) volatilization. No appreciable loss due to emulsification has been found. Apparently the presence of finely pulverized coal in the water effectively prevents emulsification. As a matter of fact, certain commercial emulsions, such as water-gas tar and B. S. emulsion, are broken down by the addition of pulverized coal and may be used as oils for the carrying out of the Trent process. Even if a little oil were retained in the water, using this water over again after separation of the refuse would eliminate loss from this source.

The oil absorbed by the refuse is seldom more than 1 per cent of the total oil used and frequently is practically zero. In certain cases where a refuse high in carbon or pyrite has been obtained, oil losses as large as 15 per cent have been noted. Volatilization losses are negligible with the heavier petroleum oils but of course quite appreciable in the case of gasoline or benzol. It is hardly likely, however, that such volatile oils will be used in any commercial application of the process.

Our results point to the conclusion that oil losses in

[1]Bottom Settlings.



GRANULES OF AMALGAM THAT FORM THEMSELVES IN THE EMULSION OF OIL AND WATER

Oil and coal collect together and form these interesting granules of amalgam which are of great purity. The pyrite content, however, is not much affected.

the first stage of the process, *i.e.*, agitation and separation of refuse, will be negligible. Recovery of oil from the amalgam by distillation is another matter and one outside the scope of the present article.

Little Water When Granules Are Large

An amalgam in granules ¼ inch or larger usually retains 10 to 15 per cent moisture, which will not drain out of the mixture. This includes the hygroscopic moisture of the coal. In an amalgam of very fine granules the moisture content may be as high as 30 to 40 per cent. A large part of this moisture occurs as a coating of the small particles. The size of the granules depends upon the amount of oil used, the size of the coal particles, the method of agitation and time of agitation and to some extent on the character of the coal. Certain sub-bituminous coals required more oil to produce granules of any given size than do the bituminous coals or anthracite.

Brisk agitation of the kind given by rapidly-revolving paddle blades is most efficient in separating mineral matter from coal and in securing rapid formation of the amalgam. At the beginning of our work, oil, coal and water were shaken in a stoppered bottle on a shaking machine. This method of agitation was first employed because it gave conditions of agitation which could be duplicated for a series of tests and permitted of quantitative treatment of materials. It was soon found, however, that better ash reduction was obtained by agitation in a small glass churn with paddle blade revolving at 1,000 r.p.m. and that certain coals which did not form an amalgam when shaken in the bottle were readily worked in the churn. A comparison of values with churn and shaker for a typical coal follows:

TABLE VI. OF ANTHRACITE CULM NO. 1 CONCENTRATION WITH CHURN AND WITH SHAKER

		Recovered Coal — Ash		Recovered Coal — Sulphur		Refuse — Ash		Ash Reduction	
Mesh	Raw Coal Ash Per Cent	Sulphur Per Cent	Churn Per Cent	Shaker Per Cent	Churn Per Cent	Shaker Per Cent	Churn Per Cent	Shaker Per Cent	Churn Per Cent	Shaker Per Cent
65	27 7	1 00	12 8	18 5	0 81	0 81	78	75	53 8	33.2
200	27 7	1 00	9 0	11 8	0 78	0 79	82	80	67.5	57 4
600	27 7	1 00	6 5	10 0	0 66	0 67	87	89	76 5	63.9

Coals differ much in the rapidity with which they form the so-called amalgam. As a general rule it may be stated that coals containing more than 3 or 4 per cent of hygroscopic moisture as received will be difficult to work. When they contain 20 or 30 per cent moisture, as do the lignites, separation is practically impossible even with prolonged agitation.

It has not been found possible to get good separation of carbonaceous material from mineral by treatment of the raw lignite. Lignites are readily wetted by water, and once this occurs, either by wet grinding or by soaking, the water is not readily displaced by oil. On agitation of a wet ground mixture of lignite with oil there is some tendency for separation into layers of coal-oil and refuse-water, but no formation of the compact agglomerate of coal and oil which takes place with bituminous coals or anthracites. Microscopic examination of the mixture shows globules of oil suspended in the mixture of lignite and water, indicating a high surface tension between the oil and the coal-water mixture.

Inspection of Table I will show that the two samples of lignite were carbonized at 500 deg. C. before treatment. Mere drying of the coal at 110 deg. C. is not sufficient. The structure of the coal is not changed by treatment at the lower temperature and the water so driven off is reabsorbed when, prior to the Trent process, the coal is soaked in water. It is necessary to carbonize the lignite at a temperature so high that it will change its structure and render it no longer hygroscopic. When this is done and the carbonized material finely pulverized by grinding in the ball mill, the formation of the amalgam takes place readily, although a large ash reduction is not obtained with the brown woody lignites. The mineral matter in these lignites apparently is finely disseminated throughout the coal substances and complete separation is not attained even though the material is pulverized as fine as a ball mill can provide—that is, to about 5 microns (0.005 mm.).

In considering the efficiency of the Trent process in the cleaning of a given coal, we must then consider a third factor—time of agitation—in addition to ash reduction and combustible recovery. This factor—time of agitation—assumes importance in treating sub-bituminous coals and lignites. Obviously, overhead expenses will become greater as the time of agitation increases and there will be a length of agitation beyond which it will not be profitable to go. In Table VII are set down analyses of a number of coals and the time it was found necessary to agitate them when treating them by the Trent process. Two figures for time of agitation are given, the first column being the time the mixture was agitated before a separation into small agglomerates of coal and oil were visible. At this time the granules are soft and cannot be separated from

TABLE VIII. RELATION BETWEEN FINENESS OF GRINDING AND ASH REDUCTION

	Mesh	Average Size of Particles	Anthracite Culm I	Anthracite Culm II	Upper Freeport I	Upper Freeport II	Upper Freeport Bone Coal Refuse	Illinois 1	Oklahoma	Indiana	Bituminous, Washington	Sub-Bituminous, Washington
		Microns	Per Cent	Per Cent	Per Cent	Per Cent	PerCeot	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
Ash in raw coal	...	...	27 7	31 4	9 3	9 5	21 7	16 6	19 5	9 9	22 6	19 3
Ash in recovered coal	65	130	12 8	13 7	7 9	9 5	17 2	7 6	5 8	9 0	17 1	12 6
	200	35	8 0	6 0	7 4	9.4	13 1	5 6	5 7	9 0	16 0	11.7
	600	10	6 0	5 0	6 7	7.5	12 0	7 4	4 3	6 3	13 6	10 0
Ash in refuse	65	130	78 0	70 0	84 0	....	..	65 1	57 7	.	70 0	62 9
	200	35	82 0	72 0	84 0	..	80 0	55 7	50 5		77 0	70 0
	600	10	88 0	88 0	87 6	86.0	88 0	69 7	30 0	86 2	85 0	80 0
Sulphur in raw coal	...	...	1 0	1 6	2 3	0 9	0 9	5 3	4 7	4 4	0 5	0 5
Sulphur in recovered coal	65	130	0 8	1 6	1 9	0 9	0 9	4 3	3 5	4 1	0 5	0 5
	200	35	0 8	0 9	2 1	0.8	1 0	3 7	3 1	4 1	0 5	0 5
	600	10	0 7	0 9	2 3	0.9	0.8	5 3	2 6	4 3	0 5	0 5
Per cent ash reduction	65	130	53 7	56 4	15 1	0.0	20.7	54 2	70 3	14 2	24 4	34 7
	200	35	71 1	81 0	20 4	1 1	39 6	66 2	70 7	9 1	29 2	39 4
	600	10	78 3	84 1	28 0	21.0	44 6	54 4	77 9	36.4	39 8	48.1

the refuse by screening. After a further period of agitation the granules become larger and more coherent, and by screening, may be filtered from the refuse and water. The figures in the second column show the total time taken for agitation and screening of the amalgam and for the several agitations in fresh water for removal of the last traces of refuse.

TABLE VII. TIME REQUIRED FOR TREATMENT

	Time of Agitation		Analysis				
Name of Coal	First Separation, Minutes	Completion, Minutes	Hg0	Vol Matter	Fixed Carbon	Ash	Sulphur
Bituminous, Pittsburgh	½	10	1.53	33 42	52 72	12 33	1 25
Bituminous, Upper Freeport I	2	30	1.50	34 40	54 92	9.18	2 25
Bituminous, Illinois II	2	30	2.50	31 87	52 42	9.93	1 28
Bituminous, Illinois I	30	180	10.93	36 22	40 30	12 55	4 03
Bituminous, Oklahoma	5	120	5 10	35 80	41 40	17 70	4 46
Bituminous, Indiana	1	30	1.75	42.75	45 80	9.70	4 19
Lignite, Texas	60	..	26.68	31 97	26 55	14 80	1 41
Lignite, Texas, (Carbonized)	20	120	0.05	10.95	55.50	33.50	1 44
Lignite, California	60	..	15.20	48.31	21 29	15 20	1 60
Lignite, Calif. (Carbonized)	30	120	0.05	19.05	45 80	35.10	1.77
Anthracite culm I	2	30	2.15	7.27	64 87	27.70	1 00

The Trent process is unique among coal-cleaning methods in that it treats coal in a very finely pulverized condition. Hence any advantages which are obtained by treatment of finely pulverized coal are advantages peculiar to the process. In the course of the investigation much work has been done to determine the relation between fineness of grinding, ash removal and combustible recovery or, in other words, to show to what degree of fineness it is necessary to grind different coals in order to secure optimum separation of mineral matter from combustible matter.

Table VIII summarizes the results of Trent process treatment of a number of coals at different meshes. A subsequent paper will discuss the subject of fineness of grinding at some length and will consider methods of determining the average size of coal particles in samples pulverized finer than 300-mesh. It is evident from the data as presented in the table that grinding finer than 200 mesh does not give ash reduction sufficient to pay for the increased cost of the finer pulverization. With finer grinding the percentage of combustible matter in the refuse decreases perhaps not in sufficient quantity to warrant the added expense of grinding from 200 mesh to 600 mesh or finer. Sulphur reduction is in general at a maximum with the 200-mesh material.

A number of comparative determinations of the fusibility of ash in raw and cleaned coal were made. Where any considerable amount of ash has been removed, the ash from the cleaned coal shows either a slightly higher softening temperature or larger softening interval. This was not true in the case of the bituminous coal from Oklahoma. Results are given in Table IX.

This paper has presented the results of laboratory-scale tests as to the efficiency of the Trent process in cleaning coal. A noteworthy feature of the operation of the process is the cleanness of separation of mineral matter from combustible matter. Combustible recovery has averaged better than 95 per cent. High-ash reduction has been obtained with the bituminous coals and anthracites. Sulphur reduction has been good in the case of anthracites but poor with the bituminous coals. It has not been found feasible to treat the lignites without preliminary carbonization, because of the difficulty of forming a coherent agglomerate of the raw lignite and oil. Finer pulverization than 200 mesh does not give a sufficient increase in ash reduction with most coals to warrant the added expense of the longer period of grinding. Any oil the viscosity of which is not too great may be employed in the process. Oil losses in the refuse or water are apparently negligible.

TABLE IX. FUSION TEMPERATURE OF ASH IN RAW AND CLEANED COAL

		Fusion		Analysis			
Coal	Raw or Cleaned	Softening Temperature Deg. F.	Temperature of Ash Softening Interval, Deg. F.	Flowing Interval, Deg. F.	Volatile Matter, Per Cent	Fixed Carbon, Per Cent	Ash, Per Cent	Sulphur, Per Cent
Anthracite culm I	Raw	2280	220	50	7 43	64 87	27 70	1.00
	Cleaned	2620	360	70	19 10	73 20	7 70	0 72
Anthracite culm II	Raw	2390	110	100	7 83	60 81	31 36	1 63
	Cleaned	2680	50	50	12 40	78 72	8 88	0.98
Bituminous, Upper Freeport II	Raw	2510	130	230	34 50	56 03	9 47	0.85
	Cleaned	2510	390	120	32 21	60 25	7.54	0.85
Bituminous, bone coal refuse	Raw	2510	230	120	30 12	48 14	21 74	0.93
	Cleaned	2740	460	140	32 92	54 84	12.24	0.80
Bituminous, Pittsburgh	Raw	2340	140	110	34 14	53 29	12.57	2 34
	Cleaned	2340	300	50	34 81	59 00	6 19	1 69
Bituminous, Pittsburgh	Raw	2310	30	170	33 94	53 54	12.52	1 27
	Cleaned	2280	200	210	34 29	59 85	5 86	1.19
Bituminous, Indiana	Raw	2110	130	140	43 51	46 62	9 87	4.26
	Cleaned	2280	340	40	44 30	49 41	6 29	4.27
Bituminous, Oklahoma	Raw	2040	200	120	37 72	43 63	18 65	4 70
	Cleaned	2060	80	270	32 47	53 76	8 77	3 83
Bituminous, Washington	Raw	2510	120	70	30 54	42 55	26 91	0 61
	Cleaned	+2730	+90	...	36 71	50 82	12 47	0.99
Sub-bituminous, Washington	Raw	+2680	...	...	39 13	41.53	19 34	0.48
	Cleaned	+2730	+90	...	43.33	42.99	13 68	0.59

Elements of Design for Anchor Bolts of Machines—III

Bolts for Prospective Installations—Improvised Flush Bolt Anchor—How to Tighten Locknuts so That They Will Not Rattle Loose—Raising a Foundation to a Higher Level—Drawings and Schedules for Specifying Anchor Bolts

By Terrell Croft
St. Louis, Mo.

IT HAS sometimes been found desirable during the erection of a structure to arrange for the installation at some future time of foundation anchor bolts for a light machine. A frequent additional requirement is that nothing in the meantime may extend above the surface of the masonry or foundation top.

If ordinary unpocketed anchor bolts are set in such a foundation, their ends must project above its surface and may be the cause of accidents or delays, the first arising from persons tripping on them, and the second from the fact that if machinery is to be installed it must be raised before it can be skidded to place. Furthermore, the projecting ends of such bolts are frequently bent if the machinery is not installed promptly. Their threads may become battered also, rendering them useless. Unless pockets are provided at the lower ends of the bolts, their replacement is extremely difficult and expensive.

Flush bolts may be advantageously used in such cases. Fig. 15 shows on the left such an anchor in perspective and on the right the anchor installed in a foundation. This device, which is used for light machines, is merely a casting with an extended base and a threaded hole in its center. Such anchors are placed in the concrete of the foundation during construction, and at any future time the machine can be clamped to them by inserting the necessary bolts. As shown at Fig. 15 on the right, some of the anchors on the market are drilled and threaded to accommodate bolts of several sizes, so that one size of anchor can be used for bolts of two or three different diameters.

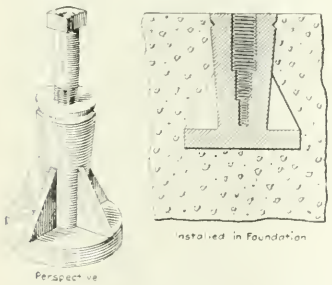


FIG. 15. CAST-METAL BOLT ANCHOR
This lies flush with the top of the foundation when installed and, being made with three separate threaded diameters, is adapted to bolts of as many different sizes.

The anchor shown in Fig. 16 is used for foundations subject to greater vibration. This device can be procured on the market to accommodate bolts of diameters up to 2 in. It consists of three parts, the top casting, the cylindrical casing and the bottom casting. The cylindrical casing is merely a piece of wrought-iron pipe or similar material so that the complete anchor can be made as short or as long as is necessary to satisfy existing conditions. This anchor is assembled and set in the concrete with a bolt temporarily screwed into it to hold the various parts together until after the concrete is poured. After the concrete sets, the bolt can be removed and the open hole at the top of the anchor plugged up with a stud until the time arrives when the machine for which the bolt hole was provided is to be installed.

A home-made flush anchor can be arranged as shown in Fig. 18. This device consists of an ordinary machine bolt provided with an anchor plate screwed into a sleeve coupling. This coupling can be made of machine steel and should have a length of at least four diameters of the bolt upon which it is used. In setting in the concrete, the bolt carrying the anchor plate is screwed midway up into the coupling. This leaves the threaded upper half of the coupling ready for the accommodation of a stud bolt or cap screw when the machine is installed.

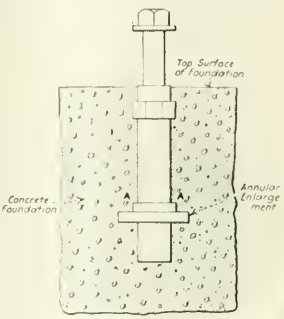


FIG. 16. MOORING ANCHOR FOR CONCRETE
The flange *AA* serves to knit bolt and foundation together.

Lag screws are sometimes used for holding machinery in place. Wooden cleats, as shown in Fig. 19, are provided, in which such screws may be driven. Though this method may hold steady-running machines satisfactorily, it cannot be depended upon if the device is subject to appreciable vibration. Vibration will soon loosen a lag screw and render the attachment of the machine insecure. In constructing concrete floors, where it is impossible to predetermine where anchor bolts will in future be needed, strips of wood of a wedge-shaped section are inserted in the concrete during construction, as shown in Fig. 19. These strips are so placed that it probably will be possible to attach a machine to them by the aid of lag screws, no matter where the machine to be installed must be bolted. The holding power of lag screws of various sizes is shown in Table IV. These values apply to bolts recently installed and one could not expect such results for bolts that had been in the wood for a long time, particularly if the machine that they carried was subject to vibration.

Nuts used upon anchor bolts may be either square or

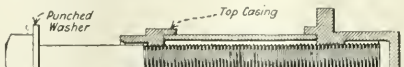


FIG. 17. SAME ANCHOR AS IN FIG. 16
This being in section shows how the anchor is made out of two castings and a piece of pipe casing.

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TABLE IV. HOLDING POWER OF LAG SCREWS.

(These data are from tests made at the University of Iowa by A. J. Cox in the year 1891)

Kind of Wood	Diameter or Size of Screw, Inches	Diameter Hole Bored, Inches	Length of Screw in Wood, Inches	Maximum Resistance, Pounds	No. of Tests Made
Seasoned white oak....	$\frac{1}{2}$	$\frac{1}{2}$	$4\frac{1}{2}$	8,037	3
Seasoned white oak....	$\frac{1}{2}$	$\frac{1}{2}$	3	6,480	1
Seasoned white oak....	$\frac{1}{2}$	$\frac{1}{2}$	$4\frac{1}{2}$	8,780	2
Yellow pine.....	$\frac{1}{2}$	$\frac{1}{2}$	4	3,405	2
Unseasoned white cedar	$\frac{1}{2}$	$\frac{1}{2}$	4	3,405	2

hexagonal. The dimensions of both types have been thoroughly standardized in the United States; hence no more will be said about them here. It is the practice to use square nuts at the lower ends of anchor bolts, particularly if the nut is to be retained in the cavity of a recessed anchor plate. The reason for this is that a square nut, because of its longer edge, cannot turn readily in a properly proportioned cavity in an anchor plate, whereas a hexagonal nut might so turn if the casting were even slightly distorted.

On the other hand, the nut at the top of an anchor bolt bearing against the machine bedplate should, as a rule, be hexagonal, for two reasons. The first is that the hexagonal nut is neater in appearance, the second that such a nut is more "get-at-able." Six possible positions exist in which a wrench can be made to engage a hexagonal nut, whereas with a square nut there are only four. This consideration may be of special importance in locations where space is restricted. In installations where appearance is a factor, polished nuts may be employed. Where they will be manipulated frequently they should be case hardened.

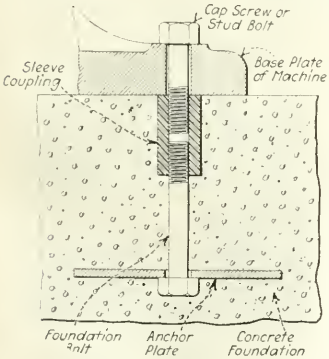


FIG. 18. SLEEVE COUPLING PROVIDES PLACE FOR BOLT

This is a good method when seeking a way to make it possible to place another machine on the same bedplate without drilling holes into the foundation.

Lock washers are sometimes applied (as shown in Fig. 20) between nuts and machinery bedplates. They are used in cases where the machine is subject to vibration that would soon "rattle" off a nut unless the washer were inserted. A locknut can be employed in place of a spring washer, but the time required for manipulating a second nut must in some cases be considered where it is necessary to remove a machine and replace it with another in a minimum length of time. This feature must frequently be considered in various industrial installations. The ends of the lock washer (shown in Fig. 21) normally flare out. It is made of spring steel, so that when the nut is turned down upon it it presses the two ends until they lie in the same plane as shown in Fig. 20. The washer then acts like a compressed spiral spring and presses constantly against the bedplate and the nut, thus preventing the latter from working loose.

Locknuts (Figs. 22, 23 and 24) should be used on practically all foundation anchor bolts unless a spring washer similar to that shown in Fig. 20 is applied. Now if a locknut is to be provided, the usual procedure is to turn the first nut down as tightly as possible and then to apply the locknut, screwing it down still harder. It appears to be the belief that this increased pressure will always lock the nut. This inference is incorrect, however, because the increased pressure tends to force the upper face of the thread of the lower nut away from the lower face of the bolt thread. This may transfer the holding stress from the primary nut to the locknut. The illustration at Fig. 24 shows this condition in exaggerated form. It is evident from this that where the locknut is put on as just decribed, the stress may be wholly borne by the lower face of the bolt thread and the upper face of the locknut thread, and the threads of the lower nut will not have any stress upon them. In other words, the lower nut in this case is merely a washer.

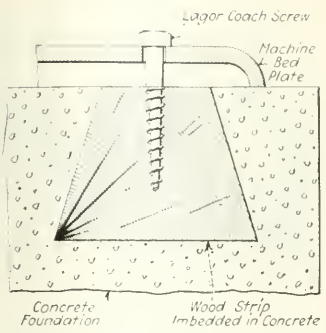
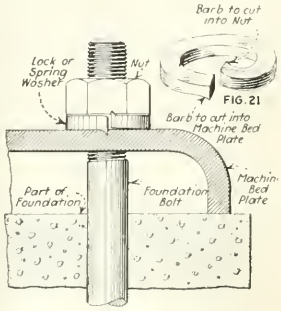


FIG. 19. LIGHT MACHINERY SECURED BY LAG SCREWS

If it is anticipated that it will be desirable later to place light machinery without it being known in advance exactly where the machinery is to go, wood strips can be embedded in the concrete for the reception of lag screws.

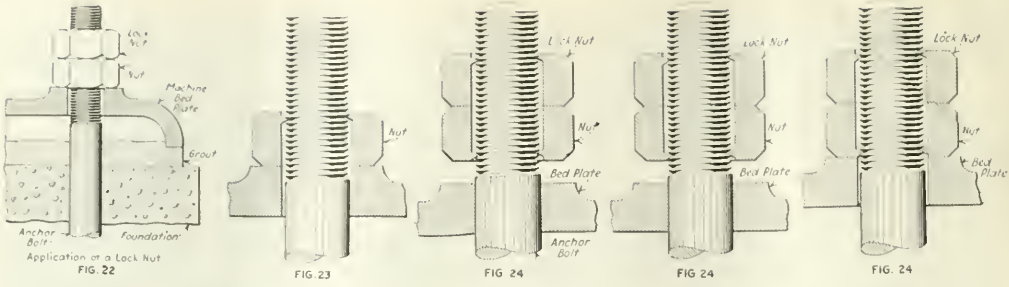
The correct method of putting on a locknut is shown in the two right-hand Figs. 24. With this method the conditions indicated in the figure on the left are corrected by causing the nut to perform its proper function and by making the locknut hold the primary nut effectively in place.

For a correct application the nut should be set to place as follows: Turn the lower nut down on its bolt until its lower face lies slightly above the upper surface of the bedplate, next apply the locknut until (as shown in center Fig. 24) its lower face rests firmly against the upper face of the first nut. Then turn down the first nut and the locknut together until the first nut rests quite tightly (right Fig. 24) against the surface to be held. The locknut now may be given another half turn, more or less, whereby its effectiveness will be increased somewhat. Why the method just outlined is the proper one to follow is obvious. When the locknut is turned down against the lower nut (shown in center Fig. 24), the lower faces of the threads of the primary



FIGS. 20 AND 21. SPRING WASHER

A cut and warped washer with barbs at the two ends. The barbs cut into the nut and bedplate, the nut being screwed tight against the pressure of the spring washer.



FIGS. 22, 23 AND 24. ILLUSTRATING THE BEST WAY OF SECURING LOCKNUTS SO THAT THEY WILL NOT RATTLE OFF

Fig. 23 shows nut as it should be and is, when used alone. Only one thread is shown on the nut. When used with a locknut it should not be screwed down tight to the bedplate. Fig. 24 shows what happens when the locknut is added. Here on the left the locknut is pushing the thread of lower nut from the thread of the bolt. When the locknut finally is tightened by an extra half turn it thrusts the lower nut downward so that the threads of that nut bear downward on the top of the threads of the bolt. The reaction between the two nuts keeps them from turning. Extreme wrench pressure is not necessary.

nut bear on the upper faces of the bolt threads. This relation between nut and bolt threads is due to the pressure imparted by the locknut. The pressure of the lower nut reacts against that due to the locknut and the upper faces of the locknut threads bear on the lower faces of the bolt threads. The reaction between the locknut and the primary nut serves, as it were, to bind the two. This binding effect is preserved if the lower nut and the locknut are turned down together on the bolt until the lower face of the lower nut rests tightly upon the bedplate surface. Additional tightening of the locknut will, because of the elasticity of iron, increase this binding effect.

Extending the anchor bolts of an old foundation involves a certain amount of reconstruction. Such extensions ordinarily can be made, however. Figs. 25 and 26, detailing a typical case, indicate the usual procedure. Fig. 25 shows, in dashed lines, an old foundation, the full lines indicating the new foundation. The

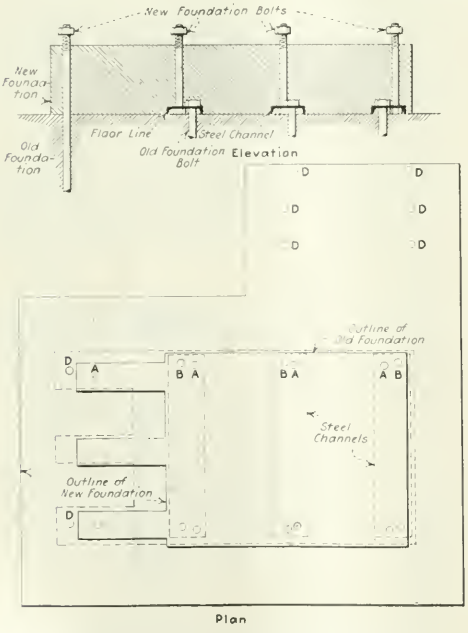


FIG. 25. METHOD OF RAISING FOUNDATION

Steel channels are placed across foundation, and the nuts of the old bolts bear on them. Bolt holes are drilled in the channels, and new bolts are passed through these to the proposed level of the bedplate of the machine.

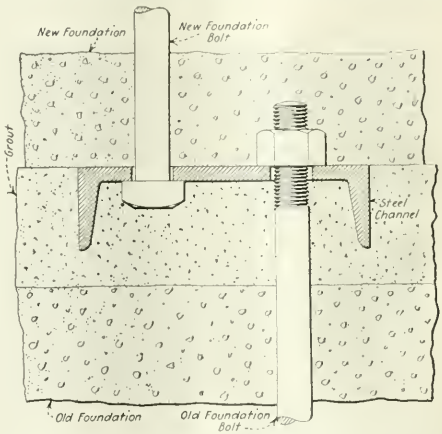


FIG. 26. DETAIL OF CHANNEL IRON OF FIG. 25

The bolts while not in line are near enough to make the hold secure. The channel is stiff enough to prevent distortion, and the resistance of the foundation in itself makes any such a twist improbable.

letter *A* shows the positions of the old anchor bolts, while *B* and *D* indicate the new positions. The new foundation, as shown in elevation, extends only a relatively short distance above the floor line. This distance was insufficient to accommodate anchor bolts for the new machine of such lengths that they would provide the requisite resistance to withdrawal, hence it was decided, in so far as possible, to tie the new bolts to the old ones, thus making them act in conjunction. The old machine bedplate rested on a level with the floor; hence the old anchor bolts (*A*) projected about 3 in. above the floor line.

Over the projecting ends of each pair of old bolts a length of properly-drilled channel was placed as shown at Fig. 26, and the new bolts were inserted through holes in these channels. The channels and bolt heads were then grouted securely in place as indicated. Next the new concrete foundation was cast around the new bolts, a templet being provided to hold their upper ends in correct position. The bolts (*D*) came outside

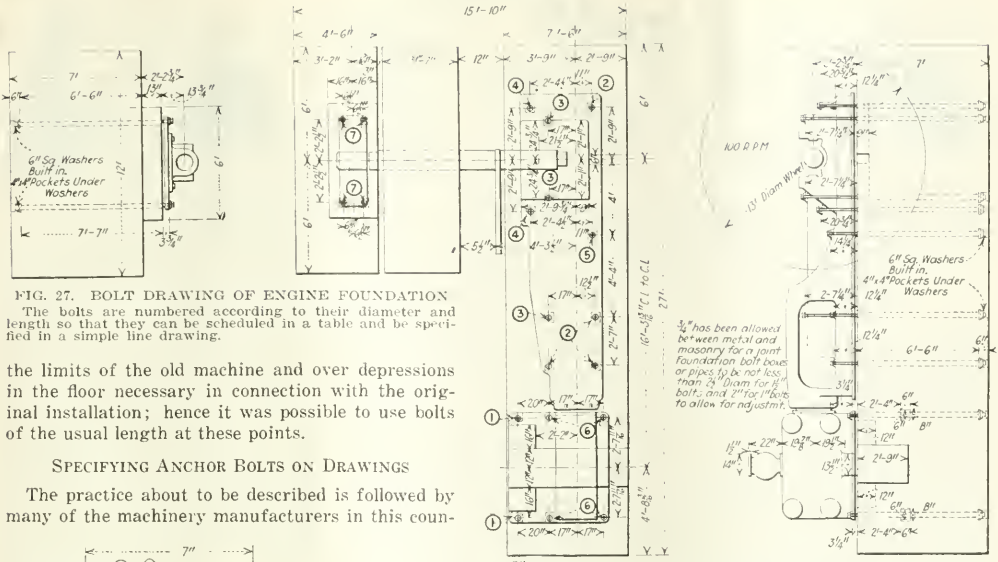

6" Sq. Washers Built in, 6½" Pockets Under Washers
100 R.P.M.
¾" has been allowed between metal and masonry for a joint. Foundation bolt boxes or pipes, ty be not less than 2½" Diam for 1" bolts, and 2" for 1¼" bolts to allow for adjustmt.

FIG. 27. BOLT DRAWING OF ENGINE FOUNDATION
The bolts are numbered according to their diameter and length so that they can be scheduled in a table and be specified in a simple line drawing.

the limits of the old machine and over depressions in the floor necessary in connection with the original installation; hence it was possible to use bolts of the usual length at these points.

Specifying Anchor Bolts on Drawings

The practice about to be described is followed by many of the machinery manufacturers in this country in specifying anchor bolts on drawings. Before the bolts can be specified it is desirable to prepare a scale drawing of the machine or prime mover on its foundation, as shown in Fig. 27. An effort should be made to so lay out the foundation that the fewest possible number of sizes of anchor bolts will be necessary. That is, the ideal anchor-bolt specification would be one that called for all bolts to be of the same diameter and length. It is seldom feasible to so lay out a large foundation that such simplicity can be realized, but an effort should be made in that direction.

The anchor bolts should be numbered on the foundation drawing as shown in Fig. 27. For example, all of the bolts of one length and diameter should be numbered 1; all those of another length and diameter, 2; and so on. This being done, a combination drawing (Fig. 28) should be laid out as part of the foundation drawing tracing. This shows dimensions of all of the anchor bolts required. It should show in addition the nuts, washers and anchor plates, and in fact should indicate the complete anchor-bolt equipment.

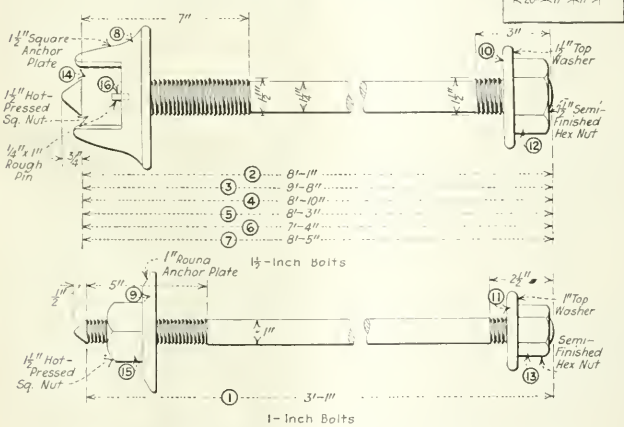


FIG. 28. DRAWING SHOWING VARIETIES OF BOLTS, ETC., NEEDED
Each bolt length has a different number, as has also each kind of washer, nut or pin. When the time comes to erect the machine it is more than humiliating and annoying to find that one or more of the bolts needed is absent.

This drawing (Fig. 28) next should be reduced to a schedule like that of Fig. 29, which any clerk or man not familiar with mechanical drawings can readily decipher and understand. This schedule will indicate exactly how many pieces of each size of nuts, bolts, washers, anchors, etc., are required.

It may appear that the schedule of Fig. 29 is a duplication of the drawing Fig. 28. This is true in a way, but on the other hand the schedule summarizes all of the information relative to material required for anchor bolts, which summation cannot be ascertained from the drawing itself without the expenditure of an appreciable amount of time. It is apparent from a study of Figs. 27, 28 and 29 that each of the reference numbers, 1, 2, 3, etc., refers in each of the three instances to one specific part.

ITEM	No. WANTED	SIZE AND NAME	MAT	PAT. No	DWG. No	STOCK STD	STOCK OTHER
1	2	1" x 31'-1" Foundation Bolt				2316	
2	4	1¼" x 1'-1" " "				2330	
3	3	1¼" x 9'-8" " "	W.I.				
4	2	1¼" x 8'-10" " "	"				
5	1	1¼" x 8'-3" " "				2334	
6	4	1¼" x 7'-4" " "				2327	
7	4	1¼" x 5'-1" " "				2338	
8	1	1½" Cotton Washer Square				2276	
9	2	1" " " " Round	C.I.	SE 7645	127-169		
10	1	1½" Top " "				142	
11	2	1" " " "	S.S.C.		127-17		
12	1	1½" Semi-Finished Hex Nut				377	
13	2	1" " " "				373	
14	1	1½" Hot-Pressed Sq. Nut				443	
15	2	1" " " "				426	
16	1	½" x 1" Rough Pin	S.T.L.				

FIG. 29. COMPLETED BOLT, WASHER, NUT AND PIN SCHEDULE
With a record like this it is easy to check whether the right bolts are provided.

Problems of Operating Men

Edited by James T. Beard

Certify the Mine Superintendent

It Is Manifestly Unfair to a Certified Mine Foreman To Require Him to Obey Orders of an Uncertified Mine Superintendent Contrary to His Own Judgment

ALLOW me to say a word regarding the qualifications of mine superintendents. At the present time nothing more seems to be required of that official than that he possess a good education, be honest and know something of the business of coal mining.

On the other hand, the mine foreman, who is hired and discharged at the will of the superintendent, must hold a certificate of competency before he can serve any length of time in the position of foreman of a mine. In nine cases out of ten the certified mine foreman hired by the superintendent will be far superior to his boss in his knowledge of practical coal mining.

The mining laws of Tennessee (Sec. 18) provide that any person who shall act as mine foreman, assistant mine foreman or gas boss for a period of more than thirty days without having a certificate of competency shall be fined $100 and costs and imprisoned not less than sixty days at the discretion of the court.

Unfair Feature of Mining Law Regarding Certification

No one can deny that it is highly unfair to require the certification of mine foremen, assistant foremen and firebosses (gas bosses) and, then, place them subject to the orders and under the control of uncertified mine superintendents.

Because of a superintendent's lack of knowledge in respect to mining matters underground, which is often the case, his orders to the foreman may be right or wrong. The law, however, makes no distinction and gives the foreman no right to follow his own judgment, but requires him to obey the directions of his superior officer.

In my opinion, every mine superintendent should hold a certificate of competency obtained in the same manner as prescribed for foremen, assistant foremen and firebosses. This would only be a fair and safe proposition. A mine foreman would not then be handicapped, as he often is at the present time by having to serve under a superintendent who has little or no practical knowledge of underground work.

It has been my experience that, as long as everything is running smoothly in the mine, the tonnage gaining and the cost growing less each day, the superintendent gets all the credit. On the other hand, if things go wrong the tonnage drops and the cost creeps higher, the blame is sure to rest on the foreman.

Were the truth known, however, it would be seen that where unfavorable conditions exist in a mine the work of the foreman is made harder than ever, and he should be credited for the efforts he must then put forth to overcome these difficulties. It is when conditions are thus unfavorable that an experienced superintendent will be able to co-operate with his foremen in securing the best possible results.

Crawford, Tenn. OSCAR H. JONES.

Firebosses as State Officials

An efficient fireboss will perform his work with the same thoroughness whether acting for a company or the state. Mine examiners needed to look after the men during working hours.

SOME time ago I raised a question, in the columns of *Coal Age*, in regard to clothing the fireboss with state authority. The same question was discussed later at the February meeting of the Rocky Mountain Coal Mining Institute, held in Denver.

The general opinion there expressed seem to be that any fireboss who would fail to perform his work thoroughly and report the condition of the mine, without fear or favor when working for a company, could not be considered a safe man if in the employ of the state. In any case, the work of a fireboss must comply with the requirements of the law, and his duties are clearly explained in Section 73 of the Coal Mining Laws of Colorado.

When Responsibility Ceases

My claim has always been that a fireboss' responsibility ceases when he has finished his examination of the mine in the morning and made a true report of its condition to the foreman, after writing out the same in the book kept for that purpose.

Although the law does require (Sec. 76) that a second examination shall be made by the mine foreman, assistant foreman or fireboss, during working hours, when the men are at work in their places, this does not mean that the fireboss shall return into the mine for that purpose, after completing his examination in the morning.

In my opinion, it would be far better to appoint safety examiners to go about the mine and examine each working place while the men are at work. These men should be in the mine the entire shift to see that each man performs his work safely and keep a careful watch over the ventilation to see that no unsafe conditions arise.

If I understand correctly, the idea of making the fireboss a state official is that he would then act independently of the foreman and the company, and would not live and act in fear of displeasing them and possibly losing his job when he felt obliged to report conditions in the mine as unsafe for work.

Let me state that I have been a fireboss myself and have never felt the force of this argument. On the other hand, in every instance both the foreman in charge and the company officials have co-operated with me in making the mine safe and removing any dangers that existed in the workings. It is my belief, therefore, that there is no need of changing the status of our firebosses.

In the framing of the Colorado Mining Laws care has been taken to safeguard the work of firebossing by providing (Sec. 79) for the suspension and prosecution of any fireboss found to have neglected his duty or made a false report regarding conditions in the mine.

The law has further recognized the value of the fireboss by providing (Sec. 80) that, in emergency, a regularly employed fireboss can act as assistant foreman. To my mind, there is nothing to be gained by going further and making him a state official.

Farr, Col. ROBRET A. MARSHALL.

Co-operation Among Mine Officials

Active, hearty co-operation essential to success. The mine superintendent being the recognized head is responsible for what he permits being done.

IN THE discussion in *Coal Age*, relative to the duties and responsibilities of mine officials, there appears to be a conflict in the attitude of foremen toward their superintendents. Some writers seem to think that the average mine superintendent is not capable to manage affairs in the mine. Reference has been made to his duties not being sufficiently defined in our state mining laws.

As has been remarked, doubtless many mine superintendents have numerous shortcomings. Since I obtained my

mine foreman's certificate in 1893, I have served under seven different mine superintendents. My experience is that, with one exception, these have all been men of ability and common sense.

At one time I filled the office of superintendent myself, but gave it up feeling that I was not fitted for the work, which was not in my line. Though having myself many shortcomings success has attended my efforts to a larger degree when serving as mine foreman than when attempting the larger duties and responsibilities of mine superintendent.

True it is, the mine foreman has many troubles. He needs all the assistance and co-operation that can be given him. As foreman, I would always take my troubles directly to the superintendent, and found much help in conferring with him in every situation.

Some foremen much prefer to manage affairs underground in their own way and resent any interference on the part of the superintendent, whom they would rather see stay out of the mine. In my opinion, this is a wrong attitude for a foreman to assume. The presence of the superintendent in the mine should be welcomed at every turn. His relation to the work would then be helpful.

Responsibility Rests Finally on the Mine Superintendent

Frequently, a mine foreman will think that because his duties are laid down by law, giving him direct charge of operations in the mine, the superintendent should not interfere. He forgets that the superintendent is also bound by law to oversee all the acts of the foreman in charge and subscribe to the same by signing his reports, which makes him the lawful head and responsible for what he permits.

The mine operator naturally holds the superintendent responsible for whatever is done in and around the mines. He is the logical agent of the operator. He must sign for the payroll, authorize all expenditures and endorse all bills for supplies and material. How is it possible for him to do this properly if he is not thoroughly informed of everything done even if the mine is subject to his control?

In closing, let me urge that there should be established at all mines a system of consultation whereby the superintendent would confer personally with each worker in charge of a separate branch of the work. This would include talking frankly with the foreman, assistant foremen, firebosses, motormen, machine runners, timbermen and trackmen, personally, as occasion may offer.

In addition to these personal talks, the superintendent should hold weekly or bi-weekly meetings with his men for the sake of a general conference on all matters pertaining to the work. In this way, true business would take the place of false reports, and sincere co-operation would be effected to the great advantage of the undertaking.

Gans, Pa. R. W. Lightburn.

Certification of Mine Officials

Certifying to the competency of mine officials, by examination before a state board, viewed from the coal operators' viewpoint. Casting reflections on the work of examination and the value of the certificate.

From time to time, I have read with deep interest the articles that have appeared in *Coal Age*, bearing on the change that was made in the Bituminous Mining Law of Pennsylvania, permitting mine owners to employ uncertified men who, in their judgment, were qualified to fill the positions of mine foreman, assistant foreman, and fireboss.

Any one well acquainted with the coal-mining industry, who may chance to have read some of these articles, would be led to believe that coal-mining companies, as a rule, have little if any interest in safeguarding the lives of their men and properties.

After reading some of the statements made by writers one would think that much legislation is necessary to compel operators to employ men who are competent to fill the positions named. They urge the repeal of this clause in the state mining law, which they believe has greatly increased the hazards of coal mining.

From the general trend of the articles mentioned, I imagine many of these writers believe that the mere matter of going before an examining board and answering a few simple questions, which any one could learn with little application, endows the individual so examined and certified with certain superior powers and faculties not possessed by persons less fortunate.

Is Certification Harmful?

During an experience of over 20 years covering every coal field on this continent, I have come into intimate contact with many mine officials both certified and uncertified. My conviction is that the granting of certificates to a large number of men, certifying to their competency to fill the positions named, has the effect of doing more harm than good. This conclusion is based on many observed facts in connection with the attitude of a certain type of men toward their responsibilities both before and after certification.

Let me say, here, that to many men who have not had the opportunity of early education an examination on the principles and practice of coal mining is a very trying ordeal. I have known many men who would make splendid mine officials, having the personality, character, experience and mental equipment fitting them for these positions. Notwithstanding the possession of these qualities, however, they hold back from taking the examination through a fear that they lack the necessary education that would enable them to pass the test required.

On the other hand, I have seen many blustering, self-assertive men, who were in nowise qualified by nature for any position of trust or responsibility. Invariably, these men believe that, by brushing up on the rudiments of mining and passing the examination, they will be amply fitted to fill any position. In their estimation all mining knowledge is centered in themselves.

My observation leads me to state that it is this latter class of men who usually find fault with their superintendents and delude themselves into the belief that they could fill the same position with far better success. Perhaps the superintendent is a college man, or an engineer who has spent years in acquiring a knowledge of coal mining that renders him capable of handling the larger problems in methods of working and economic administration.

Men Holding Certificates Often Boastful and Envious

If the said superintendent, however, does not happen to possess a certificate, which he could readily get if he so desired, our friend at once concludes that his superior officer has no knowledge of coal mining, holding his position as superintendent only through favor.

The type of man just described goes through life deploring his lot and never has a good word for any man higher up in the organization. He is constantly boasting that he could do much better if given the chance which, of course, never comes to him, as his capabilities are well known by the management, who long have had his number.

Such a man has no conception of the duties and responsibilities that rest on a mine superintendent, nor the many trials and difficulties that that official must overcome. In his estimate, the entire weight and success of the enterprise rests on his own shoulders and he is the man who deserves the credit for what is done.

Some of the correspondents have even maintained that uncertified men are more careless and reckless than men who hold certificates of competency. But my observation convinces me that the opposite of this is true. The knowledge of having passed an examination seems to give most men a very exalted idea of their capability and they make the great mistake of believing themselves infallible.

Equally Qualified But Uncertified Men More Conservative

On the other hand, the uncertified man, though his knowledge of mining matters may be amply sufficient to insure the successful operation of a mine, is not generally so egotistical as the man holding a certificate. The former is more apt to carefully consider the many difficult problems confronting him before coming to a final decision on any of them.

In studying this question of certified and uncertified men, I have examined the papers of practically all the states requiring the examination of candidates for the positions of mine foreman, assistant foreman and fireboss. I consider the average mining examination to be perfunctory and of no great value in determining the fitness of applicants for these positions.

The usual procedure of men who desire to fit themselves for examination is to study up, for a time, previous to going before the board. In nine cases out of ten, the candidate who has passed the examination and received his certificate ceases to study, the incentive for which has gone. As a result, it is not long before the man has forgotten practically all that he had learned.

In this discussion, some writers have maintained that the average coal operator is not a competent judge of the qualifications of the men he employs, unless the operator himself has taken the examination and is a certified man.

Fountain Head of Mining Knowledge

That is as much as to say that the fountain head of all mining knowledge is in the examining board; and the man who has not qualified under that board does not possess the necessary knowledge to fit him for holding a responsible position in the operation of a mine.

I presume it would follow that a certified man is one possessed of this necessary knowledge. Who, may I ask, is more competent to judge of the qualifications of employees, or who can be more interested in their ability to make good, than the mine manager whose personal success depends on the successful operation of the mine in his charge?

It is only reasonable to assume that the qualifications of the men an operator employs are carefully weighed before they are given any responsible position, inasmuch as the safety of both the mine and the men depend on the capabilities of the one placed in charge.

Mining men agree, of course, that all mine managers and superintendents should be experienced in every detail of coal-mining work. They must be thoroughly versed in safe and economical mining methods. As mining of coal is essentially an engineering proposition, it is my belief that mine superintendents should possess an engineering education and be capable of handling the work from an engineering point of view.

Knowledge of engineering is necessary to insure care and precision in the laying out of workings underground, and the adoption of suitable methods of mining, haulage, drainage and ventilation. Moreover, only by this means is it possible to insure the adoption of all necessary safety precautions.

In regard to compelling mine superintendents to pass the examination and hold a certificate of competency, allow me to say that any man who is at all qualified to act as mine superintendent would have no difficulty in passing this test with a high rating. Of course, it is true that some mine officials are chosen to fill the office of superintendent of mines through favoritism; but these instances are comparatively rare and the general run of these mine officials throughout the country are men who are competent, conscientious and efficient. Most of their shortcomings only exist in the imagination of others.

Indiana, Pa. W. A. G.

Remedy for Roof Troubles

Roof trouble is mostly due to maintaining too large territories standing open. Inducing heavy falls of roof, the remedy.

SPEAKING of the best method of overcoming roof troubles, C. McManiman advises working smaller areas and using every means possible to induce good falls of roof when drawing back the pillars. His remarks, *Coal Age*, June 30, p. 1163, appeal to me as striking the keynote of the situation.

Not infrequently when inspecting mine workings the place appears as though the territory had been gutted. For one reason and another much of the coal has not been taken out. At times, timbers are to be seen standing back in the waste and preventing the fall of roof that would otherwise occur.

As a result of these conditions, the roof pressure is carried over onto the pillars that remain, crushing the coal and making it more difficult and dangerous to mine. It goes without saying that the remedy lies, as has been stated, in taking out the coal completely and removing all standing timber.

May Be Necessary to Cause a Fall

If it happens that the roof rock is hard and does not break readily it may be necessary to place shots in the roof to break the rock and cause a fall that will relieve the pressure on the pillars. In no case, must a large area be left standing open as it is a menace to safety in more ways than one.

When working under conditions where the roof fails to break readily, the plan I usually adopt is to reduce the width of the rooms from 24 ft. to 18 ft., or from 21 to 15, and increase the room centers a like amount, thereby increasing the width of the pillars and giving greater support to the roof in the first working.

At the same time, I would push the work rapidly forward in those sections where the pillars are smaller and there is greater danger of a creep being started. It has been my custom, at the end of the week when the mine is to be idle over Sunday, to give attention to measures that will induce heavy roof falls in areas that are standing open. Generally, Monday morning will show good results and the fireboss will report conditions most improved.

Avoiding Creep or Squeeze

This plan may well be adopted in mines where there are large standing areas, and continued until the gutted area is entirely abolished and the roof pressure under control. In my experience, it is this practice that has avoided creep or squeeze in many instances.

Roof troubles, however, are not confined to a weak and tender shale or slate overlying the coal. One cause of trouble is gas existing in the roof, which will sometimes cause the slate to fall to a height of 16 or 18 ft. above the floor. Such a condition is dangerous at times, particularly if the ventilation should be suddenly cut off. The inrush of gas following a fall of roof may create an extremely dangerous condition if the fall occurs inside of the last breakthrough in a room or heading. Holes must then be placed in the roof at intervals to drain off the gas.

Gans, Pa. R. W. Lightburn.

Inquiries Of General Interest

Wrong Principle Applied

The Center of Gravity of a Plane Figure Only Corresponds to Its Center of Mass When the Figure Is Symmetrical with Respect to Any Axial Line Drawn Through That Center

STUDYING over the question of finding the depth of water in an airway having the form of a trapezoid, when the airway is half-full, which has been solved in two different ways in *Coal Age*, Apr. 15, p. 676, and June 23, p. 1125, it has occurred to me that a third solution could be found by calculating the distance of the center of gravity of the cross-section of the airway above the floor.

Following the method of making this calculation for a trapezoid having a height h, the width of the bottom being m and that at the top n (*Coal Miners' Pocketbook*, p. 155), and making $h = 6$ ft., $m = 9$ ft., $n = 6$ ft., I find for the height of the center of gravity above the floor:

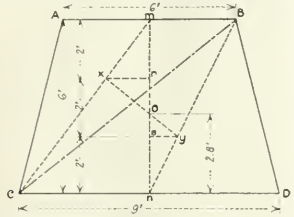
$$\frac{h}{3}\left(\frac{m+2n}{m+n}\right) = \frac{6}{3}\left(\frac{9+2\times 6}{9+6}\right) = 2.8\ ft.$$

This result, however, does not agree with the previous answers, which gave for the depth of the water 2.7 ft. Allow me to ask: Is it wrong to assume that the center of gravity of this figure is at the surface of the water when the airway is half-full? If the principle is correct, why do the results not agree; or have I calculated the center of gravity above the floor correctly?

Pikeville, Ky. Student.

The correspondent has applied a wrong principle in the solution of this problem. The cross-section of the airway being a plain figure (trapezoid), the center of mass, so to speak, will be at the surface of the water when the airway is half-full. But this is not the center of gravity of the figure.

The center of gravity corresponds to the center of mass of a plain figure only when the figure is symmetrical with respect to any axial line of the figure, which is not true of the trapezoid. It would be true of a square or a circle.



The center of gravity of this trapezoid is rightly figured and is 2.8 ft. above the base of the figure. It can be found graphically as illustrated in the accompanying figure. For example, divide the trapezoid *ABCD* into two triangles by the line *BC*; also bisect the figure vertically by the line *mn* and draw the lines *Cm* and *Bn*.

Now, the center of gravity of the triangle *ABC* is at *x*, *mx* being one-third of *Cm*. Likewise, the center of gravity of the triangle *BCD* is at *y*, *ny* being one-third of *Bn*.

Finally, the center of gravity of the trapezoid lies on the line *xy*; and applying the principle of moments, the areas of the two triangles having the same altitude are as 6:9, which gives the proportions

$$yO : xO :: 6 : 9$$
$$yO : xy :: 6 : 15$$
$$\text{and } yO = 6/15\ xy = 2/5\ xy$$

But, mx being $1/3\ Cm$, $mr = 1/3\ mn$; and, likewise $ns = 1/3\ mn$. Therefore, $rs = 1/3\ mn = 1/3\ (6) = 2$ ft. Also, since $Oy = 2/5\ xy$, $Os = 2/5\ rs = 2/5 \times 1/3\ mn = 2/15\ mn$; and lastly $On = (2/15 + 1/3)\ mn = 7/15\ mn$; or, in this case, $On = 7/15 \times 6 = 2.8$ ft.

Examination Questions Answered

Examination, Foremen and Assistant Foremen, Fifteenth Anthracite District

(*Hazleton, Pa., April* 19, 20, 1921).

QUESTION—*How many tons of coal are there under a tract of land containing 50 acres, the seam being 8 ft. thick and lying comparatively flat, assuming that a cubic yard of coal will weigh a ton?*

ANSWER—There being 43,560 sq.ft. in an acre, the cubic contents of an 8-ft. seam of coal, underlying 50 acres and comparatively flat, is $(50 \times 43{,}560 \times 8) \div 27 = 645{,}333$ cu.yd., which is also the estimated tonnage of coal underlying this tract, assuming a cubic yard of coal weighs a ton.

QUESTION—*State how the several mine gases may be detected. In what proportion in the air are they fatal to life?*

ANSWER — Methane or marsh gas (CH_4) may be detected in the mine by observing the effect this gas produces on the flame of a safety lamp. The first effect is to produce a faintly visible non-luminous cap surmounting the lamp flame, which should first be drawn down to a mere glimmer. The height of the flame cap increases with the percentage of gas present, up to about 3 or 3½ per cent, when the flame becomes unsteady, assuming a wavelike motion and filling the gauze chimney of the lamp. This gas contains no available oxygen and the mixture with air becomes fatal when the oxygen content is reduced to 10 per cent. The mixture then contains 52.2 per cent of methane, the air being otherwise normal.

Carbon monoxide (CO) is best detected by observing its effect on small caged animals, such as birds and mice, which are prostrated in much quicker time than the same effect is produced on the human system. One-tenth of one per cent of this gas present in the air is fatal to life if breathed for any length of time. Slightly greater percentages of the gas are instantly fatal when breathed.

Carbon dioxide (CO_2) is detected by the dim burning of lamps and its effect on the human system, causing headache, nausea and pains in the back and limbs, according to the percentage of gas present in the air. About 18 per cent of this gas, when mixed with the air breathed, produces a fatal effect on the human system, the air being otherwise normal.

Hydrogen sulphide (H_2S) is detected by its smell, which resembles that of rotten eggs. This gas is extremely poisonous, deranging the system, very small percentages becoming fatal when breathed for any length of time.

QUESTION—*What gases enter into the composition of firedamp and in what proportion?*

ANSWER—The American definition of firedamp is any inflammable or explosive mixture of methane (marsh gas) with air. In this meaning of the term, the gases forming firedamp are the oxygen and nitrogen of the air and methane. The lower inflammable limit of methane mixed with air occurs when the proportion of gas to air is 1:40, the mixture then containing 2.5 per cent of the gas. The higher inflammable limit occurs when the proportion of gas to air is 1:2.4, the mixture then containing 29.5 per cent of the gas.

QUESTION — *In what part of the workings of a mine is the greatest pressure required for the removal of firedamp or marsh gas?*

ANSWER—When the gas has accumulated at the face of a steep pitch, or in rise workings, or above the fall in pillar workings, a stronger pressure is required to cause the ventilating current to sweep away the gas. The gas being lighter than air has a tendency to hang at the face of a steep pitch or in rise workings and is often removed with difficulty.

QUESTION — *Would you consider it safe to work, in a mine giving off a considerable quantity of marsh gas, by the use of an electric lamp only? Give reasons in full.*

ANSWER — With proper care, in the use of an electric cap lamp, an experienced miner will find no difficulty in working in places generating marsh gas, provided the place is sufficiently ventilated to prevent the depletion of the oxygen of the mine air to such an extent as to affect breathing and other noxious gases are not present. However, in the use of the electric cap lamp, in a mine generating a considerable quantity of marsh gas, it is always well to have at hand a safety lamp of an approved type, as a means of indicating the gaseous condition of the air and the possible presence of blackdamp.

QUESTION — *Describe the various methods of prospecting and boring for coal, that in your opinion will give the most accurate information.*

ANSWER—The prospecting of a tract of coal land requires a thorough knowledge of the geological formations in that locality in order to derive the best results. With this information at hand boring for the coal is commenced and several holes being uniformly distributed over the tract. The only reliable method of boring for coal is that by means of the core drill. The depth of the several holes must be determined by the knowledge of the coal measures in the locality prospected. The depths of the holes in connection with the elevations of the surface at each hole will determine the inclination of the seam, while the cores taken out will reveal the nature of the strata and the fitness of the coal seams penetrated and show also the quality of the coal.

A. I. M. E. Will Have Sixteen Coal Papers

AFTER much work in committee the American Institute of Mining and Metallurgical Engineers has completed its extremely interesting program. It will meet Monday, Sept. 12, at Irem Temple, Wilkes-Barre, Pa., the morning being devoted to registration and the afternoon to a discussion of five coal papers, W. J. Richards, president of the Philadelphia & Reading Coal & Iron Co., presiding.

The papers being prepared are "Anthracite Preparation," by D. C. Ashmead, anthracite editor of *Coal Age*, giving a history of the development of anthracite treatment, an account of the rolls, mechanical pickers, spirals, jigs, specific-gravity flotation devices, tables, etc., used in the preparation of anthracite and an account of several representative breakers. By the courtesy of all the operators using devices of an unusual description Mr. Ashmead will be able to present many tables showing their efficiency in the cleaning of coal. He also will present some data regarding the use of water and the personnel employed in breaker operation.

H. D. Kynor will read a paper on the "Mechanical Mining of Anthracite" and Donald Markle in his paper on "Anthracoal" will give an account of the coking of mixtures of anthracite and bituminous coal. "The Slush Problem" will be treated by John Griffen, of the Dorr Co., and "The Ashley Planes" will be described by H. Stein.

H. N. Eavenson to Describe "The Lynch Plant"

In the evening, C. F. Huber, president of the Lehigh & Wilkes-Barre Coal Co., presiding, Howard N. Eavenson, consulting engineer, of Pittsburgh, and former chief engineer of the United States Coal & Coke Co., will describe "The Lynch Plant" in Kentucky, with an output of 8,000 tons a day and a daily capacity of 10,000 tons. The tipple has many innovations, all the coal being handled on belts and the sizing being performed on grizzlies with revolving bars. E. W. Parker, director of the Anthracite Bureau of Information and former coal statistician of the U. S. Geological Survey, will give "A General Description of the Anthracite Field" with maps and sections. Concurrently the Metal Section, with S. T. Nicholson presiding, will present two papers.

The next day an automobile trip will be made through the Wyoming Valley, visiting breakers and mine plants. The International Correspondence Schools, of Scranton, will be the host at noon and in the auditorium of these interesting schools, W. W. Inglis, president of the Glen Alden Coal Co., presiding, Douglas Bunting, general superintendent, Lehigh Valley Coal Co., will discuss "Mine Fires." This will be followed by the following papers: "Comparison of Cost of Operation of Steam versus Electric Hoists," by W. A. Thomas, assistant chief, Oxide West Department, New Jersey Zinc Co., Palmerton, Pa.; "The Determination of the Proper Electrical Equipment for the Electric Hoist," by Graham Bright, engineer, Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.; "The Automatic Substation for Mines," by R. J. Wensley, and "Application of Pulverized Coal to Boilers," by J. M. Fuller. The party will return on the Laurel Line.

With R. M. Catlin, mining engineer, New Jersey Zinc Co., presiding, the evening will be given over to a technical session, the papers to be presented being "The Hoisting Plant of the Pittsburgh Terminal Railroad & Coal Co.—Cloverdale Mine," by M. D. Kirk, chief engineer of that company; "Power Installation at Cloverdale," by C. M. Means, consulting engineer, of Pittsburgh, Pa., and "The Sinking of the Butte Superior Shaft," by James Bruce, manager, Davis-Daly Copper Co., Butte, Mont.

On Wednesday a session in mine accounting with R. V. Norris, consulting engineer, presiding, a paper will be presented by J. B. Dilworth, mining engineer, of Philadelphia, Pa., on "Capitalization and Valuation of Mine Development." This will be followed by a discussion. At noon the guests will be entertained at lunch by the Wyoming Valley Shovel Works. The afternoon program will include "Queen Mine—Hearth Roaster," by J. Moore Samuel; "Flotation of Pyrite," by W. S. Morley; "Relation of Gypsum Supplies to Milling," by D. H. Newland. This session will have Rufus J. Foster, chairman, executive committee, International Correspondence Schools, as chairman.

The Society of Economic Geologists will have a joint session both morning and afternoon of Wednesday and in the afternoon session there will be two papers for coal men: "Stratigraphy of the Anthracite Region," by James P. Kemp, with discussion, and "Geology of the Namma Coal Field," by Edel Moldenke. In the evening Irem Temple will be the scene of the annual dinner and ball of the institute.

On Thursday the institute will take an all-day excursion by automobile, with lunch en route, followed by adjournment, but the courtesy of the anthracite operators will not end with Thursday. Any who wish to visit points not provided for in the program will be enabled to do so on Friday by making their desires known to the committee.

Anthracite Miners Want More Pay Next Year

EXETER Local, No. 1084, submitted to the convention held in District No. 1 a wage-revision proposal for the approval of the district executive board and of the Tri-district convention of the anthracite region. It demands: A 40-per cent increase in wages and a seven-hour day, payment to consideration miners of $8 per shift and to their laborers $7; carpenters' wage to be 85c. per hour; foremen's, 95c.; car repairers', 80c.; shop foremen's, 85c.; payment of 20c. per foot for laying wood or iron road; time and one-half for all overtime and double time for Sundays and holidays; granting of the checkoff and of the closed shop including complete recognition by the operators of the United Mine Workers of America; payment for coal on the basis of 2,240 lb. to the ton; payment of $15 for opening chambers, gangways or airways and of $2 for each prop set.

When these demands were presented several delegates declared that the scale proposed was in conflict with a resolution previously adopted by the convention calling for a wage increase of 60 per cent and the six-hour day.

D. T. & I. Makes 20 Per Cent Cut in Freight Rates on Coal and Coke

HENRY FORD'S railroad, the Detroit, Toledo & Ironton, filed new rate schedules Wednesday, July 27, with the Interstate Commerce Commission proposing drastic cuts in freight rates effective Aug. 29 on heavy traffic, including anthracite and bituminous coal and coke moving from the Ohio River to Detroit and other points.

The new tariffs provide for a 20 per cent reduction on grain and grain products, coke, and anthracite coal moving from Temperance, where it is taken from other lines to points in Michigan and on soft coal on a distance scale basis.

The Detroit, Toledo & Ironton R.R., which runs from Detroit, on Lake Erie, to Ironton, on the Ohio River, crosses or has connections with such roads as the Pennsylvania, New York Central, Michigan Central, Baltimore & Ohio, Canadian Pacific and other large systems.

Central Pennsylvania Operators Seek Wage Reduction: Again Ask Conference

IN SESSION at Altoona, Pa., on July 28, the Central Pennsylvania Coal Producers' Association addressed a letter to John Brophy, president of district No. 2, asking for a joint conference on or before Aug. 5. The operators definitely stated that they desired a wage reduction. Previous requests, not making any mention of the reason for seeking a conference, were refused for that alleged reason by the Executive Committee of the district. The association says in the letter of July 28 that "Unless ways and means can be devised of decreasing cost, the mines will be able to work less and less days, and so it is manifest that the present situation is one which seriously affects both miners and operators."

In West Virginia the coal cars are shunted and held, while the coal miners are hunted and shelled.—*Washington Post.*

Senate Committee Informed as to Liberal Wages Paid to Mingo Men and of Practices of Mine Workers' Union

Mingo Employees Enjoy Larger Wages than Men in Adjacent Union Fields — Company Stores Charge Less Than Independent—Violence Used on Non-Union Men by Mine Workers

AT THE session of the Senate Committee on Education and Labor in Washington, Captain J. R. Brockus, of the West Virginia State police, testified that in the Mingo County disorder and strike members of the mine workers' union were among the assailants of the state police, using high-powered rifles, three officials being shot in the back. He denied that the police had acted in a high-handed manner or destroyed property or evicted miners. He said that 273 families were living in tents in Mingo County, including 284 women and 1,304 children. The men living in tents were not all, as is commonly alleged, striking miners who had been evicted from company houses and who consequently had nowhere else to go. Some of those living in tents near Williamson had come from Kentucky at the instigation of union officials. He said that rifles and ammunition had been concealed in the houses of the mine workers.

Harry Olmsted compared the wages paid in the Mingo field with those in the unionized sections of West Virginia. He submitted a comparative statement of the wages paid in October to the five miners at the twenty-six mines in the Williamson field who earned the highest sums for the month at each mine as compared with the five highest-paid miners at twenty-six mines in the Kanawha field, which is unionized.

According to Mr. Olmsted the average wage for the month of October at twenty-six mines in the Williamson field was $293.03. The average deductions were $52.14 and the average sum paid in cash to each miner was $240.89.

The average wages paid to miners in the Williamson field exceeded by $85.93 the average wages paid to the same number of miners in the unionized mines in the Kanawha field. The average deduction from the miners' pay in the Williamson field was only $1.77 greater than in the Kanawha field, so that the average miner in the Williamson field received $85.93 more than the average Kanawha miner after all deductions are considered.

Company Store Prices for Food Not Excessive

To prove that prices at the company stores were not excessive Mr. Olmsted compared the cost of eighteen domestic foods as obtained at two independent stores operating in Williamson and seven company stores selected within the field. The two independent stores selected are the leading grocery stores of Williamson. The plant stores selected were put upon the list without any previous investigation, and were chosen as typical of the stores throughout the field. He added that the company stores handled the highest grade of products that the market affords. Table II shows these figures.

Petitions have been presented to the committee, said Mr. Olmsted, carrying the names of 4,931 workmen out of a total of 5,200 men on the payrolls, June 30, 1921. These petitions set out "that the workmen are entirely satisfied with the terms of their employment; that they do not wish to become members of the United Mine Workers or to be interfered with in their relations with this organization, and that they wish that your committee shall make no finding that will render probable any disturbance of their present relations with their employers."

"These petitions," said Mr. Olmsted, "while originating with the Labor Committee of the operators' association, were all circulated, generally by the men themselves, and the signatures were purely voluntary; the men signed them not only freely but eagerly. In some cases workmen learning that such petitions were in existence presented themselves to the office of the company for which they worked and inquired about them and asked permission to sign them. Instances of this sort are not isolated and can be shown to have existed in large numbers and at various places.

"At one colliery the impression got out that the petition was for the purpose of soliciting and obtaining members for the United Mine Workers of America; with this understanding the men refused to sign. After the exact nature of the petition had been explained to them the men signed *en masse*. In a large number of instances 100 per cent of the employees set their names to the documents. No workman approached declined to sign the petitions. The employees who failed to sign did so solely because of lack of opportunity."

Discussing the difficulty in getting the union to keep the collective bargains they so noisily advocate and so readily break, Mr. Olmsted said:

"The record of the operations of the United Mine Workers' organization in the State of Kansas show that for forty-five months, ending Dec. 31, 1919, there were 705 separate strikes at individual mines in the state involving a loss to the men in wages (as figured at the scale rate per day per man) of $3,866,780.34. The strikes averaged 15⅔ per month. All of these strikes were called and maintained in violation of specific contract provisions."

TABLE II. FOOD PRICES AT INDEPENDENT AND COMPANY STORES

	Independent Stores		Company Stores	
	Culross	Lilly	Borderland	Thacker
Flour, per 24 lb. bag	$1 86	$1 75	$1 50	$1 60
Meal, per 10 lb. bag	.35	30	.30	35
Pinto beans, per lb.	08¾		10	12½
Navy beans, per lb.	08¾	10	08½	08½
Potatoes, per bu.	3 25 new	3 00 new	3 00 old	3 00 old
Lard, per lb.	25	25	.20	22
Butter, per lb.	50	50	60	45
Corn, standard 2-lb. can	20	20	12½	15
Tomatoes, 2½-lb. can	20	20	20	18
Sugar, per lb.	10	10	10	10
Eggs, per doz.	35	35	35	35
Cheese, per lb.	45	45	40	30
Round steak, per lb.	40	40	40	35
Porterhouse, per lb.	50	45	...	40
Rump roast, per lb.	40	35	35	30
Soup beef, per lb.	.25	.25	35	25
Pork loins, per lb.	.35	.35	.35	.35

TABLE I WAGES IN MINGO FIELD COMPARED WITH THOSE IN THE KANAWHA FIELD.

Name of Miner	Campany or Mine	Gross Wage	Deductions: Smithing	Coal	Doctor	Store	Rent	Lights	Misc.	Union	Cash Received
Mingo Field											
Mike Butkrouch	Bailey Coal Co.	$406 23	$0 50	....	$1 00	....	....	....	$0 50	....	$404 23
Henry Markhoutz	Crystal Block Coal & Coke Co.	509 74	....	$0 50	0 50	$36 00	....	....	....	....	472 24
John Rabe	Majestic Coal Co.	404 13	0 50	2 00	2 00	50 00	$8 00	$1 25	....	....	340 80
G. F. Cotton	Marietta Mine	480 40	0 50	1 00	2 00	246 36	8 00	....	....	....	222 54
John Crymer	Solvay Mine	413 13	0 50	....	2 00	.....	....	....	....	....	410 63
Kanawa Field											
Thos. Catus	Sovereign Coal Co.	$377 91	0 50	1 60	3 40	0 95	6 00	....	1 50	$1 60	268 31
Steve Guyroru	Sovereign Coal Co.	367 17	0 50	2 26	....	19 00	6 00	....	1 24	1 60	333 23
Lonie Tate	Sovereign Coal Co.	352 26	0 50	2 20	3 40	.....	6 00			1 60	338 56
Mabie Korok	Kelly Mine No. 6	331 46	0 35	....	2 50	....	....		3 20	2 60	322 81
Frank Chesta	Cabin Creek Acme No. 2	351 11	0 50	....	2.50	8 00	....		23.84	2.60	313 67

Mr. Olmsted complained much of local law officers who were in league with the United Mine Workers, saying:

"During the progress of the strike, particularly during its earlier days, it became necessary for some of the coal companies operating in the field to solicit workmen from outside the territory and to transport them to the mines within the field for the purpose of augmenting the number of men within the field who were gradually returning to work. Upon the arrival of trains carrying workmen into the field, the railway station at Williamson was jammed with crowds of strikers, organizers and agitators. Banners were paraded declaring the existence of the strike. Upon alighting the men would be surrounded by dozens and perhaps hundreds of the strikers, who would seek first to induce them to refuse to go further and to accept transportation back.

"Should this manner of persuasion fail, it was followed by a system of abuse, scathing denunciation, vilification, threats and, in frequent cases, assaults. At times there appeared among the strikers assisting in this enterprise men who were officers of the law in Mingo County, who let it be known that they were officers of the law and sought to impress upon the newcomers the idea that their mission was illegal and would be opposed and was being opposed in support of the law."

In the closing session C. E. Lively testified that while a member of the union he served as a private detective for the mine owners. Senator McKellar, a member of the investigating committee, scored this practice, alleging that private detectives had no right to get in this way into the confidences of the mine workers' union. S. E. Avis, of counsel for the operators, defended the procedure, saying that the agents of the Department of Justice resorted to the practice of having its detectives join unions and other organizations in order to obtain information.

A. M. Belcher for the operators and Thomas L. Lewis of the New River Coal Operators' Association alleged that the mine owners in Illinois, Indiana, Ohio, and western Pennsylvania had conspired with the mine workers to unionize West Virginia and destroy the competition of West Virginia coal. Mr. Belcher declared the conspiracy dated back twenty-three years. H. W. Houston asked that the miners be given opportunity to reply to these charges.

Chairman Kenyon said it had not been determined whether anything could be gained by conducting an investigation on the spot. Counsel for the miners insisted that the committee could not secure a proper survey of the situation unless it visited the scene of the disorders.

The committee has concluded its hearings in Washington and has not yet decided whether to hold any meetings in Mingo County, West Virginia.

Georges Creek Asks Wages Cut to Meet Somerset County Competition

OUT of seventy mines in the Georges Creek region, only seventeen are in operation, the lower wages paid in Somerset County, Pennsylvania, being the cause of the cessation of operation. Somerset County has already reduced wages, and now there is a rumor that a further reduction of from 20c. to 25c. is to be made. Georges Creek will then be wholly unable to compete, and consequently the operators are asking a reduction in the wages now paid by those companies that are still working. The Somerset County field lies just north of that along Georges Creek and is a keen competitor with its southern rival.

PENNSYLVANIA COAL CO. DAMAGES MUCH PROPERTY IN EAST SCRANTON.—West Scranton is the mine-cave section of the City of Scranton but, on July 7, subsidence affected the eastern part of the city on Prescott Ave. and Ash St., about eighteen acres being disturbed by the earth movement. The Pennsylvania Coal Co., whose mines are under this section, has undertaken to make all repairs to the streets which have been necessitated by these caves. The company denies that mining the third Dunmore bed was the cause of the trouble and states that it resulted from a squeeze consequent on mining the Third Vein. On July 9, only two days after the cave, the repair of the injured buildings was started.

Regulations Issued for Operation of Coal Lands Under Land Leasing Law

REGULATIONS under which the coal lands covered by the so-called Land Leasing law are to be operated have just been promulgated by Albert Bacon Fall, Secretary of the Interior, and are to be administered by the Bureau of Mines.

The purpose of these regulations, according to a statement given out by the department, is to carry out the intention of the Land Leasing law concerning conservation on public lands and the protection of the government's interest in the coal deposits. Under the terms of the Land Leasing law the government becomes essentially a partner with the operator, and it is, therefore, essential that its interest as a partner should be safeguarded. These regulations will not be in conflict with the state laws, as it is the intention of the department to co-operate fully with the states, in order to give uniform conservation measures on both state and public lands, but in addition to protecting the public welfare the department must protect its own interest in the public land.

It will be the endeavor of the department to institute the most workable conservation measures on the public lands and use its influence for unified and similar principles of conservation within the states. As the interest of the government in this case lies in the production of the coal with the highest possible extraction from the beds at the minimum expense, the interest of the Department of the Interior as lessor and conservation agency will be essentially identical with those of the lessee who expects to make money on long-continued production from these lands.

These regulations were drawn up after conferences with many operators and it is expected that they can be applied without difficulty.

Kentucky Worked Up Again Over Possibility of Tonnage Tax on Coal

J. H. TAYLOR, candidate for Representative in the Kentucky Legislature from the Harlan-Leslie district, has made a declaration favoring a 10c. tonnage tax on coal mined in that state. As this is one of the largest coal-producing sections of the state, a victory by Mr. Taylor in the coming election may be fraught with interesting results in the session of the Legislature which begins in January, 1922.

There is much discussion, as a consequence, of the whole subject of coal taxation. Such a tax, it is believed, would mean a disturbance of the equilibrium of competition between Kentucky and the Central Competitive field on northbound shipments and between Kentucky and Tennessee, West Virginia and Virginia on southbound shipments.

Northern West Virginia Wants Wage Cut: Keeney Refuses to Initiate Move

FINDING that the mines could work only 40 per cent of full time by reason of competition from fields enjoying a lower wage scale, the Executive Board of the Northern West Virginia Coal Operators Association has been negotiating with that of the district organization of the United Mine Workers of America to obtain a readjustment which would give the miners of that section steadier work. On July 3 District President Keeney said that his district would follow any lead made by the Central Competitive District but would not initiate any.

ANTHRACITE MINE INSPECTORS GIVEN SALARY INCREASE; NOW RECEIVE $4,800 A YEAR.—Owing to legislation passed at the last session of the Pennsylvania Legislature the anthracite mine inspectors are receiving an increase in salary of $1,300 annually, making their pay $400 a calendar month. Under the same law the position was made appointive and not elective. All the former inspectors have been reappointed for four-year terms.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

THE United States is practically through the period of violent business disturbance which began in May, 1920, according to a review of business conditions by the National Bank of Commerce in New York. "We will from time to time have visible evidences of the distressing conditions through which the country has been passing," the review continues, "but these occurrences should be regarded not as indices to forward conditions but as relating to the past. The changes which have taken place have not as yet been recognized by the business public for two main reasons. The period of normal midsummer dullness now at hand has obscured the certain evidences of improvement and there has been lacking a thorough comprehension of credit conditions.

"Failure to recognize the passing of the period of insufficient credit has resulted from lack of recognition of the fact that for a long time the credit shortage has been apparent rather than real and due in large part to the unsatisfactory character of some of the risks offered. There is now no bank credit available for operations designed to hold prices at fictitious levels. Orderly organized marketing, if fair, succeeds, but attempts to hold prices above the levels determined by international supply and demand are certain eventually to fail. American business and government alike have thus far kept clear of entanglements of this character, but even so, American business cannot avoid their indirect effects.

"The main requisite for a return toward normal conditions is the will to try for business on a level where it can be had. The period of general liquidation of the raw material markets of the United States has passed. Recent declines are due to conditions of supply and demand in specific lines. This is a normal condition. Wholesale prices of many classes of manufactures have been fully deflated. This is not true in all lines, but recent cuts in the price of steel and widespread reductions in wages indicate that adjustment in wholesale prices will not be long delayed. Retail prices show wide irregularities, and high-cost stocks have been largely disposed of. Price stabilization is, therefore, not far ahead."

Railroads Add Men at Lower Wages

As a result of the recent wage reduction the railroads are employing more men, made necessary because of increased work on maintenance and other repair work. Practically all the carriers delayed work on additions and betterments until they could take advantage of the 12 per cent reduction in wages which went into effect July 1, and which was estimated to mean an annual saving for the roads of $400,000,000. Substantial increases in the number of men now employed are reported by the New York Central, Pennsylvania, Seaboard Air Line, Erie, Lackawanna and other roads.

The New York Central employed 63,911 men on June 1. The figures were 70,411 on July 1 and during July the officials of the Central estimate that at least 2,500 additional men have been taken on. The locomotive shops at Depew, N. Y., were reopened July 26 after a shutdown of two months, and more than 500 men re-employed at a reduced wage. These shops formerly employed 900 men, while at West Albany the locomotive shops, which have been closed for the last six months, reopened July 25 with 600 men, or half the normal working force.

The Pennsylvania system had a working force on all its lines on the last of May totaling 185,625, which was increased to 188,144 in June. The Seaboard Air Line showed increases of from 500 to 1,000 men from June 1 to the present time.

Freight Loading Figures Rebound

Loading of revenue freight on the railroads of the United States totaled 776,252 cars during the week which ended on July 16, according to reports received by the car service division of the American Railway Association. This was an increase of 136,554 cars over the preceding week, when, however, the observance of Fourth of July resulted in a drop in the total. Comparisons show that the total for the week of July 16 was 166,599 cars less than were loaded during the corresponding week in 1920 and 126,044 less than were loaded during the corresponding week in 1919, but it was approximately 1,400 cars more than were loaded during the week which ended on July 2 last and which consisted of six full working days.

Due to reduction in demand for coal cars in the Eastern district an increase of 2,525 in the number of surplus cars during the seven-day period ended July 15 was shown by reports to the car service division of the American Railway Association. The total number of surplus cars July 15 was 372,050, compared with 369,525 July 8.

Alabama Mill on Full Time

According to an announcement from Birmingham, Ala., the plant of the Dwight Manufacturing Co. has resumed on full time. This gives employment to 1,500 men.

Reading Iron Co. Mills Reopen

A puddle of the Reading Iron Co., at Reading, Pa., and a plant of the same concern at Danville, Pa., resumed operations Monday, July 25. The company's Universal Mill, at Reading, resumed Tuesday, July 26.

286,025 Idle in Pennsylvania Cities

A total of 286,025 persons were out of work in the principal cities of Pennsylvania on July 15, according to figures compiled by the State Bureau of Employment. The figures indicate there were 116,000 men and 11,550 women idle in the Philadelphia district, 50,850 in the Pittsburgh district, 14,545 in Harrisburg, 20,850 in Altoona, 14,775 in Erie, 19,290 in Johnstown, 5,890 in McKeesport, 10,250 in New Kensington, 15,375 in Scranton and 6,650 in Williamsport.

Sheet Mill Operations Gain

Sheet mill operations in the Pittsburgh district are improving, several of the independents running at the rate of 30 per cent or more, although a few are still shut down entirely. The leading interest operated at about 35 per cent during the week ended July 23, which was an improvement of 5 per cent over the preceding week.

Consult Industries to Make Government Statistics of Maximum Value

A NEW opportunity for industry to suggest how governmental statistics and research can be of maximum value to them was afforded July 29 by the Secretary of Commerce when, at his request, representatives of the principal industries assembled in Washington. The invitation was extended through the National Manufacturers' Association. While the conference was called primarily to discuss matters pertaining to the census of manufacturers, the whole subject of the department's work came in for discussion during the course of the day. After many angles of opinion had been developed, a committee of nine was appointed to perfect recommendations. W. B. Reed, secretary of the National Coal Association, was made a member of the committee as a representative of the coal industry.

Secretary Hoover opened the meeting with the explanation that it has been determined to gather the next biennial manufacturing census so as to show commodity units, as well as monetary values. The department, he said, is anxious to gather data which will be helpful without plaguing the industries.

F. M. Feiker, assistant to the Secretary of Commerce, told the assembly that the department has been conferring for a number of weeks with committees from the various industries and trades and has received a large number of suggestions as to how the department could be most helpful. The plan now is to classify and apply these suggestions in a way that will be entirely practical. Among the suggestions that the department is particularly anxious to carry into effect are those indicating how waste in industry can be eliminated and how figures can be made the basis of prophecy rather than possess only historical interest. Mr. Feiker stated that it has been developed that there are more than 5,500 trade and industrial associations in the country and that one of the efforts of the department will be to bring into closer touch associations representing buyers and those representative of sellers.

Julius Klein, chief of the Bureau of Foreign and Domestic Commerce, expressed the opinion that too much publicity had been given in the past to the plans of the government in its efforts to assist American industries to extend their markets abroad. In the future, information which is of value to foreign competitiors will be more carefully guarded so that American business men may have the full value of the government's work.

J. E. O'Toole Is New Secretary of National Retail Coal Merchants Association

JOSEPH E. O'TOOLE, of Wilmington, Del., but for the past several years an assistant on the floor of the U. S. Senate, has been selected by the National Retail Coal Merchants' Association as its executive secretary. He is a graduate of the Georgetown University law school, where he specialized in matters pertaining to taxation. Since his graduation he has continued his work as a member of the Senate's secretarial staff but never has engaged in the private practice of his profession. Mr. O'Toole states that the offices of the association soon are to be moved to Washington.

The announcement that the offices of the association are to be moved to Washington is gratifying to many interests concerned with coal. This decision is an interesting development in that this is one of the associations which has persisted heretofore in declining to make Washington its national headquarters. The producers and the wholesalers long have had representation in Washington, but the fact that the retailers did not have representation there frequently was the cause of inconvenience in efforts to learn the viewpoint of all elements engaged in the coal trade.

While some members of Congress are fond of hurling unkind remarks at the so-called lobbyists, the real truth of the matter is that most members of Congress are anxious to obtain the views of representatives of the industries. It is manifestly impossible for legislators to obtain a composite picture of any trade situation without some such point of contact.

While government departments prior to the war regarded it as unethical to encourage the formation of industrial associations, it became evident during the war that such organizations are essential if the government is to maintain close contact with the industries of the country. Recently there has been some upgrowth of sentiment against trade organizations. This wave of opposition had its inception in a report made by the Federal Trade Commission. The attitude of the Department of Justice also has been interpreted as being unfriendly to these organizations, but Secretary Hoover has worked actively with them and has shown a disposition to defend and to encourage them. An important development affecting trade associations is expected in the near future.

JOSEPH E. O'TOOLE
Executive Secretary, National Retail Coal Merchants Association

Independent Anthracite Operators Will Not Accept Fowler Bill Provisions

THE Fowler bill, which provides for the payment of 2 per cent of the mine value of the anthracite produced, probably will not be accepted by the Independent Anthracite Operators' Association. The association is expected to make a formal announcement to that effect in a few days, having arrived at that conclusion informally at a meeting held in Philadelphia. The members are awaiting final word from the counsel of the association before taking definite action. There is plenty of time for that announcement, as the Fowler and Kohler bills do not become operative till Aug. 27. The operators believe the mine-cave bills unconstitutional and they will take legal action in order to have the matter tested in the courts.

FRICK COKE CO. REDUCES WAGES 10 PER CENT.—On Saturday, July 30, the H. C. Frick Coke Co. announced that it would cut the wages of its employees 10 per cent on Aug. 1. This is the second reduction this year. The mining rate will be $2.38 per 100 bu. Unskilled inside labor will receive $4.15 a day; unskilled outside labor, $3 a day. Day labor for skilled men inside will be $5 and $5.05.

Government Regulation of Coal, Says Senator Reed, As Unjust as Seizure of All Private Industries

AFTER having withheld from publication for nearly a month the address he made in the Senate on the Frelinghuysen seasonal coal rate bill, Senator Reed, of Missouri, completed the revision of his address and allowed its publication in the *Congressional Record* of July 26.

"The remedies for high coal prices," declared Senator Reed in that address, "are not to be found within the provisions of this socialistic bill or its socialistic twin brother. Neither are they to be found in other socialistic remedies. The proposition is a plain one of providing cars and equipment to transport coal. The mines will produce it and the people will buy it at such times and seasons as their wants manifest. These were the conditions under which the country lived and prospered prior to 1914. The war is over and the interference of the government, which may in part have been justified during that great struggle, should also come to an end.

"The pending bill is but the forerunner of another bill worse than this a thousandfold, a proposition of regulation. Let me tell my friends something about this question of regulation. Let me tell it to them in language so plain it may seem brutal. Continue this system of regulation a few months longer and you will have established the fundamental principle of socialism in this country. It has been proposed here to control coal because it is a necessity of life, a great primal necessity. I grant it is a great primal necessity. But if we are going to embark upon the policy of regulating everything that is a necessity because it is a necessity, where will we stop?

Where Regulation of Primal Necessities Would Lead

"Coal is no more a primal necessity than clothing. Our ancestors wore clothes of some kind for thousands of years before they knew anything about the burning of coal. Coal is no more a primal necessity than steel or iron, because we must have the steel or iron to produce the coal, just as we must have the coal to produce the steel or iron. Destroy the steel industry, destroy the knowledge of how to produce iron and we would go back to barbarism. There would be no plow to turn the soil. There would be no reaper to harvest the crop. There would be no railroads to carry their mighty burdens across the continent. There would be no great steamships plowing the ocean. There would be no massive buildings lifting their roofs almost to the very skies. It would be barbarism.

"If we should regulate coal, clearly we should regulate steel and iron; and if steel and iron, why not copper? Why not take over and own the copper mines, because copper also is a great necessity? After the minerals that God Almighty made, then why not take under the beneficent protection of the government the things which men produce? Why not sheep that men raise and that pasture on a thousand hills? Why not go into the sheep business, because the meat and the fleece of sheep are great necessities?

"Why not take over the cotton business, because cotton is a great necessity? Why not insist that the government shall control that, for we could not get along today under modern conditions without the wonderful crop of cotton that is raised in the Southern States? Shoes are a necessity. We could by the same process of reasoning take them over. If we enter upon this scheme, if we permit the camel to put its socialistic nose into the tent, its gross body will follow, and it ought to follow. We have no more right to seize one private industry than we have to seize all private industries.

"I think it can be fairly deduced from the evidence that at many places in the United States the retailer charged profits on coal in excess of anything which can be regarded as fair. Indeed, it is difficult to understand how the prices which were charged could be maintained in certain cities of the United States unless there was a combination, express or implied, among the local dealers. This question, however, was not sufficiently investigated so that a comprehensive statement can be made. It must be apparent that combinations of the character referred to, if they exist, are violative of the laws of substantially every state of the Union, that such combinations can be speedily broken up by the local authorities, and that the duty devolves upon them to act with expedition and effect.

"If the local authorities cannot act with reference to conditions immediately concerning their respective communities, then it is certain that Federal intereference will be ineffective. Indeed, most of the transgressions are doubtless by men beyond the jurisdiction of the Federal Government.

"Bituminous coal, according to the evidence, has not been monopolized. And because of its wide distribution and widely scattered ownership, it will be very difficult, if not impossible, to ever bring it within monopolistic control. We have, then, a condition which only demands that the coal shall be taken from the ground and delivered to the people. If that is done at a fair and reasonable price, the problem is solved.

"It is alleged that coal prices have advanced enormously; that this must be the result either of a combination among the great coal operators to raise prices or of a practice by these operators, without combination, of charging excessive prices; in a word, of profiteering upon the public.

"The first part of the proposition stated is already answered. It remains to determine whether the advance in the price of coal can be charged to the rapacity of the great mine owners. As to the above charge, it is sufficient for the present to say that the evidence shows that during the war, while under government control, and later when under private control, some of the large coal mines were operated at profits somewhat higher than the profits during normal times. The evidence, however, does not demonstrate that the profits were anything like as great as those gained in many other industries. While these increased profits had an effect upon the price of coal, nevertheless it was shown that the increase of profits was only one of the small elements contributing to the enormous advance in the price of coal."

Railroads of Northwest Take Precautions To Avert Winter Coal Shortage

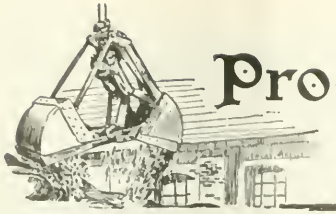
RAILROADS covering the Northwest are taking a hand in the coal situation by calling the attention of the public to the danger of an embargo and coal shortage unless a better movement from Duluth-Superior harbor over the territory is brought about immediately.

The freight department of the Great Northern R.R. has issued the following circular:

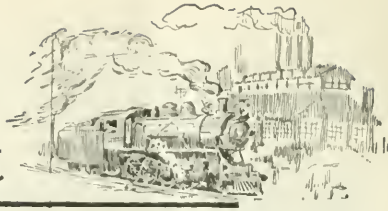
"Unless a better coal movement is brought about at once, serious congestion and a car shortage will develop this fall, when our traffic will be heavy. On the present basis of coal receipts from Lake Erie ports, and shipments from the Head of the Lakes, the docks will be filled to capacity by Aug. 1.

"The tonnage of coal required for commercial and industrial needs of the Northwest averages about the same one year with another, and should anything happen to slow down the movement via the lakes from Lake Erie ports, we are apprehensive that privation and suffering will be caused this coming winter.

"It is improbable that the Northwest will experience a recurrence of the exceptionally mild winter of 1920-21, and in order to properly take care of the situation the present supply of coal on the docks should be moved to the country, and the docks refilled before the close of navigation this year."



Production and the Market



Weekly Review

PRODUCTION of bituminous coal continues its gradual decline. The total output for the week ended July 23 was 7,369,000 net tons, compared with 7,403,000 during the week preceding. The sluggishness of the export market and the lowered Lake shipments are the responsible factors in the decline.

Close observation of all coal markets fails to disclose any material improvement in the past week. Signs are not lacking, however, that things are soon to be "on the mend." While at present the coal trade is suffering from the usual midsummer dullness, added to which is the abnormally low rate of industrial consumption, a better line of inquiry is developing. This is not resulting in the placing of much additional tonnage, but it indicates that buyers are becoming alive to the fact that when industry is again humming it will be necessary to look ahead for fuel requirements. Undoubtedly fundamental conditions have been strengthened recently. Sentiment in business has improved and it is only natural to believe that these feelers on prices and tonnage are the forerunners of orders which have been withheld until basic fuel requirements could be consistently determined.

Prices do not show any particular tendency to advance or decline. Only in screenings is there a better figure, and this of course has been the direct result of the continued lagging domestic market and the dwindling of Lake tonnage. *Coal Age* index of spot prices rose one point during the week and now stands at 90.

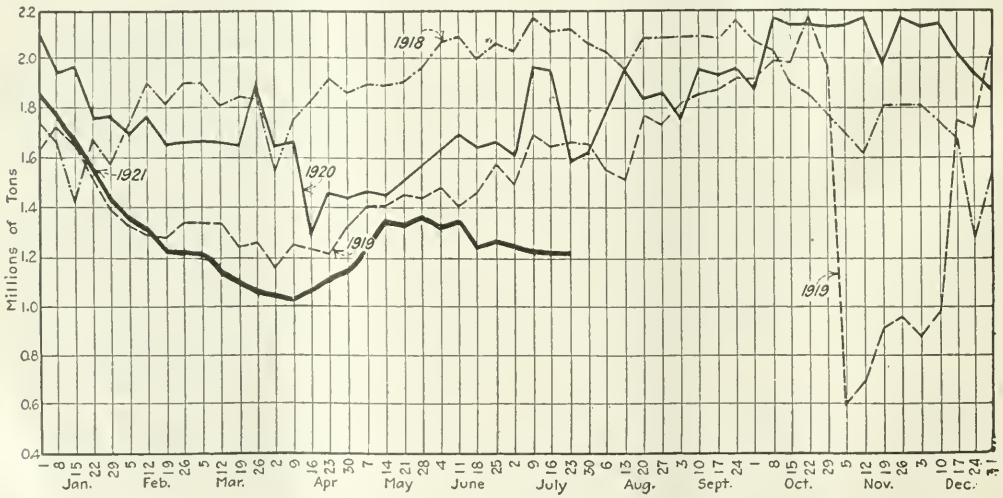
The New England market remains featureless. Active canvassing by Pocahontas and New River agencies is hitting the Pennsylvania coals via all-rail. Marine freights continue steady at low levels, making for further inland distribution of water coal. Railroads have had heavy supplies urged on them by contract shippers and with the prevailing light traffic, hold orders are inevitable in the near future.

Car Shortage in Northwest Seems Imminent

At the Head of the Lakes docks are becoming heavily stocked with coal which has been sent up from the lower ports, and while the movement to the interior has improved, the volume of orders received is far below normal and an embargo on up-bound coal-laden ships looms as all available storage space is being rapidly filled. Indications point to a heavy grain movement and a car shortage in the Northwest appears more imminent with each new day of the dilatory buying program.

The labor situation continues to occupy the limelight. In non-union fields wages have been cut to a point where competition by union operators is becoming difficult

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

and this has given rise to the advisability of paring down the wage scales of the latter. However, union officials are opposing possible moves in this direction and refuse to consider any discussion of the matter. A further wage reduction was put in effect Aug. 1 by the H. C. Frick Coke Co. amounting to approximately 10 per cent.

The export market is quiet, mainly as a result of the resumption of British operations. Tidewater accumulations at Hampton Roads are not increasing, as shippers are now cautious in sending their tonnage forward, but concessions are offered to move the coal already on hand at piers to avoid demurrage. Price appears to be no consideration, however, and these cuts are not moving much coal.

BITUMINOUS

Production for the year to July 23 now stands at 219,320,000 net tons. In the same period in 1919 the output was 245,009,000 and in 1920 it was 289,191,000. Production for this period is 10 per cent behind 1919, 32 per cent behind 1918, and 25 per cent less than the average for 1917-20.

"No markets" continue to account for over 50 per cent of production loss. There was a widespread decrease in working time in the fields shipping to the Lake, and the depression grew more acute in central Pennsylvaia, northern West Virginia and most of southern West Virginia. The only fields to report an improvement were the Somerset, Cumberland-Piedmont region, the Panhandle of West Virginia, and Harlan County, Kentucky.

Soft-coal production, by groups of states, for the first six months of 1921 was 196,258,000 net tons, or one-half of that for the same period in 1920.

	First Six Months of 1921	Year 1921 at Same Rate as 1st 6 Mos.
Northeast *a*	117,970,000	235,940,000
Southern Appalachian *b*	8,439,000	16,878,000
Eastern Interior *c*	46,558,000	93,116,000
Western Interior *d*	9,605,000	19,210,000
Mountain States and Northwest *e*	13,686,000	27,372,000
Total *f*	196,258,000	392,516,000

(*a*) Michigan, Pennsylvania, Ohio, West Virginia, Maryland, Eastern Kentucky and Virginia. (*b*) Alabama, Georgia and Tennessee. (*c*) Illinois, Indiana and western Kentucky. (*d*) Iowa, Kansas, Missouri, Oklahoma, Arkansas and Texas. (*e*) Colorado, New Mexico, Utah, Wyoming, Montana, North Dakota and Washington. (*f*) Alaska, California, Idaho, North Carolina, Oregon and South Dakota not included.

Exports of bituminous coal continue to slump. Dumpings for all accounts at the Hampton Roads piers during the week ended July 28 were 340,504 gross tons, as compared with 373,811 during the week ended July 21. During the fourth week of July 179,832 net tons went for export and 82,991 for bunkers, a total of 262,823, compared with 616,-

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

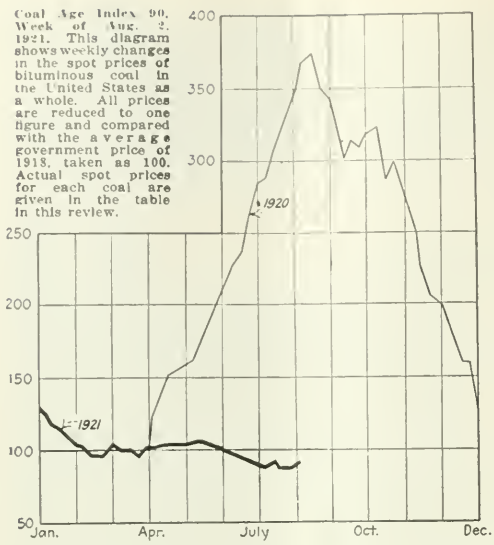
	Market Quoted	June 28, 1921	July 19, 1921	July 26, 1921	Aug. 2, 1921†
Low-Volatile, Eastern					
Pocahontas lump	Columbus	$5 65	$5 65	$5 40	*$5.00@$5 50*
Pocahontas mine run	Columbus	3 55	3 15	3 15	3 00@ 3 25
Pocahontas screenings	Columbus	2 40	2 30	2 30	**2 25@ 2 50**
Pocahontas lump	Chicago	5 65	5 00	5 15	**5 25@ 5 50**
Pocahontas mine run	Chicago	3 15	2 75	3 15	*2 75@ 3 25*
*Smokeless mine run	Boston	6 00	5.85	5 70	*5 50@ 5 65*
Clearfield mine run	Boston	2 20	2 00	1 95	*1 65@ 2 10*
Cambria mine run	Boston	2 85	2 70	2 70	2 35@ 3 00
Somerset mine run	Boston	1 95	1 80	1 75	1 50@ 2 00
Pool 1 (Navy Standard)	New York	3 20	2 90	3 15	3 00@ 3 25
Pool 1 (Navy Standard)	Philadelphia	3 00	2 80	2 80	2 75@ 2 85
Pool 1 (Navy Standard)	Baltimore	2 90	2 60	2 45	*2 40*
Pool 9 (Super. Low Vol.)	New York	2 75	2 50	2 50	**2 40@ 2 75**
Pool 9 (Super. Low Vol.)	Philadelphia	2 70	2 40	2 40	2 30@ 2 50
Pool 9 (Super. Low Vol.)	Baltimore	2 65	2 35	2 20	*2 20*
Pool 10 (H. Gr. Low Vol.)	New York	2 45	2 20	2 25	**2 15@ 2 50**
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2 40	2 20	2 20	2.00@ 2 35
Pool 10 (H. Gr. Low Vol.)	Baltimore	2 30	2 00	2 00	2 00
Pool 11 (Low Vol.)	New York	2 15	2 00	1 90	1.85@ 2.00
Pool 11 (Low Vol.)	Philadelphia	1 90	1 90	1 90	1.75@ 2.00
Pool 11 (Low Vol.)	Baltimore	2 10	1.75	1 75	1.75
High-Volatile, Eastern					
Pool 54-64 (Gas and Steam)	New York	1 95	1 70	1 70	**1 70@ 1 80**
Pool 54-64 (Gas and Steam)	Philadelphia	1 85	1 75	1 75	1 75
Pool 54-64 (Gas and Steam)	Baltimore	1 70	1 50	1 50	1 40@ 1 60
Pittsburgh sc'd. gas	Pittsburgh	2 50	2 95	2 95	*2 60@ 2 80*
Pittsburgh mine run(steam)	Pittsburgh	1 85	2 10	2 10	*1 90@ 2 15*
Pittsburgh slack (gas)	Pittsburgh	1 60	1 45	1 45	**1 60@ 1 75**
Kanawha lump	Columbus	3 45	3 30	3 15	*2 50@ 3 25*
Kanawha mine run	Columbus	2 20	2 00	2 15	*1 75@ 2 25*
Kanawha screenings	Columbus	1 20	1 20	1 20	**1 25@ 1 40**
Hocking lump	Columbus	3 15	3 25	3 15	3 00@ 3 25
Hocking mine run	Columbus	2 10	2 15	2 15	2 00@ 2 25
Hocking screenings	Columbus	1 20	1 25	1 30	*1 20@ 1 35*
Pitts. No. 8 lump	Clevelaod	3 25	3 25	3 25	3 00@ 3 50
Pitts. No. 8 mine run	Cleveland	$2 10	$2 20	$2 20	**$2 25@$2 35**
Pitts. No. 8 screenings	Cleveland	1 15	1 25	1 35	**1 35@ 1 50**
Midwest					
Franklin, Ill. lump	Chicago	3 55	3 55	3 55	3 00@ 4 05
Franklin, Ill. mine run	Chicago	2 90	3 00	3 15	**2 75@ 3 55**
Franklin, Ill. screenings	Chicago	1 90	1 95	1 90	1 75@ 2 00
Central, Ill. lump	Chicago	2 65	2 50	2 50	2 00@ 3 00
Central Ill. mine run	Chicago	2 40	2 40	2 25	2 00@ 2 50
Central Ill. screenings	Chicago	1 65	1 75	1.60	1 40@ 1 75
Ind. 4th Vein lump	Chicago	2 90	2 80	3 65	3 50@ 3 65
Ind. 4th Vein mine run	Chicago	2 50	2.50	3 05	2 90@ 3.25
Ind. 4th Vein screenings	Chicago	1 65	1 85	2 15	2 00@ 2 25
Ind. 5th Vein lump	Chicago	2.75	2 75	2 90	2 75@ 3 00
Ind. 5th Veio mioe run	Chicago	2 40	2 40	2.60	*2 25@ 2.65*
Ind. 5th Vein screenings	Chicago	1 65	1 75	1 90	*1 50@ 1 75*
Standard lump	St. Louis	2 15	2 25	2 25	2.00@ 2 50
Standard mine run	St. Louis	1 75	1 70	1 70	1.65@ 7.75
Standard screenings	St. Louis	0 85	0 85	1 00	1 00
West Ky. lump	Louisville	2 65	2 75	2.90	2 60@ 3 25
West Ky. mine run	Louisville	2 00	2 25	2 30	2 00@ 2 65
West Ky. screenings	Louisville	1.55	1 60	1.55	**1 25@ 2 00**
South and Southwest					
Big Seam lump	Birmingham	3.65	3 65	3 55	3 00@ 4 05
Big Seam mine run	Birmingham	2 50	2 15	2 15	2 00@ 2 25
S. E. Ky. lump	Louisville	3 70	3 40	3 15	**3 25@ 3 75**
S. E. Ky. mioe run	Louisville	2 25	2 20	2 20	**2 25@ 2 40**
S. E. Ky. screenings	Louisville	1 40	1 50	1.35	**1 35@ 1 65**
Kansas lump	Kansas City	5 40	5.50	5 50	5 50
Kansas mine run	Kansas City	4 25	4 40	4.40	4 40
Kansas screenings	Kansas City	3.25	3 25	3 25	3 25

* Gross tons, f. o. b. vessel, Hamptoo Roads.
† Advance over previous week shown in **heavy type**, declioes in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	July 19, 1921		July 26, 1921		Aug. 2, 1921†	
			Independeot	Company	Independeot	Company	Independent	Company
Broken	New York	$2 61	$7.75@$8 00	$7 40@$7 75	$8 00@$8 25	$7 40@$7 75	*$8 00@$8 15*	**$7 50@$7 75**
Broken	Philadelphia	2 66	8 00@ 8 20	7 55@ 7.85	8.00@ 8.20	7.55@ 7 85	8.00@ 8. 20	**7 65@ 7 85**
*Broken	Chicago	5 62	12 75	12 45	12 40	12 45	12 40	12 45
Egg	New York	2 61	7 75@ 8 00	7 40@ 7 75	7 55@ 7 85	7 40@ 7 75	7.55@ 7.85	**7 50 · 7 75**
Egg	Philadelphia	2 66	8 00@ 8 20	7 55@ 7 85	8 00@ 8.20	7.55@ 7 85	8.00@ 8. 20	**7 65@ 7 85**
*Egg	Chicago	5 62	12 60	12 45	12 40	12 45	12 40	12.45
Stove	New York	2 61	8 00@ 8 25	7 70@ 8 10	8 00@ 8.25	7 70@ 8 10	*7 70@ 8 00*	**7 80@ 8 10**
Stove	Philadelphia	2 66	8 40@ 8 50	7 90@ 8 25	8 40@ 8 50	7.90@ 8.25	*8 25@ 8 35*	**7 95@ 8 25**
*Stove	Chicago	5.62	13 20	12 70	12.70	12 70	12 70	12 70
Chestnut	New York	2 61	7 65@ 7 90	7 70@ 8 10	7 50@ 7 75	7.70@ 8.10	7 50@ 7 75	**7 80@ 8 10**
Chestnut	Philadelphia	2 66	8 25@ 8 60	7 80@ 8 25	8 25@ 8 60	7.80@ 8 25	*8 00@ 8 40*	**7 95@ 8 25**
*Chestnut	Chicago	5 62	12 95	12 70	12 70	12 70	12 70	12 70
Pea	New York	2 47	4 50@ 5 00	5 95@ 6.45	4 50@ 5 00	5.95@ 6 45	**4 50@ 5 50**	**6 05@ 6 45**
Pea	Philadelphia	2 38	4 50@ 6.00	6 00@ 6 20	4 50@ 6.00	6.00@ 6 20	4 50@ 6 00	**6 10@ 6 20**
*Pea	Chicago	5 62	10 90	11 20	11 10	11 20	11 10	11 20
Buckwheat No 1	New York	2 47	2 65@ 3 00	3 50	2 50@ 3 25	3 50	2 50@ 3 25	3 50
Buckwheat No. 1	Philadelphia	2 38	2 50@ 3 00	3.50	2.50@ 3 00	3 50	2 50@ 3 00	3 50
Rice	New York	2 47	1 60@ 2 00	2 50	1.60@ 2 00	2 50	**1 75@ 2 25**	2 50
Rice	Philadelphia	2 38	1 75@ 2 00	2 50	1 75@ 2 00	2 50	1 75@ 2 00	2.50
Barley	New York	2 47	0 60@ 1 25	1 50	0 60@ 1.25	1 50	**0 75@ 1 25**	1 50
Barley	Philadelphia	2 38	0.75@ 1 25	1.50	0.75@ 1.25	1.50	0 75@ 1.25	1 50
Birdseye	New York	2 47	.....	2 50	....	2 50	....	2.50

* Prices and freight rates net tons; quotations f.o.b. cars, Chicago.
† Advances over previous week shown in **heavy type**, declines in *italics*.



Coal Age Index 90, Week of Aug. 2, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.

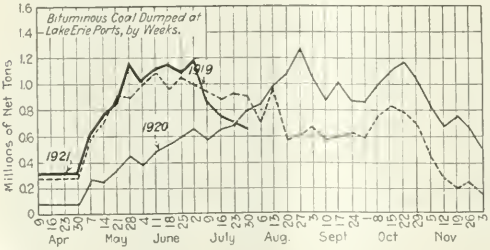
869 tons for the first week of July. The only coal now moving to Great Britain—during the strike the mainstay for American overseas tonnage—is on contracts made some time ago and where coal has been delayed in transit.

For both anthracite and bituminous coal an increase in the rail movement to New England is reported by the Geological Survey. During the week ended July 23 3,160 cars of hard coal and 3,018 of bituminous coal went forward.

CARS OF COAL FORWARDED OVER THE HUDSON TO NEW ENGLAND

	1921		1920	
Week Ended	Anthracite	Bituminous	Anthracite	Bituminous
July 9	3,228	2,647	1,169	5,904
July 16	3,090	2,444	2,066	6,154
July 23	3,160	3,018	2,377	7,033

Dumpings at the lower ports for Lake shipments are falling off. Mine loadings show the effect of the jam at the Head-of-the-Lakes and much less tonnage is now rolling. For the season to Aug. 1, this year, nearly 14,000,000 net tons have gone up the Lake, compared with 6,814,074 last year and about the same as in 1919. Preliminary figures for the week ended July 31 show 699,113 tons cargo and 25,574 of vessel fuel dumped, a total of 724,687 tons, less than during any week since early in May. Inability of Northwestern dealers to finance the carrying of stocks and refusal of industrial and domestic consumers to order their coal are accountable for the slow movement off the docks.



The Bureau of Supplies and Accounts, Navy Department, Washington, D. C., has sent out proposals for bids, receipts to be opened Aug. 23, 1921, covering approximately 600,000 tons of bituminous and semi-bituminous and 12,000 tons of anthracite coal.

The Great Northern, Northern Pacific and Soo Line railroads are reported to be in the market and to have bought heavily for future needs. No account of the coal contracted for or the price paid has been given out so far.

ANTHRACITE

Production of hard coal continues to hold up remarkably well, despite the belief that the markets had nearly reached the saturation point. The output for the week ended July 23 was 1,837,000 net tons, about 40,000 less than in the last preceding week. The larger companies put the usual 10c. monthly advance Aug. 1 on the domestic sizes, while growing pressure to make sales has caused a softening of independent prices. Retail prices were advanced to cover, and in many cases an additional 15c. per ton was put on to cover the new Pennsylvania state tax. A generally dull anthracite market is now reported and more coal must go into storage if production is to be maintained.

COKE

Beehive coke output fell off again, 39,000 net tons being the figure for the week ended July 23. Connellsville foundry demand has picked up a little, especially on high-quality coke. Spot Connellsville furnace is now quoted $2.90@$3; contract, $3; spot foundry, $4@$4.50.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY
(NET TONS)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921		1920	
	Week	Calendar Year to Date	Week	Calendar Year to Date(a)
July 9b	6,165,000	204,548,000	9,659,000	267,841,000
Daily average	1,233,000	1,278,000	1,932,000	1,668,000
July 16b	7,403,000	211,951,000	10,880,000	278,721,000
Daily average	1,234,000	1,276,000	1,813,000	1,673,000
July 23c	7,369,000	219,320,000	10,470,000	289,191,000
Daily average	1,228,000	1,274,000	1,745,000	1,675,000

(a) Less 2 days' production during New Year's week to equalize number of days covered for the last two years. (b) Revised from last report. (c) Subject to revision.

ANTHRACITE

	1921		1920	
	Week	Calendar Year to Date	Week	Calendar Year to Date (a)
July 9b	1,525,000	47,634,000	1,541,000	46,149,000
July 16	1,876,000	49,510,000	1,840,000	47,989,000
July 23	1,837,000	51,347,000	1,819,000	49,808,000

(a) Less 2 days' production during New Year's week to equalize number of days covered for the last two years. (b) Five-day week.

BEEHIVE COKE

Week Ended				
July 23	July 16	July 24	1921	1920
1921a	1921b	1920	to Date	to Date c
39,000	44,000	385,000	3,515,000	12,016,000

(a) Subject to revision. (b) Revised from last report. (c) Less two days' production during New Year's week to equalize number of days covered for the last two years.

WANT HEALTH INSURANCE, OLD-AGE AND UNEMPLOYMENT PENSIONS.—John Collins (Kolodziejak), president of district No. 1, in presenting his report to the district convention on July 18 urged legislation providing health insurance, old-age pensions for old and infirm workmen and unemployment pensions. He recommended that union dues be raised from 75c. to $1 and announced the union's intention to resist all wage reductions. Secretary-Treasurer Mack said that the treasury contained $41,210.78, of which $20,000 was in bank credits, Liberty bonds and other investments. Several locals were behind in their per-capita tax. The average monthly membership from July, 1919, till June 30, 1920, was 28,896, the receipts during that period being $169,588.39 and the expenditures $119,377.61. Since the Compensation Act went into effect $9,624,244 had been awarded injured employees or their survivors in district No. 1.

Foreign Market And Export News

European Coal Situation

(By cable to Coal Age)

GREAT BRITAIN—Provisional figures compiled by the British Government place the output during the week ended July 9 at 2,355,000 gross tons. The output during the week ended July 16 was 3,927,000 tons.

British quotations as of Aug. 1 are as follows: Best Admiralty large, f.o.b. Cardiff, 45s.@46s.; best Cardiff smalls, 25s.@27s. 6d. Newcastle-on-Tyne quotations are: Best steams 42s. 6d.; best gas, 38s. 9d. Best bunker coal is quoted, Newcastle-on-Tyne, at 35s.@37s. 6d. per ton, with prices weakening with the increase in production.

HOLLAND—American coal is quoted at Rotterdam, $8@$9 per ton; British coal 25s.@40s.

ITALY—No supplies of British coal are available on the Milan market. American steam coal is selling 315@320 lire per ton.

BELGIUM—Antwerp price on Belgian bunker coal is quoted at 135 francs.

GERMANY—Berlin reports the output in the Ruhr region, during the week ended July 16, as 1,760,000 tons. No returns are issued covering Upper Silesian production, owing to the disturbances in that district.

French Coal Imports for May

(By cable to Coal Age)

	Metric Tons
United States	39,000
Belgium	127,000
Great Britain	102,000
Germany	443,000
Sarre Region	45,000
Other countries	19,000
Total	775,000

Reduction of Belgian Coke Prices

A considerable reduction in the prices of coke is officially announced, and prices have been fixed as follows:

Furnace coke	110 Fr. (formerly 117)
Half screened	112.50 " (formerly 120)
Screened	145 " (formerly 160)
Special coke	150 " (formerly 165)

Prices for coal to industries and households have not been reduced but those for industrial briquets have been lowered by 8 francs per ton.

C.I.F. Prices, American Coal
Gross Tons, July 30

	Low Vol.	High Vol.
River Plate	$10 15	$9 60
French Atlantic, including Marseilles-Havre and St Nazaire	11 15	10 40
West Italy, including Palermo and Naples	11 65	11.00
Scandinavian Ports	11 50	10 85

U. K. prices not quoted, due to practical ending of coal shipments. Prices to the Far East also are not sufficiently fixed to admit of authentic quotations.

COAL UNLOADED IN FRENCH PORTS

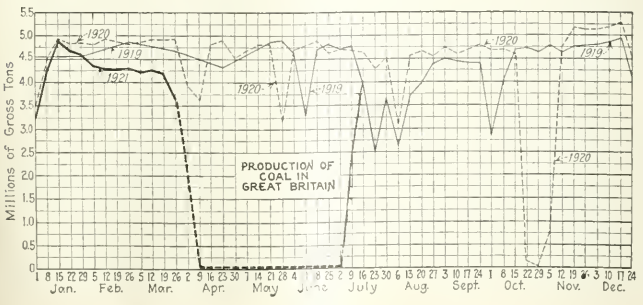
(In Metric Tons)

	Week Ended June 23	Week Ended June 30
CHANNEL PORTS		
Dunkirk	3,386	.....
Boulogne	1,578	1,465
Dieppe	2,325	1,738
Le Havre	12,500	10,650
Rouen	21,400	14,600
Caen	6,243	2,925
Cherbourg	5,389	3,486
Saint-Malo-Saint-Servan	1,897	.....
Fecamp	1,550	735
Honfleur	1,122	1,090
Trouville	1,388	.....
ATLANTIC PORTS		
Brest	6,810	2,928
Saint Nazaire	12,414	9,681
Nantes	8,615	6,072
Bordeaux	8,519	930
Bayonne	1,524	.....
Marseille*	19,498	15,653
Lorient	7,046	2,323
Les Sables-d'Olonne	900	946
La Rochelle-Ville	.....	1,892
Total	119,104	76,614

* Mediterranean port.

RICH SPANISH COAL DEPOSITS have been found in the Guadalquivir River Valley, and the exploitation of the beds has been begun. This is likely to prove another valuable coal district to be added to those of the Asturias, Leon and Ciudadreal.

STORAGE SPACE AT COLOMBO is occupied and it is practically impossible to store coal still arriving and to arrive. So far as Ceylon is concerned, no more Indian coal will be required till the end of the year, as present stocks and contracts to be filled are sufficient for requirements.



Quiet Hampton Roads Market

Buying is still on the downgrade, although prices are on the level of the last few weeks. Pools 1 and 2 have a range of $5.75@$6 and in some instances have been cut to $5.50. Other pools are quoted at $5 with only few acceptances. The lack of activity in the market is not a question of price but of general sluggish business.

Dumpings declined during the week ended July 28, only 340,504 gross tons passing over the piers, as compared with 373,811 tons the week preceding.

PIER SITUATION

	—Week Ended— July 21	July 28
N. & W. Piers, Lamberts Point:		
Cars on hand	2,793	3,067
Tons on hand	135,076	151,387
Tons dumped	182,047	149,907
Tonnage waiting	48,850	28,175
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	2,111	2,343
Tons on hand	105,550	131,850
Tons dumped	59,039	101,184
Tonnage waiting	5,673	28,501
C. & O. Piers, Newport News:		
Cars on hand	2,502	2,633
Tons on hand	125,100	131,650
Tons dumped	132,725	89,413
Tonnage waiting	80,800	2,790

Buying for British markets has come to a standstill. The only cargoes clearing for Great Britain are those contracted for several weeks ago and delayed in transit.

The coal piers are not crowded and while the accumulations at Tide are approximately the same as during the last two weeks, many shippers have offered to make pronounced cuts to keep their stocks moving and obviate demurrage.

CLEARANCES

For Argentine:		
Du. SS. Maashaven	for Guanaco	493
For Atlantic Islands:		
Dan. SS Harald	for Barbados	2,442
Am. SS. Edward Pierce	for Martinique	5,796
Br. SS. Clan Macindoe	for St. Vincent	5,828
Br. SS. Burnholme	for St. Vincent	4,976
Am. Schr. Ella Little	for Teneriffe	1,173
For Brazil:		
Br. SS. Penrose	for Buenos Aires	5,210
Nr. SS. Coquetmede	for Buenos Aires	5,108
For Canal Zone:		
Am. SS. Cristobal	for Cristobal	9,181
For Chile:		
Nor. SS. Wilfrid	for Valparaiso	1,503
For Colombia:		
Nor. SS. Bana	for Santa Marta	1,371
For Cuba:		
Nor. SS. Mt. Vernon	for Antilla	839
Am. SS. Munindies	for Havara	7,109
Br. SS. Beacon Grange	for San Juan	2,676
For France:		
Ital. SS. Laura	for Marseilles	4,036
For Gibraltar:		
Nor. SS. Earle		7,162
Br. SS. Aalimba		6,717
Am. SS. Kentuckian		8,141
For Greece:		
Grk. SS. Charalambos	for Piraeus	7,374
For Italy:		
Du. SS. Celebes	for Italian Ports	6,279
Jap. SS. Jufuku Maru	for Messina	5,209
Ital. SS. Ancona	for Naples	5 688
For Russia:		
Nor. SS. Borgild	for Petrograd	4,987
Br. SS. Airedale	for Petrograd	4,463
For Uruguay:		
Dan. SS. Nevada	for Montevideo	5,196
Jap. SS. Hofuku Maru	for Montevideo	7,021
Br. SS. Trehawke	for Montevideo	6,213
Am. SS. Panaman	for Alexandria	8,150
Br. Schr. Nova Queen	for Hamilton	737
Br. SS. Mayari	for Kingston	3,423
Am. SS. J. K. Mitchell	for Nassau	444

IN ITS ANNUAL STATEMENT, according to a London report, the Russo-Asiatic Consolidated, the big Siberian mining corporation, says that negotiations are proceeding for the return of confiscated properties and for a resumption of operations.

GREAT BRITAIN'S COAL EXPORTS in June amounted to but 8,000 tons. This compares with 1,951,000 tons in June, 1920, and with 6,006,000 tons for the same month in 1913. Exports of coal for the first six months of the current year amounted to 6,025,000 tons. This compares with 14,432,000 tons for the same period of last year and with 35,526,000 tons in the first half of 1913.

A SHIPMENT OF ASIATIC COAL, the first to reach San Francisco in five years, was aboard the Japanese S.S. *Seine Maru*, which arrived recently. The coal was shipped from Darien, Manchuria.

Italian Prices Reduced

Italian State railways have reduced the prices of coal supplied by them to private industries. In the case of coal for ships the prices will be increased by cost of transport, loading, customs, etc.

The following prices cover tonnage delivered free on truck, on barges in the ports, or delivered by trucks for foreign countries, previous contracts notwithstanding:

	Lire.
Westphalian steam coal	275
Belgian and Upper Silesian steam coal	260
For furnaces and gas—	
(Splint and the like) Westphalian	275
(Splint and the like) Upper Silesian	260
Belgian slack	260
Metallurgic coke, Westphalian	380
Metallurgic coke, Upper Silesian	350

SUEZ CANAL COAL SHIPMENTS up to 1914 averaged about one million tons annually, while in 1919 they amounted to only 242,000 tons and decreased to 118,000 tons in 1920.

Reports From the Market Centers

New England

BOSTON

Trend Continues Unfavorable — Pennsylvania Grades in Very Light Request — Railroads Have Greater Reserves Than Situation Warrants — Anthracite Dull.

Bituminous—If anything, the market is even weaker than previously reported. Steam-users are so besieged with offers that they very naturally conclude to wait further developments. The whole trend for several weeks has been toward lower prices, and at this writing new low levels have been touched by producers.

There has been a small amount of buying on the part of plants using 5,000 tons or less per year, but even those purchases have been for delivery extended through the fall and cannot be called spot business. Moreover there is such activity on the part of the smokeless agencies to market their Pocahontas and New River that a very considerable tonnage will probably be lost to Pennsylvania interests who have come to depend upon certain trade because of the relatively lower cost of the all-rail route that prevailed from 1915 until a few months ago. There are signs that the pendulum will swing back until the old-time two-thirds of New England's requirements will come forward by the water route.

Inquiry is so light that whole districts in Central Pennsylvania are scarcely turning a wheel. The fair to medium grades have next to no outlet in New England under present conditions. The through tariff is so high that buyers are inclined closely to examine the evaporative qualities of coals offered, and any such comparison of course works to the advantage of the low ash grades of high fusing temperature. There are plenty of those to meet the limited needs of the few who are interested.

It develops that the railroads here have on hand much larger stocks than was supposed. Early in the year they made purchases based upon normal business and it is probable also that the ability of producers to furnish full quotas was somewhat discounted. In any case, the shippers have pressed the railroads all along to take coal and as a result there is more on hand than the situation warrants. In view of continued light traffic it would be in no wise surprising if the New England railroads should soon notify their coal contractors to withhold deliveries for the present.

At Tidewater the amount of coal dumped has been reduced to relatively small limits. It is a commentary on the state of the market that notwithstanding the lowest water freights since pre-war times there has been no improvement in tonnage by this route. At Baltimore, Philadelphia, and at New York the bulk of what coal is tranferred into boats is either for bunker purposes or moves on over-sea contracts. The volume coastwise is extremely light, with no better market in sight.

There are still heavy accumulations at Hampton Roads. Many of the agencies have been embargoed and there are observed the same hectic efforts to place coal in any direction where it can be absorbed. Prices have receded still further f.o.b. vessel, as well as on cars at points like Boston, Providence, and Portland. Marine freights continue easy on a $1.15@$1.25 basis, thereby making possible sales of the smokeless coals much farther inland than has been the case for some years.

Anthracite—All the domestic sizes, with the possible exception of stove, are now in ample supply with practically all shippers. There is a dearth of orders, even with the companies who are usually well supplied, and August will see either a suspension of mining or large quantities going into stock piles in the mining region. Retail trade is still almost unbelievably dull; dealers are at their wits end to induce the public to take on coal.

Tidewater—East

NEW YORK

Anthracite Demand Wanes — Yards Heavily Stocked — Wage Reductions Affect Bituminous Quotations, but Futures Stiffen.

Anthracite—The let-up in consumer demand is now being felt in full force. The point has now been reached at last where a great many dealers are stocked up to the limit and have had to call a halt on shipments.

It is a noteworthy fact that, in spite of all the talk about dullness, mining operations continued on practically a full-time basis right up to the end of July. However, some of the individuals have had to curtail during the past fortnight.

Independent tonnage has been offered in limited quantities this week as low as $7.35 for egg and nut and $7.60 for stove, but most of the small operators seem disposed to close down rather than sell below the circular, in view of the low figures at which there are obliged to dispose of their steam sizes.

Buckwheat is available as low as $2.50 on ordinary grades, although the better grades are commanding $2.75@$3.25 in the line trade. The market on independent rice is $1.75@$2.25, and on barley 75c.@$1.25.

Bituminous—The trade at the end of July was in much the same position as at the beginning of the month. There have been times when it seemed as if the demand was reviving, but no real expansion occurred. Some consumers are taking a little more interest in providing against next winter's requirements, either by stocking up or contracting, but thus far their activities have been largely confined to feeling out the market.

A factor which will tend to cause still greater unsettlement is the wage reduction put into effect in Somerset County, Pa., about the middle of July.

As the small operators have been selling at prices based on the reduced scale for some little time past, it may be that quotations will not go any lower right away, but the latest cuts will mean an increased tonnage offering at the low figures and eventually this is apt to result in still further recessions. In any event, the latest Somerset reduc-

tions have added to the troubles of the operators in Cambria County and other organized districts, whose labor costs are above those of their non-union competitors.

Coal from selected mines in the various classifications sometimes brings a premium, and it is difficult to obtain tonnage for shipment over a term of weeks at the minimum prices quoted. Producers are inclined to take a firmer stand on business running beyond the middle of August. Slack has stiffened up considerably. Export demand shows practically no sign of revival.

There has been a slight increase this week in tonnage standing at the piers outside of the pools. At the same time, most of it appears to have been shipped on orders and contracts, so that the pressure on the market has not increased. Prices remain practically unchanged, $5.90@$6.15 f.o.b. piers for Pool 9 and $5.50@$5.70 for Pool 10. The tidewater market has been a little quieter.

PHILADELPHIA

Anthracite Demand Quiet — Mines on Short Time — August Prices Little Changed — Tax Rumors — Reports of Bituminous Contract Adjustments — Efforts at Wage Reductions.

Anthracite—The low-water mark in retail deliveries seems to have been passed, as last week was if anything a shade better. However, with capacity stocks in the yards, retailers are content to deliver from them and are not at all inclined to take in additional coal. Their idea seems to be to get in more money for the coal they have out before they add to their stocks.

This has resulted in much shutting down at the mines. The greatest amount of idleness is among the independent operators and most of them are now working on a three-day schedule.

As to August prices, some of the independents have already announced that they do not intend to make any increase, although the companies in two cases at least have decided on the regular 10c. monthly advance. Under these conditions the retail dealers are not at all likely to add to their delivered price to the consumer, although it would be no surprise should there be an advance of 25c. after Sept. 1.

Dealers have lately been stirred by a rumor that some of the big companies intend within the next month or so to bill their costumers for the tax, no mention of which was made by any of them when the law became effective on July 1. Should this happen it would not be much of a guess to say that a few of the retailers would actually resist payment, on the ground that they have already sold much of the coal at the prices as billed by the companies.

Bituminous—The market seems to be watching the calendar, as the impression grows that as we approach Sept. 1 the consuming interests will awake in a moderate degree to the necessity of storing some coal in excess of current needs. There are already a few instances where consumers who had been holding off contract negotiations, have gone into the market and bought spot blocks for storage.

There has lately been a little stir in the contract market by rumors that some big shippers were adjusting their prices downward. In one instance it was said that the contract figure of $4.20 on good steam coal was brought down to $3.80. Should this prove to be correct it is likely that the reduction will be met by other shippers, with adjustments for all coal previously shipped. It is believed this is being done to cope with the practice of contract customers taking advantage of the low spot prices.

There has been no appreciable change in spot prices, and the tendency is altogether stationary. Exceptionally low prices are occasionally heard, and these are usually on coals from non-union regions where the operators have succeeded in having their men accept a wage adjustment. Some operations under strict union schedule have been pushed out of the market by mines able to produce at a much lower rate.

It cannot be said that business conditions have greatly improved in this district, but they certainly have not gone backward. We have personal knowledge of iron furnaces getting under way for short turns, and the textile trade which only a few months ago was anticipating summer dullness gives every appearance of being able to go right through to fall.

BALTIMORE

Trade Encouraged by Better Line of Inquiry — Demand Not Sufficient to Overcome Low Price Conditions—Hard Coal Still at Standstill.

Bituminous—Soft coal dealers as a whole seem a bit more optimistic as a result of a better line of inquiry for deliveries in the near future. This line of inquiry, which is coming into a fair proportion of the offices here, has not so far been of such extent as to stiffen prices, but it does give a hopeful tone to the trading which has been woefully lacking for some weeks past.

Best grade steam coals are still offering at prices below actual production cost in spots, this being especially true of those operations which have been unable to arrange a cut in mine wage scales. The tone of inquiry is possibly stronger from some of the towns of Western Maryland than from the Baltimore district, as yet, for the odd feature of the expected business revival seems to be that it is gradually working its way eastward.

The export situation, which lagged for some days in July is again showing evidence of activity, although the late heavy call from Great Britain is totally lacking. The report for the first 28 days of July shows a total loading on 46 ships of 289,185 tons cargo, while 31 of these took an additional 30,637 tons bunker.

Anthracite—The situation here is at a complete standstill and coal men are showing more and more signs of worry over the jam that is sure to come in September when everybody will want coal at one time and the supply will be impossible on a satisfactory basis. The trade has hoped that the Grand Jury investigation would wind up rapidly and that the public would come to realize that by waiting they are not going to get lower prices, but this hope has been vain so far. There is practically no ordering and distribution at this time.

The dealers have held several meetings to discuss some method of educating the public away from the thoughts created by false information fed to them recently by a daily newspaper.

BUFFALO

Trade Lagging as Usual—Factories All on Short Time — Anthracite by Lake Brisk—Slight Stir in Coke Trade.

Bituminous—It is hard to find a shipper who is doing much business. Everything is in a listless condition and it promises to remain so for a considerable time yet. Not till general business begins to recover will coal sell at a brisk rate again.

It is the operators who are faring worst, for the trade is commonly in such condition that most mines need to run actively to make sure of a profit. The sudden falling off of the export demand and the slowing down of the Lake trade have both hit the mines hard and there is nothing to make up for the decline, for the consumer will not buy more than is required for present use.

Prices continue weak and unsteady, being consumers' figures mostly, at $3 for Youghiogheny gas lump, $2.50@$2.75 for Pittsburgh and No. 8 steam lump, $2.25 for Allegheny Valley mine run and $1.50@$1.75 for slack, which is scarcer than sizes, on account of the light Lake shipments.

Anthracite—The demand does not increase. The heat has been excessive for about six weeks, which is quite unusual here and it has kept the consumer who was in doubt from buying. It has been a task to keep consumers in the market anyhow, for there have been constant reports of the early reduction of rail freights rates and often of government interference on account of what has been called excessive prices and as at least some of these ideas are likely still to prevail, the buying will continue to be slow.

Lake—Shipments are heavy, though the present spurt is probably accidental. Loadings for the week were 185,900 tons, of which 97,400 cleared for Duluth and Superior, 42,400 for Milwaukee, 23,200 for Chicago, 9,400 for Port Arthur, 7,000 for Marquette and 6,500 for Racine.

Freight rates continue easy at $1 to Racine, 65c.@70c. to Chicago, 60c. to Milwaukee and 50c. to Duluth, Marquette and Port Arthur.

Coke—One or two circumstances favor at least a show of activity. The purchase of quite a block of iron ore is reported and the temporary starting up in August of one of the Wickwire

steel mills here obliged that company to buy 21,000 tons of furnace coke. Local prices remain $4@$4.35 for 72-hr. foundry, $3@$3.25 for 48-hr. furnace, $2.75 for stock with a trifle of domestic, chestnut size at $5@$5.25, adding $3.64 a ton to cover freight.

Northwest

DULUTH

Coal Embargo Looms — Anthracite Receipts Improve — Shortage Seen with Slow Inland Demand.

A coal embargo looms strongly as the only method to stop coal shipments and keep coal laden boats from filling the harbor, when the coal docks here become full to capacity, which will take place in about a week or ten days, unless some strong move comes to loosen up the market. Should the embargo become a reality, operators claim that a shortage of coal next winter at the Head of the Lakes region will be inevitable

The most conservative of estimators place the amount of coal on the docks now at more than 4,500,000 tons, and as the docks have only a maximum capacity of 5,000,000 tons a tie-up is momentarily expected.

The increase movement in anthracite last week has brought the hope that more hard coal will be shipped here in proportion than has been so far this year. A hard coal shortage has been feared even more than a shortage in bituminous.

Prices in soft coal are being held more firmly by dock men, who are reported to have refused $6.25 for Youghiogheny, Hocking and Splint lump, and to be demanding $6.50@$7. This shows a general trend of prices upward, which dealers claim will become more and more pronounced as the season advances.

What is spoken of as one of the heaviest movements of grain to the Head of the Lakes in years will begin about Aug. 15, and this will require every available freight car in the Northwest, and, in turn, will make heavy coal shipments from the harbor virtually impossible.

MILWAUKEE

Market Very Dull — Dealers Endeavor to Loosen Up Deliveries — Trade Now Guaranteeing Prices—Receipts by Lake Falling.

Dealers are out hustling for business from house to house and as a consequence local deliveries may be said to have improved slightly. Dealers are guaranteeing prices in order to assure doubting consumers who have been waiting for a decline in coal, especially in anthracite. Guaranteeing prices was popular before the war and it now looks as if the practice has returned to stay.

Jobbers of Illinois and Indiana soft coal are cutting car-lot rates in order to stimulate business. Talk of an impending increase of 25c. per ton in anthracite is still indulged in. Dealers argue that the present price of anthracite is not exorbitant. They say the Milwaukee price is based on the cost at the mines, plus the freight rate by rail ($6.58 per ton, plus a tax of 3 per cent). The difference between the all-rail rate and the lake-and-rail rate which Milwaukee enjoys, dealers hold is absorbed by dock handling charges and degradation. Egg is selling at $15.65, stove $15.90, chestnut $15.90, pea $14.05 and buckwheat $12.10.

Receipts by Lake have fallen away considerably, but there is promise of a fair inflow throughout the balance of the season. July's total will near the half-million mark, however. The season's receipts thus far aggregate 1,971,783 tons, of which 509,515 tons were anthracite and 1,462,268 tons bituminous. Last year, anthracite receipts footed up 365,161 tons and bituminous 583,344 tons, or 948,505 tons in all.

MINNEAPOLIS

Inland Buying Still Delayed — Docks Nearly Full—Car Shortage Seen with Grain Rush.

There is still very little sign that the coal buyers of the Northwest intend to take hold until they have to. Considerable publicity has been given the subject in the local papers, all of it urging early buying.

Despite all efforts of those in the trade and out, who feel an interest in the spreading of information on the situation, coal buyers persist in their strike. Usually at this time, there has been a reasonable movement to the interior. It is true that in the last two or three weeks, there has been a little improvement noted, but it is not up to normal, and even if it were, it would still leave a deficit from previous months.

Around this time, it used to be the theory that people should have coal sent from the docks in box cars, thereby moving the cars out for hauling grain back. But so far there has been very little done in this direction. In fact the outbound coal traffic is so light that dock men are beginning to worry lest they have to shut down on coal receipts. The docks have sufficient capacity for little better than half the usual requirements, hence if the docks are loaded but once, it means a shortage of dock coal of not far from 40 per cent of the winter's needs.

The tonnage served the Northwest from the docks is somewhat variable. The all-rail trade at times sells a larger tonnage than at others. During the past year or so, the dock business has been cut into by the all-rail trade, through the revised freight rates which hit the lake-and-rail trade harder than the all-rail. This has been adjusted by an allowance of 28c. on lake-and-rail coal since May, to last until Oct. 31, and the effect will be to extend the dock zone and cut into the all-rail zone. The all-rail people are quite aggressive at times, and have been known to go after tonnage and cut prices sharply. They may conclude to do this in reprisal, before the season is over.

Canada

TORONTO

Trade Very Quiet—Large Yard Stocks Accumulated—Shortage Probable When Demand Sets In.

There is little current demand either for anthracite or bituminous and the accumulation of coal in the yards has taxed the storage capacity to the limit, resulting in a decrease of mine shipments. The public is still holding back orders for fall and winter supplies, and dealers are apprehensive that when the cold weather sets in there will be a rush of orders and probably a shortage in the supply. Meanwhile, the carrying of large stocks, with limited storage facilities, is putting the trade to much inconvenience.

Quotations are as follow:

Retail:	
Anthracite egg, stove, nut and grate	$15 50
Pea	14 00
Bituminous steam	11 00@11 50
Domestic lump	12 25
Cannel	16 00
Wholesale f.o.b. cars at destination:	
1-in. lump	8 00@8 50
Slack	6 00@6 75

Inland West

CLEVELAND

Slack Shortage Develops as Prices Rise — Lake Movement Tending to Slow Down — Slight Gain in Industrial Demand.

Bituminous—Something akin to the old time "scarcity market" has developed in the slack situation this week. A few of the largest producers of lump coal for Lake shipment have curtailed their output sharply with the result that the supply of slack is inadequate. The demand for some months has been on a hand-to-mouth basis and now that supplies have suddenly vanished may consumers are finding themselves in difficulties.

A slightly better demand is beginning to be apparent from industrial consumers, reflecting the somewhat more confident feeling that is beginning to be felt. No sharp revival is expected, but coal men assert that the corner has been turned and predict a gradually rising demand throughout August, with a more pronounced gain during the autumn months.

Lake—While there is much talk about curtailment of shipments to the lower ports for the Northwest trade, and many indications that this is being done, yet the aggregate tonnage arriving at the ports is still heavy. Arrivals at the first of the week were unusually large. The sentiment among operators is that the movement up the Lake will show a decline in August unless efforts now being made in the Northwest to move coal from the docks are successful. According to reports reaching the trade

here, dealers at the Upper Lake ports are engaging in a price war in an endeavor to reduce their stocks.

Pocahontas and Anthracite—As the season advances the retail is gathering more confidence. It is realized that the purchase of fuel for next winter cannot be postponed indefinitely.

Retail prices for coal delivered follow: Anthracite—egg $14, chestnut and stove, $14.25; Pocahontas — shoveled lump, $11.50, mine run $9.50; domestic bituminous, West Virginia Splint, $9.25; No. 8 Pittsburgh, $7.75; Cannel lump, $11.50; Steam coal, No. 6 and No. 8 mine run, $5.50; No. 6 and No. 8 slack, $5; No. 8 ¾-in. lump $5.50.

Receipts of bituminous coal for the week ended July 23, were 484 cars, divided; industrial, 369, retail 115; as compared with a total of 688 cars the previous week.

DETROIT

Little Demand Apparent — Industrial Conditions Unimproved — Anthracite Business Nil.

Bituminous—There are as yet few indications of an early realization of better market conditions. Both steam and domestic consumers are still delaying the releasing of orders for their winter supply.

Buyers are being advised to place their orders at once that they may have the benefit of the favorable transportation conditions in obtaining prompt delivery of shipments. A little further delay, in the opinion of jobbers, will result in uncertain movement of shipments owing to the pressure of crop movement on railroad facilities.

Dealers are of the opinion that the reduction in freight charges, announced recently by the Interstate Commerce Commission, on rail-lake shipments to be moved by boat from Lake Erie ports, is unlikely to produce any cheapening of coal for Detroit consumers. It is thought the lower freight rate may have a tendency to stimulate shipments over Lake routes, which have been diminishing during recent weeks.

West Virginia lump is quoted $3.25@$3.50, mine run $2.25@$2.50, nut and slack $2@$2.25; Ohio lump $3@$3.25, mine run $2@$2.25, nut and slack, $1.15@$1.25; smokeless lump and egg, $5.25@$5.50, mine run $3@$3.50, nut and slack, $2@$2.50.

Anthracite—Little business in prepared sizes is being done by retail dealers. While the lack of orders is due in part to the public's unwillingness to pay what it regards as high prices, lack of employment, also is a factor in curtailing domestic buying.

COLUMBUS

Strength in Screenings — Domestic Demand Weaker—Lake Tonnage Declines —Production Suffers.

With the Lake trade waning and little demand for domestic sizes, screenings are showing more strength because of reduced production. Screenings from all fields in Ohio are selling $1.25@$1.40. Other steam grades are not showing much strength with mine run quoted $2@$2.25 in most of the fields.

The buying public feel more and more that freight rates will be reduced and are still holding off on the purchase of their winter fuel supply. Retail prices are steady at former levels with Hocking lump selling around $6.50, and West Virginia splints $7.50@$7.75. Pocahontas is not as strong and sells around $9.50@$9.75. Anthracite is around $15.

The Lake trade is showing signs of the expected let-up which was freely predicted several weeks ago. The H. V. docks at Toledo during the week ended July 23 loaded 122,328 tons as compared with 165,763 tons the previous week, making a total of 2,228,170 tons for the season. During the same week the T. & O. C. docks loaded 66,629 tons as compared with 28,853 tons the previous week, making 594,037 tons for the season.

Production is being reduced to about 20 or 30 per cent. The Hocking Valley is producing but 20 per cent of normal while the same percentage is reported from Crooksville, Cambridge and Jackson. In the Pomeroy Bend field the output is less than 25 per cent.

CINCINNATI

Slack Coal Weakens Again—Pocahontas Softer—Retail Prices Fairly Stable.

Slack prices which have shown a disposition to strengthen under the influence of a curtailment of the demand for prepared sizes could not maintain the advantage that they gained last week and have sagged again. This with the prepared selling at the new low figures again places the aggregate returns at a new low level. Pocahontas lump has shown its first sign of weakness for the past two months. More mines are reported closed in the southeastern Kentucky fields. New Lake business here is practically nil. Country inquiries have sloughed off to the lowest ebb yet.

Lighter speculative business at Tidewater and lightening of the seaboard demand is given as the cause for reducing the price of slack to $1.25@$1.50 once more from the West Virginia fields. Kentucky slack can be had from $1@$1.25. Mine run is priced $1.50@$1.75. Kentucky operators still hold to their price of $3.25@$3.50 for lump and block and good West Virginia offerings can be had for $2.75@$3.

Pocahontas and New River companies shipping heavily on contract are holding egg and lump at $5.25@$5.50 though they have reduced nut to $4.25. Spot offerings of smokeless lump of good grade and quality have been made at $4.50@$5. Circular prices on mine run hold to $3.50 with sales from $2.75 up. Slack is not being quoted but sales from smaller mines have a range of $1.75@$2.50.

Retail prices are much on the same plane as last week, though some of the firms are playing with the rise and fall of the bituminous slack market. Some sales this week have been made as low as $4.35. Smokeless lump is quoted $9.75@$10.25, mine run $7.50@$8 and screenings $6.50. Bituminous lump $7.25, and mine run $5.75.

ST. LOUIS

Domestic Still at Standstill — Country Movement Slightly Improved — Screenings Show Activity.

Aside from a little hard coal there are no domestic deliveries locally. What inclination there was to buy on the part of the consumer was smothered by the extreme hot weather. Reports from country towns show some little activity in the movement of domestic. A few apartments in St. Louis are finishing up on their needs and the schools are about filled. This contract calls for Standard coal which is coming, it is understood, from a mine near Duquoin.

Screenings, in the steam sizes, is all that has picked up. This start ought to continue for the better unless domestic begins to move. Some few steam plants are getting a little coal ahead.

Anthracite receipts at the St. Louis gateway for this season to Aug. 1 will approximate 60,000 tons. This would indicate that the total to the end of the year will be around 85,000 to 90,000 tons. The movement to date is considered good in view of the headway being made by coke in the St. Louis territory.

Southwest

KANSAS CITY

Market Quiet — Steam Coals Feel Oil Competition — Prices Firm.

There is little or no change in the market situation. Demand for domestic grades has slackened off a trifle and steam plants continue to change from coal to oil, some of the large packing companies having changed to oil recently. It seems, however, that fuel oil production is about sold up, as the market is stiffening and some plants are unable to make long time oil contracts. Prices f.o.b. mines remain unchanged.

South

BIRMINGHAM

Market Extremely Quiet—Small Mines Keep the Market Glutted — Trade Requirements Show No Increase.

Trade conditions are not such as to afford much encouragement for better buying in the near future. Industrial recuperation is very slow and hardly noticeable and thus the demand from this source is negligible. Outside of the railroads and utility companies very little contracting has been done and the spot market is being depended on for supply to meet current needs. Spot buying is not sufficient to stimulate

the trade to any extent but only suffices to enable consumers to get their coal at almost their own price.

Quotations on mine run are reported as follows: Carbon Hill $2@$2.40, Cahaba $2.50@$3, Black Creek $2.75@$3, Pratt $2.50@$3, Corona $2.25@$2.50, Nickle Plate $2.25@$2.50, and Jefferson $2.25@$2.50.

Domestic coal is now being moved with more or less difficulty on account of the retail trade being practically at a standstill as consumers decline to place orders. Quotations for August show a slight advance over July in accordance with the usual custom of increases during the summer months. Figures are as follows: Carbon Hill $4.15, Cahaba $5@$6, and Black Creek $5@$6.

Production will be somewhat increased and employment conditions improved by the announcement of the Woodward Iron Co. of its intention to blow in another furnace early in August.

LOUISVILLE

Production Showing Very Little Improvement—Screenings Stronger—Industrial Stocks Getting Low.

Markets are somewhat stronger than they have been as a result of slow movement of prepared sizes forcing higher prices on screenings. West Virginia screenings, which have been selling down to $1 and less are today going at $1.50@$1.60. Hazard screenings are fairly firm at $1.25@$1.35, and Harlan is quoting $1.60@$1.75.

All prices are somewhat better than last week when there were quotations of $2.75 and under on some eastern Kentucky prepared, and when screenings were quoted as low as $1.

Orders are coming a little better as a result of industrial consumers having used up stocks in hand, and being forced to buy. Many of them have been running their bunkers down to a very low point.

There is no general improvement shown in any one class of industrial buying, and the retailer demand continues slow as the domestic consumer is putting off his buying.

West

DENVER

Prices Increase, but Demand Lags—Mines Suffer Heavy "No Market" Losses.

Prices are looking up while production, compared with a year ago, shows a weekly decrease of 80,000 tons. The more optimistic business men believe that industrial activities will recover shortly.

The great item going to make up "lost production" is lack of orders, totaling 42 per cent of possible full-time output for the week ended July 16, when 144,550 tons were mined.

Aug. 1 the mine price on lignite increased 25c. and the increase was carried to retail markets, where a price of $9 was asked on a mine basis of $3.75. Cheaper grades are retailing at $6.35@$8.50.

Bituminous shipments have been slow, but lignite demands have been even fewer. Routt County lump is retailing $11@$11.50, and southern Colorado grades $10.50@$11, while nut is 50c. cheaper.

There are approximately 13,500 miners on the payrolls—the average employed throughout the year—but companies in many places are unable to do more than give them part time week.

News From the Coal Fields

Northern Appalachian

ANTHRACITE

Dull Period Anticipated—Independents Cut Prices—Steam Sizes Pile Up.

Operating conditions were not so satisfactory last week and producers seemed to be looking forward to a very dull period during the next thirty days. The mines are all being operated, but while the tonnage produced shows no material decrease, no pick-up in the market is looked for until after Sept. 1.

It is probable that all of the large companies will continue to work full-time, although independents are being forced to close down, despite the fact that they are shading their prices.

EASTERN OHIO

Production Increases — Slack Stronger — Heavier R.R. Tonnage — Rate Cut May Help Lake Business.

Production during the week ended July 23, ran counter to the recent downward trend and registered an increase over the preceding week of some 31,000 tons. Aggregate tonnage mined was 396,016 tons, or 63.4 per cent of the total rated capacity.

Production figures for the year to July 23, indicate a total of 9,564,890 tons, or 53 per cent of rated capacity. This is at least a million tons ahead of last year when the output was curtailed by an acute car shortage.

The Association mines worked 53.1 per cent of possible worktime as compared with 51.1 per cent the preceding week, and produced 63.6 per cent of capacity.

There is a slight improvement being felt in Ohio industry, and this with continued fairly heavy shipping of Lake coal and also some better demand from the carriers, explains why production is holding up in the face of many predictions that a slump was at hand. The railroads took at least 35 per cent of production last week and a continuance of this ratio may be expected because of anticipated stocking-up and greater fuel needs of the roads to handle fall traffic.

The enlargement of the Lake destination territory to which the 28c. per ton allowance applies, thereby resulting in reduction in the rail rates Aug. 1 to certain upper Lake ports not heretofore enjoying it, may bolster the declining Lake tonnage. The railroads have about 14,000 cars at the Lake front, with some 3,000 cars in transit.

Operators say that the general industrial demand remains quiet and that both spot and contract inquiries are slow, with the latter rather negligible. Spot prices remain much the same with the exception of slack, which has stiffened during the week.

PITTSBURGH

Demand Extremely Light — Business Going to Non-Union Fields—Wage Subject May Be Reopened.

Demand continues extremely light and has probably decreased further in the past week or two. Lake shipments have now dropped to relatively small proportions. With a little general business going, the district can only occasionally sell coal, on account of the competition of non-union fields nearby, particularly the Connellsville region, which has had such a large wage reduction.

While one would probably have to pay $2.10@$2.20 for Pittsburgh district mine run steam he can easily get Connellsville coal at $1.80@$1.90 and there are lots of Connellsville or other coal to be picked up at lower prices, down to about $1.50.

There are no indications that demand is on the verge of increasing and there is nothing definite to suggest that the district is likely to have a lower production cost in the near future. Operators in central Pennsylvania have addressed the union officials in that field with a suggestion that the wage matter be opened, to pave the way for more activity. Nothing of this sort can be seen to be brewing in the Pittsburgh district.

Prices are largely nominal, there being scarcely any transactions, and are approximately as follows: Slack, $1.60@$1.75; steam mine run, $2@$2.15; ¾-in. steam, $2.25; gas mine run, $2.20@2.35; gas lump, $2.60@$2.80. Slack has advanced on account of decreased production of ¾-in.

CONNELLSVILLE

High Quality Coke Sold—Little Room for Further Decline — Spot Foundry Demand Improved.

The report a week ago that a Buffalo steel concern made a purchase of 15,000 tons of furnace coke each for August and September at about $2.75 proves erroneous. The trade arrived at the

price by considering offers at $2.80@$2.85 that were refused. It turns out that during the negotiations some strict stipulations as to quality were introduced and the period was reduced from the original two months, the outcome being that the business was placed with a dealer at $3 net to the consumer, the dealer placing it with producers at $2.85@$2.90. The Robesonia business, previously reported as being at $3.25 to the buyer, is learned to have been at $3 to the producer, though on account of certain special conditions some middle interests figured in the transaction. The coke is under very strict specifications.

Spot furnace coke usually brings about $3 when sold by brokers, but operators have accepted less in many cases, and in one extreme instance a lot of several thousand tons went direct from producer to consumer at $2.75, this being the lowest done.

Recent transactions have been on the basis of the further reduced wage scale of July 1, and it looks as though the market has little if any room for further decline.

Spot foundry coke has improved further in demand, though the market is still distinctly light, and is quotable as follows: Spot furnace, $2.90@$3; contract furnace, $3; spot foundry, $4@$4.50.

The *Courier* reports production in the week ended July 23 at 7,900 tons by the furnace ovens, and 13,620 tons by the merchant ovens, making a total of 21,520 tons, an increase of 40 tons.

UPPER POTOMAC

Mines Still Marking Time—More Operations Suspended—Prices Very Soft.

Upper Potomac and Georges Creek mines were still marking time to a great extent during the week ended July 23, there being no developments to stimulate production in either field. If anything, the output was even more restricted, with mines in larger number shut down awaiting a change in the market situation.

CENTRAL PENNSYLVANIA

Hand-to-Mouth Buying—Mines Unable to Meet Non-Union Competition—U. M. W.'s Refusal to Consider Reduction Closes More Operations.

A combination of circumstances seems to present an impregnable front against the efforts of the operators and an even deeper slump characterized the output during the month of July than up to the end of the first six months of the year.

There is no disposition on the part of industrial or domestic consumers to place orders for any considerable quantity of coal. Operators seem to be waiting, hoping for better prices or a reduction of the scale so that they can compete with non-union fields which have gone back to the 1917 scale. It is felt that economic conditions throughout the country demand cheaper coal and the operators are not in position to offer it. Consumers are perfectly satisfied to buy as they need coal, on the open market, at the prices ruling from time to time.

A leading operator states that the district is losing heavily as a result of the United Mine Workers' failure to consider a reduction. This operator states that his company must drop a contract on Aug. 4, which amounts to 120,000 tons a month because non-union mines can underbid his company by 60c. Union miners refuse to consider a modification of the scale and then, when a mine is forced to close down, they go into the non-union fields and work on the 1917 basis.

UNIONTOWN

Industrial Conditions Encouraging — More Plants Resume Work — Steady Improvement Seen.

Industrial conditions in the Connellsville coke region during the past two weeks have assumed an encouraging aspect and the belief that the industry has seen the worst of the depression is steadily attracting more advocates.

Here and there a number of the smaller mines are getting back to an operating basis although the nature of the business they received which justified resumption has not yet been established. In addition quite a few of independent coke plants are now engaged in mining coal for shipment to byproduct plants.

There is now basis for the opinion held by any number of operators and observers that conditions will gradually become better until a complete resumption is again at hand. The improvement of the past two weeks is sufficiently indicative that business is slowly but steadily returning.

Most operators are trimming their sails for fairly good business during the last quarter commencing Sept. 1. There will be more business in August than at any time this summer but the expectation is that nothing worthwhile will be accomplished before Sept. 1.

FAIRMONT AND PANHANDLE

R.R. Tonnage Improves — Lake Shipments Continue to Decrease—Spot Market Still Listless.

Fairmont

Production increased slightly during the latter part of the week ended July 23. The output, or the bulk of it, was railroad fuel there being little general demand. However, a few more inquiries were being made and there was some discussion of future contract requirements.

Export shipments were light and comparatively little coal went to the Lake. Prepared sizes ranged $2.60@$3, mine run about $1.75, and slack $1@$1.25.

Northern Panhandle

More suspensions of operations were necessary as shipments to the Lake continued to decrease and the general spot demand remained very dull. There was almost no contract inquiry. Prices were only nominal, mine run $2.25, prepared $2.40@$2.60 and slack not over $1.25, with very little coal moving at any price, however.

Middle West

INDIANA

Somewhat Better Feeling Prevails, but Current Demand Is Unimproved — Industrial Inquiries Increase — Domestic Trade Sluggish.

Little change is recorded with the exception that industries are making more inquiries about prices. These have held steady during the past week, but this is attributed to the fact that they are as low as they can go. Screenings are still as low as $1.80 and some prices have been shaded down below this figure.

Continued hot weather is held responsible by the retailers for the poor demand for domestic coal. Generally in July there is some increase in the call for the better domestic grades from persons who are storing. So far this year the demand from this source is below normal. A rise has been predicted among retailers for Aug. 1, but up to the present time it appears that it will likely be Sept. 1 before such a rise takes place. The demand does not justify it at the present time.

Some of the Indiana utilities are making inquiries concerning prices. Little actual business has resulted, however. Railroad reports in the state show a few more cars moving and the general business outlook is more encouraging than it has been for weeks.

SOUTHERN ILLINOIS

No Noticeable Improvement Except on Screenings — Screened Sizes Accumulating — Poorer Working Time — No Price Increase.

The screenings situation shows up considerably better in the Carterville field. The 600 cars that were pooled between the big shippers and which went to Chicago packers and one other large food corporation, has helped to eliminate the screenings surplus. Some of the screenings that have been on the ground for many weeks past are now being loaded. The prevailing prices range from $1.25 upward, but on current business the tendency is to ask $2.85 and get as close to it as possible. Some operators are shipping nut out as screenings to relieve the situation when a screening order carries a good price.

Domestic orders are few. This applies to all territories, although more is moving northwest than elsewhere.

Independent prices range as low as $3 for lump and egg, and nut from $2.35 up. Mine run is $2.75 and screenings $1.25 upward. The independents are showing up perhaps a trifle better in working time, but their coal cannot at these prices mean other than a loss.

In the Duquoin field in Perry County conditions are not as good. Prices are in some instances lower. In Jackson County a better showing is made on time and price. At Murphysboro—the Big Muddy vein—one mine worked every day but one in June—another missed three days and July records are almost as good to date. Mt. Olive shows

no change from the report of last week.

The Standard field reports improvement in screenings and here and there a slight increase in movement of screened sizes. Railroad coal is moving better.

On July 22, the following report of "no bills" on hand will show why an advance can be expected on screenings unless the domestic tonnage begins to move: Southern Illinois, screenings, all sizes, 264 cars; prepared coal, all sizes, 2,161 cars; central Illinois, screenings, all sizes, 262 cars; prepared coal, all sizes, 684. This shows slightly over three cars of screenings and about twenty-one cars of domestic coal per mine on hand.

Up to the end of the month there was no announcement of any increase in the circular price of Carterville or Mt. Olive coal. Thus the top will be $4.05 for domestic sizes. Only a demand will bring an increase in the Standard field. It is understood that several operators in the Springfield district have announced an increase.

WESTERN KENTUCKY

Business Slightly Better—Prices Firm —Production Not Being Forced.

Operators are maintaining values and slowly getting better prices, through holding down production when the market cannot absorb it. The result is that the general situation is looking promising in view of the fact that operators are generally of the opinion that there will be an active fall and winter trade.

It is patent that the domestic consumer is going to be a late buyer this year, and some of the retailers are under the impression that there will be more coal bought in the dead of winter than at any previous time since before the war. As western Kentucky has always been a prominent prepared-size producer the outlook is for a heavy fall and winter business.

In the event of a heavy demand developing later for prepared sizes there is some speculation as to just what can be done with screenings if industrial demand does not show material improvement over present consumption.

Middle Appalachian

LOW-VOLATILE FIELDS

Production Declines — Export Tonnage Slumps—Gulf Mines Hindered by Blast —Prices Soft.

New River and the Gulf

New River production fluctuated between 13,000 and 17,000 tons a day during the week ended July 23. Conditions were becoming worse and more mines were closing down for lack of orders. Neither at Tidewater, Lakes nor Inland points had it been found possible to secure any desirable business and some of the largest concerns closed during the week. Little coal was being exported and even government shipments had been curtailed.

Very little Gulf coal was being produced as the main line of the Virginian had not been cleared of the debris from the blast set off at Maben. Hence, during the greater part of the week, mines were without transportation facilities. However, there was literally no market whatsoever at Tidewater or elsewhere. Export shipments had come to a standstill and Tidewater prices were as low as at any time during the year.

Pocahontas and Tug River

Loss of export business cut down Pocahontas production so that the output was not over 40 per cent, with "no market" losses aggregating about 300,000 tons weekly, as against a production of about 235,000 tons. Although few mines were closed down entirely, yet most concerns were limiting operations to about one-half a week. Contract coal only was being moved, there being no spot demand discernible. Under such conditions prices were not as firm, prepared averaging $4.50@$5, mine run $2.25@$2.75 and slack in slim demand around $1.75@$2.25.

Poorer demand caused Tug River production to reach new low levels, in view of the fact that it was no longer possible to send so large a tonnage to Tidewater or the Lake. Prices, however, were being maintained, although very little business was being closed either on a spot or contract basis.

HIGH-VOLATILE FIELDS

Steadily Waning Demand—More Mines Closed — Tidewater and Lake Outlets Poorer.

Kanawha

If anything there was even less of a spot market during the week ended July 23. The domestic call had disappeared almost entirely and contract orders were being further curtailed. Production did not reach more than 10,000 tons daily and more mines closed down indefinitely. Where mines were running at all two days was the maximum. The best mine run price was $1.75, with slack $1.10@$1.25. Prepared sizes were only bringing $2.50 @$3.

Logan and Thacker

Although Logan production was still on a larger scale than in other fields, it represented coal for storage rather than any general demand. However, "no bills" were on the increase. Lack of a Tidewater outlet and the slowing down of Lake shipments were affecting production to a great extent.

In the Williamson field a steadily waning demand cut down the production. However, the output was somewhat strengthened by the fact that more railroad fuel was being handled. No market losses were increasing rather than diminishing and prices were on about the same level as in other high-volatile regions, although but few sales were being made.

Northeastern Kentucky

Paralysis of production continued as a result of even more pronounced dullness. Industrial concerns still withhold steam orders in the belief that better prices may prevail and the market for domestic coal is also in a slump. Even railroads were using only a small proportion of the usual tonnage required. With less coal being prepared screenings were not so plentiful and ranged around $1.25; mine run averaged about $2 and prepared sizes $2.75@$3.25.

Virginia

Conditions remained virtually unchanged, there being a very poor market and production was curtailed to about 50 per cent. Few new contracts were being closed, and only those operations having live contracts were able to keep running. There was little demand for coke and scarcely any was moving.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Steam Market Shows Better Tone — Domestic Demand Sluggish—Fall Rush Seen.

While there appears to be a little better tone to the steam market, the general situation remains unchanged. Nut and slack and other steam sizes are moving more readily than block, but so far the Straight Creek operators have been able to maintain a price of $3.50 @$3.75 for block, while good Harlan is being sold 50c.@75c. less. Nut and slack is being sold $1.60@$1.75, 4-in. steam $2 and straight mine run $2.25 @$2.40.

It is plain that domestic buying is far less than normal and operators are preparing for an inevitable rush of orders later on. Just what will become of resultant coals may be a problem, unless industrial consumption picks up in the meantime.

West

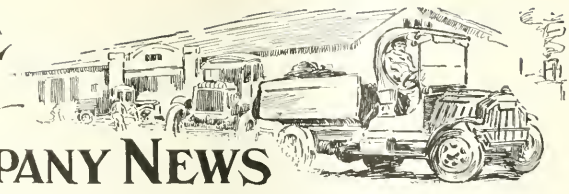
UTAH

Slight Improvement Noted in Coal Situation—Coast Trade Holding Up—Labor Conditions Excellent — No Industrial Improvement.

There is a little improvement in the coal situation, the first in many months, but this improvement is anything but marked. Dealers are of the opinion that business will not really pick up before the latter part of August. The head of one of the largest retail coal yards in Salt Lake City, with whom the correspondent of *Coal Age* discussed the situation, said he expects to see people glad to carry a few hundred pounds of coal home in their automobiles during the coming winter.

The Coast trade is holding up fairly well and the labor situation continues excellent. There is considerable coal in the Salt Lake City yards and those dealers who are in a position to do so are putting in all they can hold. There is no improvement in the industrial situation and no prospects of an immediate change.

MINE And COMPANY NEWS



INDIANA

John E. Cox, judge of the Vigo Superior Court, Terre Haute, has awarded Ross Mace judgment for $873 against the **Vandalia Coal Co.** Mace asserted in a complaint that the Vandalia Coal Co had taken 25,000 tons of mineral and sulphur substance from his farm in Lost Creek township without his consent and permission.

KENTUCKY

T. C. Hughes, president of the Standard Harlan Coal Co., reports that his company has taken over the Harlan Gem Coal Co., located at Ages, in Harlan County, Ky.

The St. Bernard Mining Co. and the **W. G. Duncan Coal Co.** power plants are being put in parallel with a common line between the two stations. The excess power will be taken over by the Kentucky Utilities Co. This energy will be used in mines, industrial plants and community use.

NEW YORK

Perry & Co., wholesalers, 300 Madison Avenue, New York, in a circular sent out to retail coal dealers say:

"It has been suggested to us that an annual 'clean-up week' would not be a bad idea for many a dealer's yard. Collect all the old scrap and rail the junkman. Wash up the wagons and motor trucks, grease up all the wheels and machinery, oil and polish the harness. Give your horses a run in pasture, or a stand on blue-clay, and your motors a renovation. Paint up the entire plant, lock, stock and barrel. Take this opportunity to look prosperous. Ginger up your confidence in your own business; breathe success. Talk, eat and sleep business optimism. It is as contagious as the measles. It will reach your office and sales force, and filter through to your trade. 'Clean-up week means also cleaning up your office—burning a lot of old stuff that you have no further use for, and getting a new slant at those old outstanding accounts. Get after them and get the cash. It is all up to you, Mr. Proprietor; you must be the first victim of the epidemic."

OHIO

The Mahio Coal & Mining Co. with general and retail offices in Cincinnati and mines at McArthur, has passed into the hands of Receivers Fred O. Valentine and Arthur W. Moore, under orders of the Superior Court. This was caused by a suit of its president, Charles P. Malone, who sued for an accounting. Disagreements as to management is also told in the suit filed.

The Board of Education, City of Cleveland, has requested bids on 40,000 tons of coal, various grades, to take care of their requirements the coming winter. It is expected bids will be opened and contracts awarded in the near future.

PENNSYLVANIA

The Chartiers Creek Coal Co., of Pittsburgh has contracted with Roberts and Schaefer Co., for the reconstruction of the tipple at Canonsburg.

The Midway Coal Co., of Bridgeville, has contracted with Roberts and Schaefer Co., for the installation of machinery equipment for its new tipple at Midway.

The Clarksburg gas coal mine of the **Hillman Coal & Coke Co.** resumed operations on July 5, after being idle for several months.

The Alliance Coal & Coke Co. plant at Denbo, a short distance up the Monongahela River from Brownsville, was recently closed down indefinitely.

The Warnke Coal Mining Co. has notified the Secretary of the Commonwealth that it has made an actual increase in its capital stock from $75,000 to $100,000. The company operates in Lackawanna County.

Alicia No. 1 coal and coke plant and Alicia No. 2 coal mine, of the **Pittsburgh Steel Co.,** closed down indefinitely on July 1.

State troopers and county authorities are investigating the series of explosions which damaged a portion of the Donald mine of the **Consolidated Coal & Coke Co.,** near Masontown. Mine officials said no authorization had been given for use of explosives in the vicinity of the mine where the blast occurred.

There were ninety fewer fatal accidents during the first six months of this year than during the same period in 1920 in the bituminous mines of Pennsylvania, while in the anthracite region during the same period there were three more fatalities this year than last year. The number of serious non-fatal accidents—those incapacitating workers for sixty days or more—was reduced materially in both fields, there being 821 fewer non-fatal accidents among the bituminous mine workers and 159 less among the anthracite mine workers in 1921 than in 1920.

From Jan. 1 to June 30, 1920, according to figures tabulated by S. E. Button, Chief of Mines, there were 210 fatalities in the bituminous field, while during the corresponding period of 1921 the number was but 120. In 1920 there were 646 non-fatal accidents in the bituminous region as compared with 725 this year for the first six months.

Fire broke out in the Gallatin Mine of the **Pittsburgh Coal Co.,** near Monongahela City, on Tuesday morning, July 12. The cause of the fire is believed to have been a short-circuit caused by a roof fall. The company succeeded in sealing off the fire on Thursday, July 14.

The Buck Ridge Coal Mining Co., Knickerbocker Building, New York, of which W. J. Fallon, is president, is planning to double the output of its Buck Ridge colliery, at Shamokin. Three new slopes are being driven to reach coal deposits not exploited heretofore, and a 750-hp. boiler is being installed to provide more power.

UTAH

The Beehive Coal Co. is making application for a lease on 1,560 acres of coal lands west of Helper. They propose 10c. a ton royalty and $200,000 improvements during the first three years of the lease.

Niel M. Madsen and **R. Y. Gibson** have been granted a government lease under the royalty and improvement plan on a large tract of coal lands between Schofield and Clear Creek and adjacent to the Denver & Rio Grande R.R.

According to an opinion handed down by Attorney General Cluff, title to coal discovered on leased grazing lands may be passed to the state in instances where owners do not desire to pay taxes on the mineral. Cases have been brought to the attention of the State Board of Equalization in which persons acquiring land for grazing purposes have reported that coal deposits discovered on their land are of such an inferior quality or are so far from a railroad to give them little or no commercial value. In cases of this kind it is contended that the payment of a tax on the deposit makes the cost of grazing prohibitive.

WEST VIRGINIA

A deal has just been completed whereby the **Maine Collieries Co.,** backed by Eastern capital, is to take over a portion of the holdings of the **Bear Mountain Coal Co.,** in Barbour County. The purchasers expect to produce coal in the late summer or fall.

Fairmont and Connellsville people are principally interested in the newly organized **Peoria Coal Co.**, of Fairmont which has just been formed for the purpose of operating in Marion County with a capitalization of $125,000. Leading figures in the new concern are: Anthony Love, H. T. Spiker, of Connellsville, Pa.; A. J. Colborn, Osman E. Swartz and Ada Moore, of Fairmont.

The Hamil Coal & Coke Co., of Blaine, has contracted with Roberts and Schaefer Co., for the complete machinery equipment for its new tipple to be installed at Blaine.

Chairman Kenyon, of the Senate Committee on Education and Labor, has appointed the following sub-committee to investigate disorders in the West Virginia-Kentucky coal fields: Senators Kenyon, Iowa; Phipps, Colorado; Shortridge, California; McKellar, Tennessee, and Walsh, Massachusetts. The miners and operators are each allowed to present six witnesses in Washington, beginning **July 14.**

Fairmont Mining Machinery Co., Fairmont, directs attention to the fact that the statement in *Coal Age*, page 1065, issue of June 9, 1921, relating to the belt conveyor in the mines of the Chesapeake Coal Co., should have stated that at this mine there is a 200-ft. apron conveyor, elevating the coal from 100 ft. below the surface to the tipple height, instead of stating that the conveyor delivers coal about 200 ft. from the top of the hill to the tipple.

A small tonnage of Redstone coal is being loaded by the **Brewer-Harrison Coal Co.** but such coal is being loaded in the course of development as this company only began production a short time ago. The operation is about two miles east of Weston on the Pickens branch of the B. & O. The company was formed late last year and in the last few months has been engaged in putting in a new plant.

A tract of Redstone coal is being developed by the **Mudlick Coal Co.** on the Louis Bennett estate about one mile from Weston. The Mudlick company has progressed to a point in the installation of a new plant where it is now able to produce and load a little coal. Shipments are being made over the Richwood branch of the B. & O.

The Eastern Coal Co., a Cumberland (Md.) concern has acquired the operation of the **Mary Coal Co.,** located near Kingwood in Preston County, the consideration being in the neighborhood of $50,000. In purchasing the mine, the company also secured 125 acres of land in the Bakertown seam. From what can be learned the Eastern Coal Co. has negotiations under way for the purchase of additional mining property.

Operations at the plant of the No. 2 mine of the **Irona Coal Co.,** located on the Morgantown & Kingwood R.R. near Kingwood, were resumed recently, this company having secured a contract to furnish coal to the P. & R. R.R. The company is controlled by the J. H. Weaver interests of Philadelphia.

Favorable progress having been made on the preliminary construction work for a new plant of the **McHale and Talbott Coal Co.,** the company has begun work on the installation of a siding at its plant not far from Philippi in Barbour County. Principal stockholders in the new concern are E. T. McHale, Donald Talbott and Brown Talbott, all of Elkins, at which point the company's office is located. This concern will be in readiness to begin operations about Sept. 1.

Clay County is to be the seat of operations of the newly organized **Kanawha White Ash Collieries Co.,** which is capitalized at $250,000. This concern expects to operate on a fairly large scale at Dorfee in Clay County. Pennsylvania people, in large part, are behind the new concern, among them being: E. M. Burns, of Ebensburg; E. J. Foye, J. J. Caulley of Brownsville; F. E. Williams, of Buckhannon and A. J. Horan, Charleston.

WYOMING

The Union Pacific Coal Co. notified several Wyoming coal dealers that the price of their coal would be increased 25c a ton July 1 and another 25c. on Aug. 1. The reason given for the raise is that mining costs and operating expenses are still high. It also is stated that orders for coal have fallen off to such an extent that most of the mines are working only two days a week, and some only one, but overhead expenses go on just the same.

Traffic News

In the complaint of the **Gillespie Coal Co.**, the I. C. C. decides that the rates on coal from complainant's mine at Gillespie, Ill., to interstate destinations are not unreasonable but are prejudicial, which prejudice the commission orders removed.

The I. C. C. has denied the application of certain railroads to continue rates on coal and coke from Illinois and Indiana to points north and west without observing the long-and-short-haul clause.

The I. C. C. has authorized the Huntingdon & Broad Top Mountain Railroad & Coal Co. to assume obligation for $300,000 in notes to procure locomotives and passenger cars.

In the complaint of the **Illinois Steel Co.**, the I. C. C. decides that rates on coke from coke ovens to points in the company's plant at Gary, Ind., in 1918 were unreasonable, and awards reparation.

Personals

E. R. Thompson, secretary and treasurer of the Federal Coal Co., whose office is in Chattanooga, Tenn., was in Pineville recently. He reports that business in his section is still dull, but things are looking better.

Jesse H. Nuzum, of Shinnston, superintendent of five mines of the Consolidation Coal Co., located at Shinnston and at Lumberport, W. Va., has tendered his resignation after having been connected with the company for a period of twenty-four years. Mr. Nuzum desires to devote his entire time to personal business.

W. S. Walker, for the past two years southwestern sales manager at St. Louis for the Peabody Coal Co., has resigned and bought a ranch at Medford, Ore. He is succeeded by **A. W. Hamilton**, formerly of the Hamilton Coal Co. of Chicago.

Colonel L. E. Tierney, of Powhatan, president of the Powhatan Coal & Coke Co., is spending the summer at a northern summer resort and is undergoing treatment, having been in very poor health for some time.

D. A. Lyon, supervisor of stations, and **George S. Rice**, chief mining engineer for the Bureau of Mines, are now in Alaska on a tour of inspection to determine in what manner the Bureau of Mines can best assist the territory's mining industry. It is proposed to divide the territory into four districts, each being in direct charge of a Bureau of Mines engineer. District 1 has been assigned to **Bert W. Dyer**, who also will continue to discharge his duties of Federal Mine Inspector of Alaska. This district embraces the South coast, including the Matanuska, Kenai and Bering River coal fields, the Copper River basin and, for the present, the Katalla oil fields and Southeastern Alaska. A. A. Davis will continue to serve as superintendent of the Fairbanks station and, in addition, will be in charge of District 2, which consists of the territory tributary to the government railroad from Seward to Fairbanks. District 3 consists of interior Alaska, comprising the Yukon and Tanana basins. This district has been assigned to K. T. Sparks, assistant mining engineer. District 4 is the Seward Peninsula. No assignment of an engineer for this district has been made as yet.

Trade Catalogs

C-H Iron Clad Solenoids—Cutler-Hammer Mfg. Co., Milwaukee, Wis. Publication 873. Pp. 4; 8½ x 11 in.; illustrated. Describing design, especially adopted for operating brakes, clutches, valves, etc.—Advertiser.

Pennsylvania Air Compressors and Vacuum Pumps—Pennsylvania Pump and Compressor Co., Easton, Pa. Form 101; pp. 16; 6 x 9 in.; illustrated. Describing line of air compressors and reciprocating dry vacuum pumps.—Advertiser.

Sullivan Drill Sharpeners—Sullivan Machinery Co., Chicago, Ill. Bulletin 72-E; pp. 32; 6 x 9 in.; illustrated. Description of compressed-air machines for hammer-forging drill-bits and shanks.—Advertiser.

Synchronous Motor Control Apparatus and Exciters—General Electric Co., Schenectady, N. Y. Bulletin 48032; pp. 12; 8 x 10½ in.; illustrated. Describing four main divisions of synchronous motor control apparatus: exciters, compensators, panels and rheostats.—Advertiser.

Association Activities

National Coal Association

On the Government Relations Committee of the Association, appointed June 1, 1921, are:

Ogle, A. M. (Chairman) president, Vandalia Coal Co., Terre Haute, Ind.

Bockus, C. E., president, Clinchfield Coal Corp., New York City.

Gallagher, Michael, general manager, M. A. Hanna & Co., Cleveland.

Guthrie, T. W., president, Hillman Coal & Coke Co., Pittsburgh.

Kooi, Peter, president, Sheridan-Wyoming Coal Co., Sheridan, Wyo.

Maloney, A. J., sales manager, Chicago, Wilmington & Franklin Coal Co., Chicago.

Houston, T. E., Houston Coal Co., 1516 Union Trust Bldg., Cincinnati.

Huff, Julian B., president, Keystone Coal & Coke Corp., Greensburg, Pa.

Cunningham, W. H., secretary, West Virginia Coal Association, Huntington, W. Va.

Barnum, Walter, treasurer, Pacific Coast Co., 50 Church St., New York City.

Brydon, J. C., president, Quemahoning Creek Coal Co., Somerset, Pa.

Davis, P. B., president, Island Creek Coal Co., 1 Broadway, New York City.

Quealy, P. J., president, Gunn-Quealy Coal Co., Kemmerer, Wyo.

Ramsay, Erskine, first vice-president, Pratt Consolidated Coal Co., Birmingham.

Watson, C. W., president, Consolidation Coal Co., New York City.

Arnold, Gohen C., Buckhannon, W. Va.

Heiner, Moroni, vice-president, United States Fuel Co., Salt Lake City, Utah.

Mahan, E. C., president, Southern Coal & Coke Co., Knoxville, Tenn.

Caperton, G. H., president, New River Coal Co., Charleston, W. Va.

The Railroad Relations Committee of the National Coal Association, appointed June 1, 1921, is made up of the following:

Mahan, E. C., (Chairman) president, Southern Coal & Coke Co., Knoxville, Tenn.

Andrews, W. L., vice-president, Consolidation Coal Co., Baltimore, Md.

Barger, D. H., Shawsville, Va.

Boyd, C. D., traffic manager, Hazard, Harlan and Southern Appalachian Coal Operators' Associations, 705 Republic Bldg., Louisville, Ky.

Buffington, W. P., traffic manager, Pittsburgh Coal Co., Pittsburgh.

Francis, J. D., vice-president, Island Creek Coal Co., Huntington, W. Va.

Gunter, L. C., Stoney Fork Collieries Co., Knoxville, Tenn.

Hurd, D. F., secretary Pittsburgh Vein Operators' Association of Ohio, Cleveland.

Hutchinson, S. Pemberton, president, Westmoreland Coal Co., Philadelphia.

Jenkins, C. H., secretary and treasurer, Hutchinson Coal Co., Fairmont, W. Va.

Jones, J. S., president, Sunday Creek Coal Co., Hullock Bldg., Columbus.

Marion, A. M., president, Chartiers Creek Coal Co., 928 Park Bldg., Pittsburgh.

McElwain, John, vice-president, W. J. Rainey, 52 Vanderbilt Ave., New York City.

Moderwell, C. M., general manager, O'Gara Coal Co., 910 Fisher Bldg., Chicago.

Mouser, Otis, vice-president, Stonega Coke & Coal Co., Big Stone Gap, Va.

Reed, G. W., vice-president, Peabody Coal Co., McCormick Bldg., Chicago.

Taylor, C. W., vice-president, W. G. Duncan Coal Co., Greenville, Ky.

Waffle, Jonas, secretary, Indiana Coal Trade Bureau, 609 Trust Bldg., Terre Haute, Ind.

Warner, C. E., traffic manager, Southwestern Interstate Coal Operators' Association, Keith & Perry Bldg., Kansas City, Mo.

Yerkes, S. L., vice-president and secretary, Grider Coal Sales Agency, American Trust Bldg., Birmingham.

Callahan, John, traffic manager, National Coal Association, Washington, D. C.

Recent Patents

Self-Operating Mine Door for Locomotives. Patrick J. Stanton, Lundale, West Va., 1,374,478. April 12, 1921. Filed Aug. 18, 1920. Serial No. 404,441.

Coal-Mining Machine. John D. Pugh, Harrisburgh, Pa., 1,374,525. April 12, 1921. Filed June 30, 1915. Serial No. 37,265.

Automatic Mine Door. Newton K. Bowman, Canton, Ohio, 1,374,547. April 12, 1921. Filed Feb. 14, 1920. Serial No. 358,673.

Mine Drill. George Juresisin, Wilkes-Barre, Pa., 1,374,744. April 12, 1921. Filed Sept. 19, 1919. Serial No. 324,794.

Coal-Handling Apparatus. John H. D. Peterson, Chicago, Ill., assignor to the Link-Belt Co., Chicago, Ill., 1,375,105. April 19, 1921. Filed Aug. 12, 1918. Serial No. 249,468.

Attachment for Coal Conveyors. C. G. Walker, Bramwell, W. Va., 1,375,988. April 26, 1921. Filed Nov. 3, 1919. Serial No. 335,410.

Drilling Machine. O. D. Norman, Spencer, W. Va., 1,376,028. April 26, 1921. Filed April 19, 1919. Serial No. 291,245.

Industrial News

Washington, D. C.—The Potomac Electric Power Co., of the District of Columbia, has reported that although it has been able to effect a small saving in the item of coal in the present contract price as compared with the average price of the preceding year, the total reduction in operating costs therefrom amounts only to about $38,000, or a reduction in the cost of production of one-fortieth of one cent per kilowatt hour generated.

Washington, D. C.—Secretary Denby of the Navy Department, as a precaution to insure sufficient coal for the navy, has endorsed a bill pending before the House Naval Committee which would authorize the commandeering of coal for the navy upon order of the President.

Coming Meetings

The Huntington Coal and Industrial Exposition will be held in the Chamber of Commerce Building, Huntington, W. Va., Sept. 19 to 24 incl. Chairman of committee, Thomas A. Palmer, Huntington Chamber of Commerce, Huntington.

American Institute of Mining and Metallurgical Engineers will meet at Wilkes-Barre, Pa., Sept. 12 to 17. Secretary F. F. Sharpless, 29 West 39th St., New York City.

National Association of Cost Accountants will hold its annual convention at Cleveland, Ohio, Sept. 14, 15 and 16. Secretary, S. C. McLeod, 130 West 42d St., New York.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The twenty-fourth annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers will hold its annual meeting at Huntington, W. Va., on Sept. 20 to 23. Secretary-treasurer, Herbert Smith, Huntington, W. Va.

The following first-aid meets will be held during August: The Davis Coal & Coke Co., first-aid and mine rescue meet at Thomas, W. Va., on the 3d. The State of Iowa will hold its annual first-aid and mine-rescue meet on the 6th at Albia. At Birmingham, Ala., state first-aid and mine-rescue meet on the 6th. Under the auspices of the Colorado Fuel & Iron Co. a local first-aid and mine-rescue meet will be held at Pueblo, Col., on the 20th. The Stonega Coal Co. will hold its annual first-aid meet at Stonega, Va. on Aug. 8. The Lehigh Coal & Navigation Co., field day and first-aid meet on Aug. 13 at Greenwood Park, Hauto, Pa.

New York State Coal Merchants' Association, Inc. will hold its annual convention at Richfield Springs, N. Y., on Sept. 8, 9 and 10. Executive secretary, G. W. F. Woodside, 250 Arkay Bldg., Albany, N. Y.

Canadian Institute of Mining and Metallurgy will hold its annual Western meeting at Edmonton, Alberta, Canada, Sept. 14, 15 and 16. Convention secretary, T. B. Williams, 10,610 83d Ave., Edmonton, Canada.

American Manufacturers Export Association will hold its twelfth annual convention at the Waldorf-Astoria, New York City, Oct. 5 and 6. Secretary A. W. Willmann, 160 Broadway, New York City.

National Safety Council will hold its annual congress at the State House, Boston, Mass., Sept. 26 to Sept. 30 inclusive. Secretary, S. J. Williams, Chicago, Ill.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

Volume 20 NEW YORK, THURSDAY, AUGUST 11, 1921 Number 6

Bituminous in Relation to Mining Growth

CENSUS returns for 1919 covering the entire mining industry and separately that of bituminous coal, published in this issue, provide an opportunity for some interesting generalizations. Whereas ten years ago in number of enterprises the soft-coal trade represented but 17.6 per cent of the whole, in 1919 the figure was 31.2. In number of mines the proportionate increase was even more startling; soft coal mines were 33.1 per cent of the total in 1909 and 60.4 in 1919. Persons engaged in the bituminous coal industry increased from 534,814 in 1909 to but 583,155 ten years later, and these totals represented 51.2 per cent of all engaged in mining in 1909 against 54 per cent in 1919. In respect of power used coal likewise recorded a relative gain, from 26.6 per cent of the total in 1909 to 32 per cent in 1919.

Here the apparent advantage ends, however, for capital investment shows a relative decrease, from 31.3 per cent ten years ago to 27.3 per cent, the total of principal operating and general expenses from 38.3 per cent to 39.3 per cent and value of product from 38 per cent in 1909 to 35.5 per cent in 1919. The mineral industry as a whole recorded an increase of 160.7 per cent in value of products in the ten-year period compared with which the bituminous coal industry shows but 143.8 per cent gain. The most significant feature of these returns is that the bituminous coal industry is shown to have been thinned out—diluted, as it were. No great increase in capital investment (79 per cent) or in persons engaged (9 per cent) but in number of enterprises a gain of 89 per cent and of mines of 38 per cent. The business is spread out to a greater extent and the risks and profits are being divided among a greater number of proprietors.

Bashful Coal

SOMEONE has said that we learn some from observing the successes of others, a little more from the failures of others, more from our own successes, but most of all we learn from our own failures. Success comes soonest and in largest measure to him who profits most by the combined experiences of those who have gone before, who takes the medicine fate hands him and goes after each day's problems afresh. Before the fateful 1917 the coal industry was largely a heterogeneous mass of individuals, here and there seeking the light collectively, but for the most part each plodding his own way, seeking to make ends meet in a business so highly competitive that the fittest who survived were becoming fewer each year.

From the day this country entered the war, however, and the coal industry, through the Peabody committee, first had a common and national expression, experience has come in large doses. In the short space of four years the coal industry has passed through a trial by fire such as the railroads and public utilities were each a score or more of years in experiencing. Dr. Garfield in submitting his final report to the President noted that, whatever the merits of the policy of war-time regulation of coal, things were settled that needed settlement—the principle of equal car supply, the knowledge on the part of the people that coal is a basic commodity, that the production of coal is essentially a transportation proposition, and that there are enormous wastes both in the production and distribution of fuel. But vastly more important than these, he states, "was perception of the fact that industrial enterprises producing or distributing basic necessities—food, fuel, shelter, clothing and transportation—are in a real and practical sense charged with public interest; that neither the men who labor nor the capital employed, nor both of them together, can be permitted to settle questions touching the adequate supply of these basic necessities without consultation with the government, representing the entire people."

Above all, it seems to us, these four years have brought to the coal industry a trade consciousness and have developed a national viewpoint and called forth national leadership. Where before the war there were innumerable small antagonistic groups, there is now at least the semblance of national expression for the industry. This growth has brought a train of responsibilities and as well has focused popular attention on this industry. Whether coal is to tread the path of regulation or is to go its way unfettered depends on the quality of its leadership in the next few years, if not in the next few months. Reciting the doleful history of the railroads, Will Payne, writing in *The Saturday Evening Post* recently, says that "Much of the public was then [in 1905-1906, when the Hepburn Bill was passed] hearing nothing of American railroads except to their discredit. Government control of the railroads rode in on the crest of the muckrakers' muddy wave."

The early history of the public utilities—gas, electric light and street cars—is characterized by franchise-grabbing and disregard of public rights and opinion. Because people found it necessary to use trains and trolleys, gas and electricity, and they could get these services only from the railroads and public utilities, the owners and operators of these monopolies chose to disdain the feelings of their customers. Regulation followed.

The question before the coal industry—next in line, we are told—is whether the hard lessons of experience by these predecessors will be taken home and studied, whether this industry will profit by the successes and the failures of others and by its own successes, or will learn from its own failure too late. The public in turn has made mistakes in its treatment of basic industries and it too has opportunity to profit by these errors in policy, but its attitude toward coal is going to be largely

determined by the strength of the ideas of the respective sides representing private industry on the one hand and governmental or communistic control on the other. There is but one way in these times that these ideas can effectively reach the public—through the printed word.

Have you ever stopped to consider those things about coal that claim popular attention and the few attempts made so far to carry the truth the length and breadth of the land, and who it is that so far have been the spreaders of the gospel? Buyers want good coal. For four years the people had so much shoddy that they now turn with eagerness to a merchant who promises old-time quality. They will respond to the coal merchant, big or little, who makes it clear that once again coal is available without slate. Buyers want service. Coal is a necessity, but no good feeling is produced by an attitude on the part of the seller of "Take it or leave it." Persistence in this direction leads to the same end for coal that it did for street cars.

Even for necessities price is a secondary consideration with the buyer when the merchandising of the commodity is sound. The buyer is chiefly concerned in getting a fair deal, and the successful merchant is he who sends the purchaser away satisfied. Food is a necessity, but many an article of relatively high price comes on our tables, desired and acquired because we have been sold the idea that it is of particular quality. The delivered cost is the first concern of the buyer, and this varies so with each locality as to become a local question, but with the proper viewpoint on coal the consumer is more apt to reason correctly with respect to the reasonableness of what he is called upon to pay. From the experiences in meeting the public of the vendors of food products and of such comforts and luxuries as automobiles and electrical appliances the coal industry can learn much. Is it not better to cultivate good will before the advent of paternalistic control than afterward, as are the railroads and utilities? Thomas Robson Hay, in this issue of *Coal Age*, discusses the value of publicity to the coal industry and asks "Why not cultivate this public in a spirit of service?"

Manufacturers of equipment for burning coal are the only ones so far to attempt in a large way to show consumers how to use coal. Some few shippers have mechanical engineers to train the boiler-room force how to get the most out of the furnace and a particular coal, and thus to cement the trade. But, *mirabile dictu*, we have found one such, at least, who mixes this type of progressivism with the belief that the practice is a trade secret, and therefore to be hushed up. And so the manufacturers alone are advertising to the millions of consumers on the principles of combustion and proper use of coal.

And now the railroads are carrying the message of coal to the public. In an advertisement, a reproduction of which appears on another page of this issue of *Coal Age*, the New York Central tells a sane and timely story about coal to people in every city and town of importance in this country, from coast to coast. The railroad is doing this in no spirit of pulling the chestnut out of the fire for the coal man, but because it is good business to cultivate trade, traffic and good will. It is helpful to coal because of what will happen to that chestnut if some one does not pull it out of the fire.

Verily, the public may well say, "Who is this bashful boy, Coal? Why don't you speak for yourself, John?"

Booster Ventilation Problems

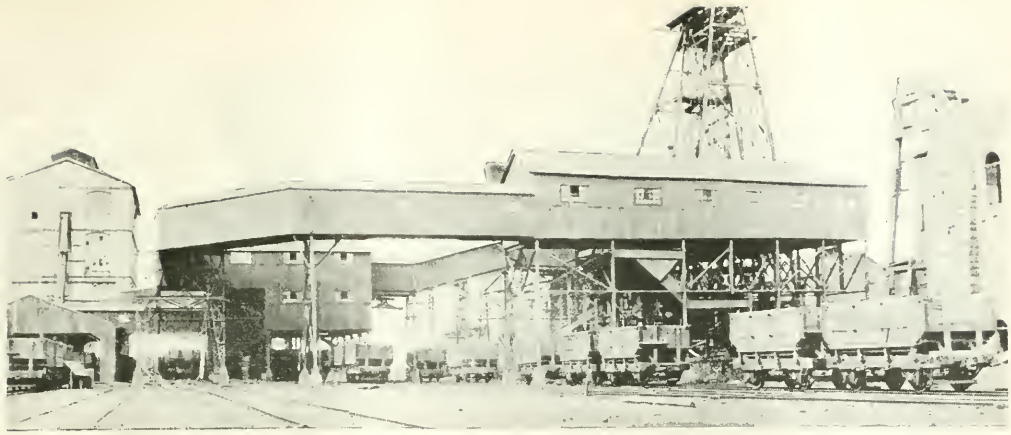
IF coal mines did not have an unhappy faculty of exploding, booster fans might have a larger place in their equipment. From a mathematical and scientific point of view no exception can be taken to the booster fan, which has much to commend it economically. Situated a mile or more underground, however, it is hard indeed to rely on equipment of that kind for the re-establishment of air circulation after an explosion to the full violence of which the booster inevitably must be exposed.

All other objections to such fans can be removed by proper installation and care. The underground fan can be so placed as to be in no danger of being fed on stale air. It can have an attendant; it can be arranged to show a light at any given point or points, thus testifying whether it is running or idle. At the Indianola plant, near Pittsburgh, a red electric light flickers as long as the mine fan is in operation, and should the fan stop the water in a water gage falls, an electric contact is closed and as a result an automatic siren is blown, warning the whole countryside and those, incidentally, whose duty it is to order by telephone the vacation of the mines. Similar arrangements could be made to protect a booster fan.

With such provisions ventilation by a booster, in the absence of an explosion, might be in a slight degree safer than by a single fan, though about this opinions might differ. If a door were left open the booster at a side heading would still keep air in circulation. It might do it, it is true, with air that is driven round the second time, but even that is better than having the air cut off entirely by an open door, for air which stands in a gassy place soon becomes more dangerous than that which travels over the same territory twice and passes for much of its travel through districts that are not gassy or make hardly any gas. Moving air, in short, usually is safer than dead air, though it may fail to announce that it is stale and therefore dangerous and so fail to give the warning that would bring the men out. If, however, it becomes saturated to the point of ignition the explosion resulting is more widespread than with dead air.

Boosters, however, are not much needed in shallow workings, for in that event ravines usually give an opportunity for the placing of shafts by which fresh air can be fed to the workings. It is likely that boosters will find an appropriate place in the West, where the mountains are high and the beds pitch so that great depths are attained and great distances are likely to be traversed to reach the more distant coal. They seem also to have a place in those mines which go long distances under water, but they should not be installed where these conditions do not exist unless one fan be placed at the intake and one at the return. Both should be capable of affording the mine in time of disaster the quantity of air needed for rescue work.

No wonder the mine inspector dreads the introduction of the booster. As too often installed it merely recirculates vitiated and devitalized air and frequently air already having such a gas content as to be explosive or nearly explosive, especially in the presence of coal dust. The booster undoubtedly has many faults, but an exception may well be made in cases, like those at the Princess Colliery, where the air has to be delivered to a point three and a half miles distant through a heading which probably leaks incurably.



PRINCESS COLLIERY BANKHEAD SHOWING WASHERY ON LEFT AND OLD TOWER OF CORNISH PUMP

Nova Scotia Steel & Coal Co. Is Completely Removing Coal Seam Under Ten Square Miles of Sea Area*

Room-and-Pillar Methods Used—Engine Plane About Ten Thousand Feet Long—Air Travels Seven Miles—To Lower Water Gage of Fan Would Use Low-Pressure Boosters in Series—Little Water To Be Handled

By A. S. McNeil†
Sydney Mines, N. S.

IN THE year 1825, Messrs. Rundall, Bridge and Rundall, of London, organized a company called the General Mining Association, Ltd., which acquired from the Duke of York the coal beds known and unknown in the whole Province of Nova Scotia. The Duke at that time held a 60-year lease by the royal prerogative of George IV. This lease was executed in 1826, and Richard Brown, an eminent engineer and geologist, came to Cape Breton as manager for the association.

In 1827 the company took formal possession of the property, and from that time forward coal mining has been carried on uninterruptedly at Sydney Mines. The first shaft was sunk in 1830 at what is known as the Yard Pit, which was 200 ft. deep. The second shaft, known as the Jacob Pit, was sunk in 1834, and was 320 ft. deep.

In 1838 the coal from what was then and is still known as the "Old Sydney Main Seam" for the first time was used for bunkering purposes. Its good name was soon fully established and universally acknowledged both at home and abroad. In 1849 the Crown released to the Government of Nova Scotia all its interests in the minerals of the province.

The third shaft, known as the Queen Pit, was sunk on the Old Sydney Main Seam in 1854. This shaft is about 400 ft. deep. In 1857 the General Mining Association surrendered its claim to all mines and minerals, except coal, within certain defined limits, thus ending the Duke of York's lease.

In 1864 Richard Brown retired and was succeeded by his son, Richard H. Brown, lately deceased. Mr. Brown continued to manage the affairs of the General Mining Association and its successor, the Nova Scotia Steel & Coal Co., Ltd., at Sydney Mines up to the year 1901.

Princess Colliery Dates Back to 1868

In 1868 the sinking of the "New Winning" or Princess mine was begun. This pit also is on the Old Sydney Main Seam, and was not completed until 1876. The coal was encountered at a depth of 680 ft. Some years ago the sinking of this famous shaft, with its attendant difficulties, formed the subject of an interesting paper read before the Nova Scotia Mining Society by the late R. H. Brown.

It should be noted here that all the above-mentioned operations by the General Mining Association were confined to what may be described as the peninsula between Big Pond on the north and Sydney Harbor on the south, a comparatively limited area. The Princess Pit was located as near the coast line at Cranberry Head as possible, for all the land area overlying the main seam in this district was included in the workings allotted to the previous sinkings and only by extensions into the measures under the sea could a new mine be opened.

This mine, therefore, was to be the outlet for a submarine lease of four square miles acquired in 1858 by the General Mining Association and extending one mile southerly into Sydney Harbor from Chapel Point and two miles directly out to sea in a northeasterly direction, and having an outside boundary parallel to the coast line two miles in length. This submarine lease was in 1886 further extended parallel to the coast line in a northwesterly direction, making a total outside boundary three miles in length and coming ashore at

*Paper read before a meeting of the Nova Scotia Mining Society, April 5, 1921, entitled "Notes on Coal Mining in Submarine Areas at Princess Colliery, Sydney Mines."

†Superintendent of mines, Nova Scotia Steel & Coal Co.

Little Pond, or making in all about four square miles of submarine territory.

The underground projection for the new mine included two main haulageways or angle deeps,* one on the north and the other on the south, evidently at the least angle of dip at which an engine-plane haulage could be operated. Later, at a point 2,000 ft. from the pit bottom on the south angle deep, another heading was begun on or approximately on the pitch, to win the coal from the lower levels, as the distance between the angle deeps was increasing rapidly and the haul on the "in-between" level was becoming too long.

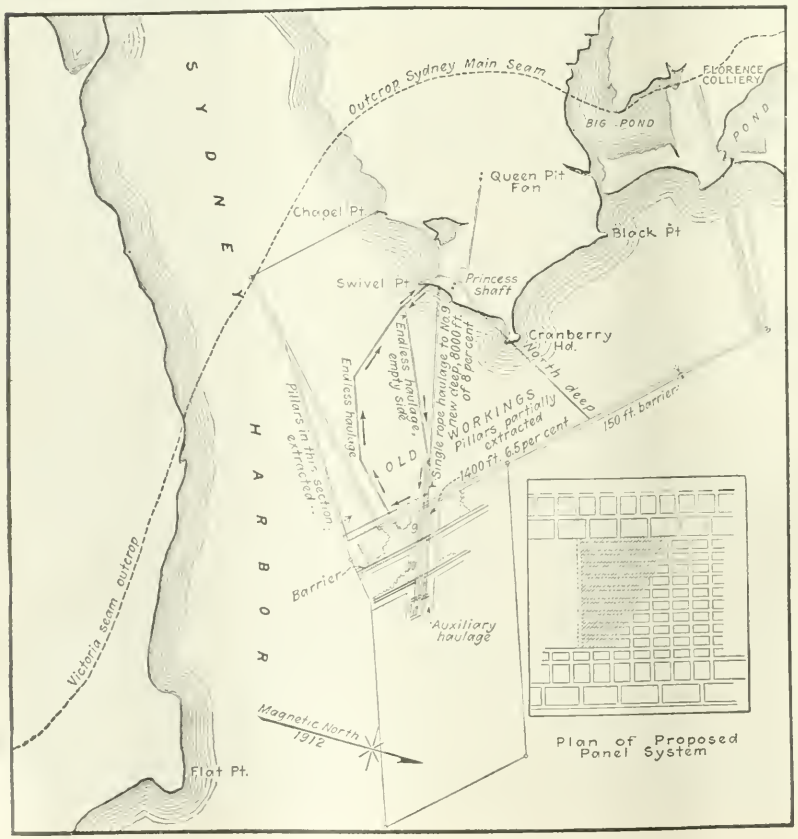
Underground operations of the Nova Scotia Steel & Coal Co. from the time it took over the holdings in Sydney Mines in 1901 followed along the lines adopted by the General Mining Association until about the year 1910, when practically all the deep workings had been driven to the east boundary of the property. It then became necessary to acquire additional territory for this colliery. In 1912 a sublease was granted the Nova Scotia Steel & Coal Co.'s adjoining holdings. This sublease contains two square miles. It is one mile in width and extends eastwardly two miles, where it in turn is bounded by outside leases held by the Nova Scotia Steel & Coal Co.

On the acquisition of this sublease a new haulageway was projected from the shaft through the old workings into the outside territory in a direction best suited to take the coal from the sublease and at the same time enter the company's own outer holdings at a desirable point. This new haulageway was completed to the barrier in 1915. It is 6 x 10 ft. inside the timbering and perfectly straight to the face, which is now 12,000 ft. from the pit bottom.

Under the land the General Mining Association used the room-and-pillar method. Rooms were about 18 ft. wide and pillars 30 ft. This proportion of room to pillar did not vary to any great extent. In the new pit the workings were laid out with 16-ft. rooms having 40-ft. pillars. This proportion was maintained for a distance of 2,000 ft. from the pit bottom, where the cover was about 760 ft. thick. It appears that the pillars were increased from 30 to 40 ft. so as to take care of the additional weight which resulted from the increase in cover.

Evidently, however, no difficulty of any kind was experienced and eventually the policy was adopted of making 30 ft. pillars and 16 ft. rooms, which proportion was maintained for another 700 ft. to the dip. At this point the pillar size suddenly jumps to 60 ft., with the rooms 16 ft. wide, as before. Probably indications of the bottom heaving and other troubles developing were attributed to the smaller pillar in this section. This change from 30-ft. to 60-ft. pillars occurred at a point about 2,700 ft. from the pit bottom, where the cover

*Slopes at an angle to the pitch of the bed.



Undersea Workings

This shows a small part of Sydney Harbor and the extensive submarine workings of the Nova Scotia Steel & Coal Co. The coal dips east, the earth cover being from 600 to 1,700 ft. thick. In a large part of the mine the pillars have been extracted, yet the workings are quite dry. The mine ultimately will reach a distance of four miles from the shore at Cranberry Head. The bed is gradually becoming more level and should eventually reach a basin. No displacement faults disturb the workings. The air travels from the Queen Pit to the face and back, a distance of about seven miles. A system of booster fans is proposed which, without using excessive water-gage at any point, will deliver a larger quantity of air than the mine is now receiving.

Washery

A reinforced-concrete building erected by Simon-Carves, Ltd., of Manchester, England, and provided with Baum jigs which are air-operated, the influx and release of the air causing the water to pulsate. Washed coal leaves the jigs in glass-lined launders.

was about 830 ft. thick. Thereafter to the outside boundary or to a point about 7,000 ft. from the shaft 60-ft. pillars and 18-ft. rooms were maintained.

Prior to this time the General Mining Association commenced to extract pillars at about the 800-ft. cover line, and a large section of the south side was left in bad condition, as the pillars had been drawn back too close to the haulage and traveling roads. The effect of this practice is still evident, and at many places on the working deeps men are constantly employed retimbering and lifting bottom. Evidences of "crush" are visible in many localities on the new main haulageway through the old workings, and the consequent necessary upkeep of roads is a large item in the cost.

The new development from the old barrier into outside territory is reached by four deeps, driven parallel with the new main haulageway, which is approximately on the pitch. These deeps are 10 ft. wide inside the timbering. Pillars 100 ft. thick are left between them, the crosscuts in deep pillars being 100 ft. apart. A 300-ft. barrier pillar is left on each side of these deeps. Levels are broken off north and south every 1,400 ft. All pillars in working districts are 70 ft. and rooms 18 ft. wide. As a further protection a barrier pillar 200 ft. thick is left on the low side of the low levels.

Must Mine Pillars As Rooms Are Completed

Experience in pillar drawing in this district proves conclusively that under such conditions as obtain in the Princess Colliery, with a cover of 1,000 ft. or more and a roof of the nature so far encountered, some method must be adopted whereby pillars can be removed simultaneously with the advance of the workings. In other words, a panel system similar to that followed in some of the large English collieries must be adopted.

It is quite possible that a longwall system could be adopted that would give good results, and this may be tried later. There are, however, certain objections to longwall, among which may be mentioned a lack of available stowing material and the nature of the roof of this mine.

It might be mentioned in passing that practically the entire roof throughout the area covered one year ago by a certain district in this mine where the cover is about 1,100 ft. is down completely today. To recover pillars in this area will cost as much now as it would to reclaim them in much older workings. In view of the above it would be well at this point to mention the timbering. It is sufficient, possibly, to say that a stick of timber was used for each ton of coal, as against one stick for three tons at Florence Colliery, though this plant is mining the same coal bed and is distant only two miles north. At that mine, however, the cover is only 700 ft. thick.

This is not said to give the impression that the difference in cover alluded to is altogether responsible for the difference in condition existing at these two mines. Undoubtedly the roof in Princess Colliery, on the whole, is not as good as it is at Florence.

Plan for Rapid Drawing of Room Pillars

The experiment of drawing pillars almost simultaneously with the advance of the rooms is now under way in No. 10 district south. This will be done by the following method: The lift is to be split—that is, another pair of levels will be driven 600 ft. to the rise of No. 10. Headways or room entries will be carried up every 200 ft., rooms to be 16 ft. and pillars 30 ft. wide. When the upper rooms have been driven 200 ft. in both directions, pillar extraction will begin and follow along behind the rooms.

The inside head, of course, always will be a straight line of crosscuts, and when the pillars have been extracted up to the working headway, the track will be shifted to some road further in, and so on. Of course, the necessary pillars will be left to protect the level. If this method can be successfully pursued the result will be a great saving in day labor, with a maximum tonnage from the area involved.

The words "successfully pursued" are used advisedly, for it is difficult to foresee how any method of working in the deep section of this colliery will make much difference to the action of the bottom and roof, particularly the bottom. It is my understanding that a 70-ft. pillar to an 18-ft. room is the greatest proportion of pillar to room adopted in Cape Breton. Notwithstanding this where cover is 1,000 ft. or over, the bottom (which is fireclay weathering to a semi-plastic state) squeezes up, and this seems to occur with almost any proportion of pillar to room. To lift this heaving bottom accelerates its movement, and there are places completely filled by this upheaval from bottom to top. On the whole it is best not to touch it, but to gain any required height by brushing the roof.

Limit of Engine-Plane Haulage Reached

At present the coal is hauled from the new deep by an engine-plane operating trips of forty cars to a point about 9,400 ft. from the pit bottom. The coal from the lower levels is brought to this point, a further distance of 3,000 ft., by an auxiliary plane operated by an air-driven engine.

It is interesting to note here that an engine plane can be operated over a distance of 9,400 ft. under the

conditions here obtaining, namely, 8,000 ft. of 8 per cent, and 1,400 ft. of 6.5 per cent grade, the road being straight. I believe this distance may serve as an example of the "ultimate" that may be accomplished by this system of haulage for similar conditions, and from it possible conclusions may be drawn by anyone who contemplates installing an engine plane on haulageways having a similar pitch.

In other words, the best that could be done with such a plane in this case was to get forty empty mine cars weighing 1,000 lb. each to drag a 1-in. rope for a distance of 9,400 ft., the first 8,000 ft. falling 8 ft. per 100 and the last 1,400 ft. falling 6.5 ft. per 100. In order to accomplish this result special care was exercised in providing rollers as wide as the road would permit and spacing them at 50-ft. centers. These rollers are constantly watched in order that they may function properly at all times. One of the most important essentials in a long engine plane is to keep the rope from dragging on the roadbed.

Coal from the pillar sections is transported by an endless-haulage system operating on the old south deeps and forming a loop about 3¾ miles in length. It is proposed to handle the coal from the new deep districts from face to pit bottom by endless haulage on the new road, a distance of 12,000 ft. The haulage engine will be motor-driven and installed in the pit at the head of the deep and in line with the road.

Some of the Air Travels About Seven Miles

Ventilating the Princess Pit forms an interesting problem. The deep workings are almost 2¾ miles from the downcast shaft, and the fan is 3,600 ft. further to the rise. At present two intakes and two returns are available with a total cross-sectional area of about 100 sq.ft. each way. The loss in air due to short-circuiting is heavy, and the present workings have reached a point where a change in the system of ventilation has become necessary. Much of the loss due to short-circuiting of the current cannot be avoided, for 8,000 ft. of the airways pass through the old workings, which have fallen in, or are at various points in process of crushing.

The old stoppings of brick and stone faced with mortar all the way from the pit to the barrier are intact as far as they themselves are concerned, but innumerable falls have occurred both above and below them, making it difficult, if not impossible, to prevent a leakage of air through the shattered roof. In many places it is impossible to find the stoppings, as they are hidden by fallen material and by the stowing of the clay which had to be gobbed when the bottom was lifted. Although an examination of these blinded crosscuts and room-ends, in which stoppings are built, does not reveal any perceptible short-circuiting of air, undoubtedly loss occurs in many such places. Under these circumstances it is an interesting problem, considering the expense involved, to determine just how far to go in order to remedy the difficulty.

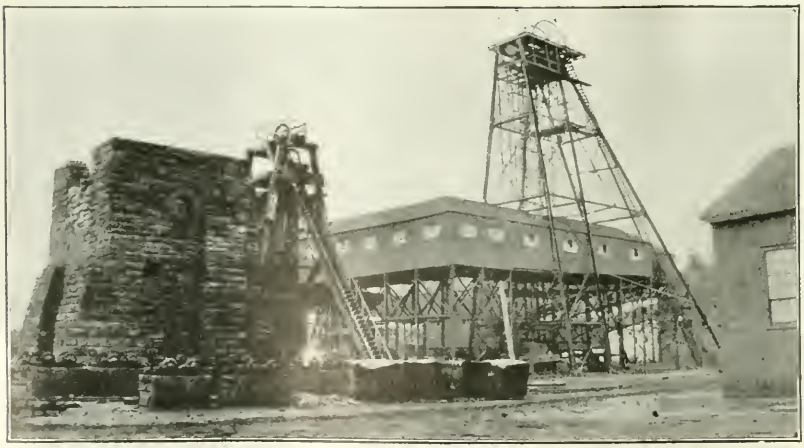
Loss of Air Thirty-One Per Cent of Intake

Mr. Tonge in a paper read before the Manchester Geological and Mining Society in 1906 speaks of a case where 105,000 cu.ft. of air per minute delivered at the fan resulted in only 73,000 cu.ft. per minute reaching the working districts, thus showing a loss of 31 per cent. Nine thousand eight hundred cubic feet per minute were accounted for as being unavoidably lost at certain doors, but the balance of the loss, 23,000 cu.ft., could not be found, although, as he puts it, "a diligent hunt was made for it."

He does not state the water gage under which the above discrepancy occurred but says that, assuming a 20-per cent air loss with a 1-in. water gage, one of 44 per cent could be expected with a 5-in. water gage. Considering the unavoidable loss in Princess Colliery arising from the abnormally high water gage required to give the necessary air, it would seem advisable to attempt to ventilate this colliery by means of underground booster fans in series, operated, of course, in conjunction with a surface installation.

With workings situated as far from the airshafts as are those at Princess and with intake and return airways of limited cross section, no other remedy seems feasible if the required volume is to be obtained at a pressure sufficiently low to insure against abnormal leakage and other consequent difficulties that doubtless would appear. The nature of such an installation will be more or less new to Cape Breton mines, but this method has been resorted to elsewhere, as at the Hulton Collieries, England, where three underground units, operating in series through one downcast and one upcast, shaft supply air to the workings.

The pumping problem at Princess Colliery is comparatively simple. The old workings to the dip from the



Mine Shafts

On the left are the remains of the old Cornish pump tower, of which about one-third has been removed. The cylinder of the pump was 6 ft. in diameter and 10 ft. long and made 12 complete strokes per min., the steam pressure being 20 lb. per sq.in. On the right is the main shaft and in the center the man hoist.

COAL-CAR EQUIPMENT OF SYDNEY & LOUISBURG R.R. IN YARDS OF PRINCESS COLLIERY
These cars are of the type formerly used in the anthracite region of Pennsylvania

shaft are practically dry and what little water is made from the pit to the face is handled by six small pumps, lifting about fifty gallons per minute from one to the other and discharging into the sump at the bottom. At this point a Jeansville pump with a capacity of 500 gallons per minute is located.

This pump was installed in 1902, taking the place of the original Cornish pumping plant erected when the shaft was sunk. It discharges about 300,000 gallons during a 14-hour shift. Most of the water comes through the barrier from the Old Queen Pit workings, but some, as stated, is pumped to the sump from the workings below. A duplicate motor-driven installation is now under consideration to take the place of the Jeansville pump, the cost of maintenance of which is becoming heavy.

Outbursts of Methane and Carbon Dioxide in Coal Mines And the Conditions Under Which They Occur*

Firedamp in Great Britain and Carbon Dioxide in Central France and Southern Silesia Cause Violent Outbursts — Coal Adsorbs Large Quantities of Gas and When Activated by Natural Causes Adsorbs More

By Henry Briggs†
Edinburgh, Scotland

AS IS GENERALLY KNOWN, the highly-contorted seams of the Mons basin in Belgium have been for many years unusually liable to sudden outbursts of firedamp, which invariably come from the solid coal, and have occasionally been of great magnitude. During the thirty years from 1869 to 1898, comprising 9,000 working days, Belgium had no less than 237 of these outbursts.

In Great Britain firedamp has been the only gas these outbursts have emitted; but in the Gard district of France and in the area lying between Waldenberg and Neurode, in Lower Silesia, numerous irruptions of carbon dioxide have occurred. The largest outburst in any mine was one of carbon dioxide; it occurred in July, 1907, at the Nord d'Alais Colliery, Gard, during the preliminary development of a thick seam.

James Ashworth has described a firedamp outburst which, having regard to the amount of coal projected from the face, was of magnitude but little inferior to the instance just cited. It took place in November, 1904, at the Morrissey Colliery, in British Columbia, causing fourteen deaths and the closing of the mine. Another large scale firedamp irruption occurred in 1879 at the Agrappe Colliery, Belgium—a mine notorious for sudden outbursts—when more than 12,000,000 cu.ft. of gas was discharged and 121 lives were lost. In a number of outbursts which occurred at the Bessèges mines prior to 1892 the firedamp was accompanied by sulphureted hydrogen—an extremely unusual feature. While sinking through Permian strata a great outrush took place in Saxony, in 1875, at a depth of 1,659 ft.; the gas on that occasion was blackdamp (nitrogen plus carbon dioxide) mixed with a small proportion of firedamp.

With the exception of the last-mentioned instance, those cited were all of the kind in which the gas bursts out from the coal itself. There is another kind of irruption of an entirely different character, where large volumes of firedamp are suddenly flung into the workings from the floor or roof. A typical example was the outbursts that occurred at the Strafford Main Colliery, Barnsley, England, in 1867, where the Silkstone seam, 6 ft. thick, was being worked at a depth of 720 ft. There were similar outbursts in the same pit in 1870 and 1877. The stratum immediately under the seam, and for 22 ft. below it, was of extremely hard rock. Those below it were softer. A borehole sunk into the floor of the mine did not meet gas until it had reached a depth of 35 ft.; below that several gassy beds were

*Abstract of article entitled "Characteristics of Outbursts in Mines," read before Institution of Mining Engineers, London, June 9, 1921.

†Professor, mining department, Heriot-Watt College.

encountered. W. H. Chambers described a series of five outbursts in the same seam at the Thorncliffe Colliery: in each case the blasts were accompanied by heavy weight on the coal, and for a distance of 60 yds. the floor was thrust up at and parallel to a longwall face. J. Willen and R. Miller also relate how, in 1876, at the New Oaks Colliery a great outrush of gas occurred from a large fracture in the floor. Another irruption from the floor was that in 1889 which occurred between a nip-out and a fault in the Haigh Moor seam, Whit wood Colliery, and at a depth of 885 ft., the gas apparently coming from a thin seam below. Many cases are on record where gas in large volume has blown out in similar fashion from the roof, usually after exceptional weight on the coal had been experienced.

The cause of an outburst from the floor or roof is not far to seek. Given a stratum near the seam holding great volumes of gas under pressure and separated from the seam by an impervious bed which is not readily fractured, the conditions are suitable for such an outburst. The longwall method, especially when faces are kept straight and packing material is scanty, is apt to encourage the formation of these big "gas blisters." The best known precautionary measure is to prick the blister by boring into the pavement or roof, as the case may be. Where gas is apt to collect in blisters in the roof, and the top coal is unmined, the latter can be kept up only with great difficulty until the gas is drained off by boreholes; then the roof becomes sound.

Explanation of Outbursts from Solid Coal

A few of the greatest outbursts of this kind have already been mentioned. I propose in this section to look more closely into the circumstances of these discharges, and, as immensity tends rather to paralyze than to assist inquiry, it has been considered preferable to devote attention to occurrences on a more moderate scale. Their characteristics are best dealt with under heads, thus:

The Cavity Theory.—It seems certain, despite allusions here and there to "cavities of gas in the coal" and the old miner's expression "bags of gas," that in no British outburst from the solid of which we have record has there been in the seam anything of the nature of an open cavity holding gas under pressure; the gas is contained in the coal. That open cavities may possibly exist in shallow seams, however, is clear from the observations of E. A. Simcock, who found open pockets some 20 ft. in length, containing gas under pressure in a thick seam in Upper Assam, British India, at a depth of 120 ft.

Physical Character of Coal Ejected.—In the kind of outburst now dealt with, coal is blown out with the gas. In almost every case the ejected coal has been found to be in a fine state of division, a proportion of it being excessively fine dust. No doubt where these outbursts occur the coal must be soft, and the particles must form a loose aggregate, or, in other words, must be in a fine state of division prior to and not merely as a result of the outburst, the pulverization being, in fact, a cause and not an effect of the irruption.

Where these outbursts occur the coal invariably is very dry. What appeared at first sight to be an exception to this rule was the Bedford Colliery outburst of March, 1918.* It occurred at a depth of 1,500 ft. in a heading that had been driven in the Trencherbone seam. Water with gas was first observed to issue from the floor; then there was a violent blast from the center of the face; 26 long cwt. of extremely fine coal were shot out, leaving a cavity 8 ft. x 3 ft. x 3 ft. Gas and water continued to pour out of the cavity for a long time after the outburst. The coal and dust discharged from the opening, however, were quite dry.

Geological Conditions.—Another important characteristic of these occurrences is that they usually are associated with faults or other disturbances of the strata. At Ponthenry† the irruptions occurred after driving through a "want" and upon entering the thickened seam bordering the want. Geologically the circumstances were remarkable. There was a similar outburst in the same area of disturbed ground on Nov. 20, 1920.

Change of Temperature.—When compressed gas suddenly expands, performing much external work, a drop in temperature inevitably results. The escaping gas in an outburst has to overcome the resistance of the atmosphere and give kinetic energy to the extruded coal, and such a lowering of tempearture should be experienced. This effect indeed has been recorded in Lower Silesia, when sudden outrushes of carbon dioxide occur, the temperature change being noticeable in the surrounding coal.

At Ponthenry the ejected material was found during removal to be warm—not cold. The heating cannot have been a direct effect of the outburst, and—although the material was anthracite—appears to have been due to oxidation. This view is supported by the fact that, according to the tests of C. A. Seyler, the gas subsequently found to be occluded in the soft material contained nearly 63 per cent of carbon dioxide, though that extracted from the normal anthracite of the seam contained only 6.4 per cent of that gas.

Outbursts Usually Occur in Narrower Work

Effect of Mode of Working.—Almost without exception, outbursts of gas from the solid have occurred either when driving winning headings (room entries) or when "working in the whole" in bord-and-pillar mines (extending rooms). Experience indicates that the best precautionary measure in seams liable to these accidents is to work advancing longwall and to avoid pushing the faces forward too quickly. A wide, straight face advancing slowly gives a chance for the gas to drain quietly from the coal; it goes a long way toward obviating the creation of a dangerously steep pressure gradient in the coal immediately in front of the face.

So far as this particular risk is concerned, handcutting becomes safer than machine-cutting, and in some Continental mines prone to these outbursts coal-cutting machines are prohibited; they carry the face forward too rapidly. A regular discharge of gas from a face is a sign of safety, and a cessation of that discharge is an indication of danger.

As is generally known, advance boring is often resorted to in seams of this kind, although there are several cases in which that process has yielded disappointing results; in faulty ground, however, it is advisable to riddle the face with boreholes.

Explosions Following Upon Outbursts.—Outbursts of firedamp have seldom been followed by ignition of the gas, especially since the ventilating furnace has become

*See also "Instantaneous Outbursts of Coal and Gas at Bedford Collieries, Leigh," by F. N. Siddall (Proceedings of the Institution of Mining Engineers, 1917-1918, vol. lv., p. 210).

†See also "Notes on Outbursts of Gas and Dust at the Ponthenry Colliery," by George Robllngs (Proceedings of the South Wales Institute of Engineers, 1921, vol. xxxvi., p. 423).

obsolete. Paradoxically enough, the bigger outbursts are safer in this respect than the smaller ones, because with the former the expulsion of gas and dust is so violent that all flame lamps in the district are at once extinguished. At Ponthenry and in other cases every lamp in the seam was put out by the concussion. In the majority of the fatal accidents from gas outbursts that have occurred in this country the victims have either been smothered by fine coal or have succumbed from lack of oxygen.

C. A. Seyler made utlimate analyses of the material ejected at the first Ponthenry outburst (February, 1920) and of the normal anthracite of the seam. Thanks to G. Roblings, I am able to quote the results, which are as in Table I.

TABLE I. COMPARISON OF NORMAL AND OUTBURST COAL TAKEN AFTER FIRST OUTBURST

	Normal Anthracite (Dried), Per Cent	Outburst Coal (Dried), Per Cent
Carbon	89 95	90 49
Hydrogen	3 20	3 18
Oxygen plus nitrogen	1 82	2 72
Mineral matter	5 03	3 61
Total	100 00	100 00

The difference between the two analyses is inconsiderable. A like result was obtained when a similar comparison was made in connection with the Shelton Colliery outbursts.

Dr. R. Lessing has been kind enough to undertake, for the purposes of this paper, the chemical examination of the material from the second (November) Ponthenry outburst. As the proximate analyses in Table II show, the proportion of ash in the outburst material was much greater than that from the normal anthracite of the seam.

TABLE II COMPARISON OF NORMAL AND OUTBURST COAL TAKEN AFTER SECOND OUTBURST

	Normal Anthracite, Per Cent	Coal from Outburst, Per Cent
Moisture	1 34	1.30
Volatile matter (excluding moisture)	6 12	6 16
Fixed carbon	90 28	83 70
Ash	2 26	8 84
	100 00	100 00
Nitrogen	1 09	1 02
Color of ash	Chocolate brown with large white patches	Light maroon with large white particles

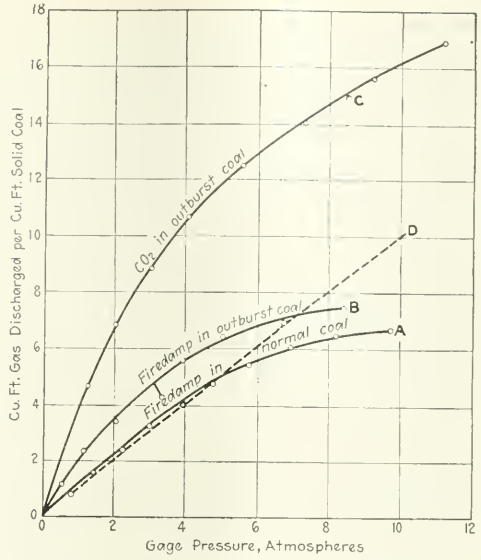
Except in ash percentage, the two samples were, chemically speaking, almost identical.

Dr. Lessing proceeded to investigate the nature of the incombustible matter in the two coals. He also immersed ground samples of the coals in a liquid of 1.5 specific gravity, and examined the ashes of the "float" and "sink" portions. He observed that the ashes of the "float" fractions were much alike, consisting to a large extent of highly ferruginous particles of web-like structure similar to the ash of vitrain and clarain. The following conclusions may be drawn from Dr. Lessing's work:

(1) The larger part of the combustible matter in the outburst material had been increased in density, or, in other words, a greater percentage of the coal sinks in a liquid of 1.5 specific gravity than would sink when normal coal is tested.

(2) The substance of higher density that was introduced into the outburst coal occurred mainly in particles of relatively large size, a fact indicating that the invading substance was mixed in by mechanical action rather than carried there in solution.

(3) The ash of the "sink" fraction of the outburst coal—the part which contains most of this invading substance—was high in substances insoluble in acid, was high in silica, and comparatively low in iron.



GAS ADSORBED UNDER PRESSURE BY PONTHENRY COAL

Outburst coal from Ponthenry coal will adsorb about twice as much carbonic dioxide as methane at eight atmospheres pressure. It will hold more methane than will the normal coal, but not quite as much as the open space would contain.

Mr. Roblings observes that the soft 3-in. "rashing" (bone coal) which usually separated the top and bottom coals was not present at the seat of the outburst, and that it had apparently been mixed up with the soft coal The bone and possibly the fireclay of the floor of the seam appear to have been churned up with the coal. This would explain both the increased ash percentage and the chemical character of the ash as revealed by Dr. Lessing's examination.

Do Adsorption Theories Help to E plain?

From the physical point of view, outbursts of firedamp or carbon dioxide from the solid coal constitute a problem in gaseous adsorption. Recent study of this subject, particularly that of the last two years, has added much to our knowledge of its mechanism; it is now known, for example, that the attraction exercised by a surface of cocoanut charcoal, such as that used for box respirators, is so intense that the gas molecules are drawn to it and packed upon it under a pressure of about 10,000 atmospheres.

This adsorbed layer of gas is excessively thin, but with a well activated charcoal the area of molecules of the solid (or, more properly speaking, of the polymers of the solid) which is exposed to gas is so enormous that the charcoal can fix or hold in this way several times its own volume of a gas like nitrogen or firedamp, even at ordinary atmospheric pressure.

In 1916 J. Ivon Graham read before this institution a paper dealing with the solubility of gases in coal.* He experimented with methane, carbon dioxide, nitrogen and hydrogen, and showed, among other matters, that

*"The Permeability of Coal to Air or Gas, and the Solubilities of Different Gases in Coal," by J. Ivon Graham (Proceedings of the Institution of Mining Engineers, 1916-1917, vol. lii., p. 338).

coal, even at 30 deg. C., may adsorb at atmospheric pressure more than three times its volume of methane. Although not pursuing the inquiry at higher pressures, he was, I believe, the first to obtain definite quantitative evidence of the immense capacity of dry coal for gas, and especially for an easily condensible gas such as carbon dioxide. In the discussion of that paper Dr. Haldane pointed out how this latter fact went a long way toward explaining the outbursts of carbonic acid in French collieries.

It was discovered during the war that coal, like charcoal, can be "activated"—that is to say, its adsorptive power can be greatly increased by artificial means—and toward the end of the year an activated Pennsylvania anthracite ("bachite") was produced, and was one of the materials used for anti-gas purposes by the United States Government. In this country a briquetted mixture of a charcoal dust and a coal dust was manufactured for the same purpose. It is unnecessary here to discuss the processes of activation; it is sufficient to say that in the cases of charcoal or colloidal silica they appear to do nothing more than disrupt the elaborate polymers from which these substances are built up, and so create a wider expanse of surface and a greater development of passages of molar dimensions available to the gas.*

The artificial activation of coal involves, in addition, the driving off of all volatile ingredients—a process which opens vents of microscopic and ultramicroscopic size, and by so doing reduces the resistance to the passage of a gas into or out of the material. In this connection, however, it must be observed that the soft coal from the second Ponthenry outbursts although, as will soon be seen, showing signs of partial activation, does not contain less volatile matter than the normal anthracite of the seam.

Test Shows Gas Capacity of Outburst Coal

To study the problem experimentally, a steel gas cylinder of 1.2 liters water capacity was filled with dried outburst coal, which was well shaken down within. The weight of coal introduced was noted. A stop cock was then screwed and soldered into the cylinder neck, a small plug of asbestos wool being first placed in the neck under the cock to prevent coal dust from being blown out. The cylinder was then charged with compressed dry firedamp, so as to restore, as nearly as possible, the material to the state in which it existed before the outburst. The firedamp was obtained from South Wales; its contents of methane (almost 98 per cent) is much the same as that of the firedamp of the Pumpquart seam at Ponthenry, which on analysis showed 98.8 per cent of methane.

A throttle valve provided with a pressure gage was screwed to the cylinder. The latter was placed in a vessel of water to keep it at uniform temperature (15 deg. C.), and the gas was allowed to flow slowly out through a meter. The gage and meter were carefully tested beforehand. From time to time the flow was stopped, a short interval was allowed to elapse, and the gage reading was taken.

It will be clear that gas discharged in this way will come in part from the coal and in part from the interstices existing between the particles of coal; it also is obvious that when the coal was in place in the mine no such open interstices existed; their influence had, therefore, to be eliminated. A number of determinations were made of the specific gravity (1.50) of the material;† this figure enabled the actual volume of the solid material in the cylinder to be found, and the difference between the volume of the cylinder and that of solid coal gave the interstitial space. It proved to be 37 per cent of the total volume.

As the gas expanded from that space in accordance with Boyle's law, it was an easy matter to correct the volume of gas discharged for the amount extruded from the interstitial space. The results were then set down in graphical form (curve *B* in the accompanying graph), so as to indicate the relationship between the gage pressure in atmospheres and the volume of firedamp (at normal pressure and 15 deg. C.) discharged by 1 cu.ft. of solid coal. The experiment was repeated, using carbon dioxide (see curve *C* in the same graph).

A quantity of the normal anthracite was then ground to a state resembling that of the outburst coal; it was dried and placed in the cylinder, and the test again carried out with firedamp (see curve *A*). The line *D* expresses the relation between pressure and volume of gas discharged from an open space of 1 cu.ft.

Outburst Coal Proved to Have Been Activated

The graph shows the outburst coal to be, per unit volume, a better adsorbent of firedamp than the normal anthracite of the seam. Apparently for the first time we meet here with a substance that has undergone a natural process of activation to a small though definite extent. Whether this feature is peculiar to the Ponthenry coal or whether it is the rule with such ejected material can be settled only by examining the coal blown out in many other such outbursts.

Curve *B* also shows that with pressures up to seven atmospheres the outburst coal held, ready for almost instantaneous discharge when the pressure was relieved, a quantity of gas greater than would have been held by an open cavity of the same volume.

Though, unfortunately, we do not know the pressure at which gas exists in the solid coal at Ponthenry, a rough estimate of the volume of gas blown out at the first outburst may be made if we may assume that that pressure probably lies somewhere between four and eight atmospheres. This outburst threw out or disturbed 280 tons of coal, which would have a volume of about 7,200 cu.ft. in place. An open cavity of that size would have released 57,600, 43,200 and 28,800 cu.ft. of gas on a fall of pressure to zero (gage) from eight, six and four atmospheres respectively. Containing, as the pocket did, the soft coal of the outburst, it will be found from line *B* of Fig. 1 that the gas volumes shown in Table III would be emitted at the pressures stated.

TABLE III. FIREDAMP RELEASED FROM 280 TONS OF PONTHENRY COAL

Gage-Pressure, Atmospheres	Volume Released,* Cu Ft.
4	40,320
6	48,390
8	53,570

*Measured at 15 deg. C.

If the conditions had been those of the French and Silesian collieries where carbon dioxide is discharged, the coal would have held a much greater volume of gas (see curve *C*), amounting, in fact, to about 107,000 cu.ft. at eight atmospheres and 77,800 cu.ft. at

*"Adsorption of Gas by Charcoal, Silica and Other Substances," by H. Briggs; Proceedings of the Royal Society, A, 1921 (in course of publication).

†If the coal had been a more active adsorbent, the determination of density by the usual method of water immersion would have been liable to considerable error, owing to the fact that in that case the water is intensely compressed in the thin layers in actual contact with the solid.

four atmospheres. The greater adsorption of carbon dioxide is due mainly to its critical temperature being above that of the mine, while that of methane is much lower. Hence the coal is able, by the pressure of adsorption, to liquefy (and then still further compress) the carbon dioxide in the thin films which lie in actual contact with the molecules of the solid; but methane at 15 deg. C. is incapable of liquefaction in this way.

It is important that the coal ejected by these outbursts from the solid be dry. The adsorptive power of coal—or charcoal, for that matter—is greatly reduced by the presence of moisture; so much so, indeed, that bursts of that kind are not to be feared in seams in which water exudes with gas at the face. The entry of water for the first time into a virgin seam containing gas adsorbed under pressure, an effect which may result from the working of a neighboring seam, would bring about an evolution of gas, and, unless there were channels of relief, an increase in the pressure of gas in the seam, a fact which may have a bearing upon the problem of sudden outbursts from floor and roof.

To sum up, sudden outbursts of gas and coal from the solid are due to the co-existence of four factors, namely: The presence of gas under considerable pressure, the presence of a mass of disintegrated coal which is loose enough to move under a sudden relief of pressure and to set free almost instantaneously the greater part of the gas adsorbed in it, the absence of water in the soft coal, and the employment of a method of working which affords little opportunity for the gas to drain quietly from the soft coal; or, as an alternative to the last, the presence in the seam, and surrounding a soft zone, of ribs of low permeability which prevent or interfere with that drainage. It also has been shown that in the instance closely studied the phenomenon of "activation" played a part in increasing the volume of gas adsorbed by the loose coal. Activation, however, is not an essential factor, as normal coal can adsorb sufficient gas to cause outbursts if favoring conditions obtain.

Circuit Breaker That Not Only Protects the Motor But Affords Safety to the Operator Also

Blowing Point of Fuses Is Lowered by Progressive Oxidation—Circuit Breakers Operate Under Time and Current Conditions for Which They Are Set—Switches Boxed—It Can Be Closed Without Opening Box

FOR years mining electrical engineers have indulged in much talk and controversy concerning the relative merits of the knife switch and fuses on the one hand and the circuit breaker on the other as a means for protecting from overload not only the motor but also the equipment driven by it. Though the fuse unquestionably is cheaper in first cost, its frequent failure, with consequent loss of production while renewal is being made, is a source of continued expense, the magnitude of which often becomes large.

Furthermore, a fuse is liable to "age"—that is, if the current it normally carries is sufficiently large to

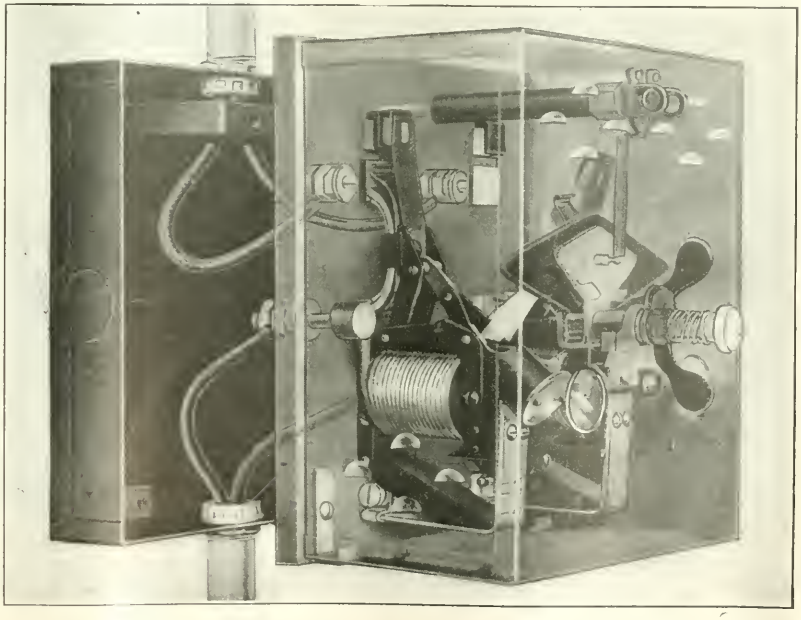


FIG. 1

X-Ray View of Circuit Breaker

This unit is practically dual in that it virtually embodies two breakers. The diamond-shaped piece of insulating material attached to the operating handle closes first one contact, then the other. In reclosing if an overload or short exists on the circuit served, the contacts cannot be closed simultaneously and the one first closed will come out as soon as the other allows the passage of current.

FIG. 2. EXTERIOR OF THE SMALL CIRCUIT BREAKER

All mechanism except the operating handle is enclosed within a substantial steel box. It is impossible, therefore, for the operator to come in contact with any live part.

keep it hot, it oxidizes and as a result its blowing point changes, lowering with the lapse of time.

Where a motor is protected by fuses, their frequent blowing presents the temptation to substitute either a fuse of larger capacity or to bridge the fuse block with a piece of wire, a nail or some similar conductor. Both practices are highly pernicious, the latter of course more than the former, for in either case the motor or circuit supposedly protected can draw more current from the line than it is built to carry.

Not Really Costly and Made Entirely Safe

In the past the chief objection to the circuit breaker has been its initial cost. As circuit breakers last indefinitely the first cost of such apparatus is its only expense.

Another objection, however, has been that the closing of the ordinary exposed circuit breaker presents a hazard of the same character and magnitude as that involved in the throwing of an unenclosed knife switch. In other words, manipulation of such a device is an operation which though by no means dangerous to the continuously careful attendant requires at least a measure of caution if shocks and the possibility of personal injury are to be entirely avoided.

In order to remove all danger to the operator and to give still better protection to the motor, the Cutter Electrical & Manufacturing Co., of Philadelphia, Pa., has developed and is now marketing the U-re-lite. This is a circuit breaker enclosed in a steel case with an especially designed insulated operating handle projecting from the front of the cover.

The U-re-lite Junior (Figs. 1 and 2) is equally efficient on direct current not exceeding 250 volts and on single-phase alternating current. It is made in sizes ranging from 2 to 60 amp. inclusive and can easily be adjusted to operate at any tripping point over a wide range. Thus, for instance, the 60-amp. instrument may be set to trip at any current value between 40 and 90 amp.

The U-re-lite Senior is built in all sizes ranging from 5 to 200 amp. and is serviceable on the voltages mentioned above. It may be equipped with special features, such as the time lag, no voltage or shunt trip. Each of the above instruments is in reality two single-pole inverse-time-element, circuit breakers enclosed in a steel box so designed that it is impossible to close both poles simultaneously. This renders the device non-closable on overload. Furthermore, it is impossible for any unauthorized person to block this instrument or to change its armature setting.

The Auto U-re-lite (Figs. 3 and 4) is designed for 3-phase alternating current work. It is a 3-pole breaker so designed that all three poles may be closed simultaneously if no overload exists on the line. Should an overload be present, however, the instrument will instantly trip independently of the handle. This breaker may also be equipped with the special features mentioned in connection with the second circuit breaker described.

Safety is effected by mounting the circuit breaker proper within a sheet-steel case and making the closing mechanism operative from the front of the cover. This construction, together with a suitable insulating element embodied in the closing lever, renders it impossible for anyone to come into contact with any of the live parts. When the breaker trips out it may be closed by simply

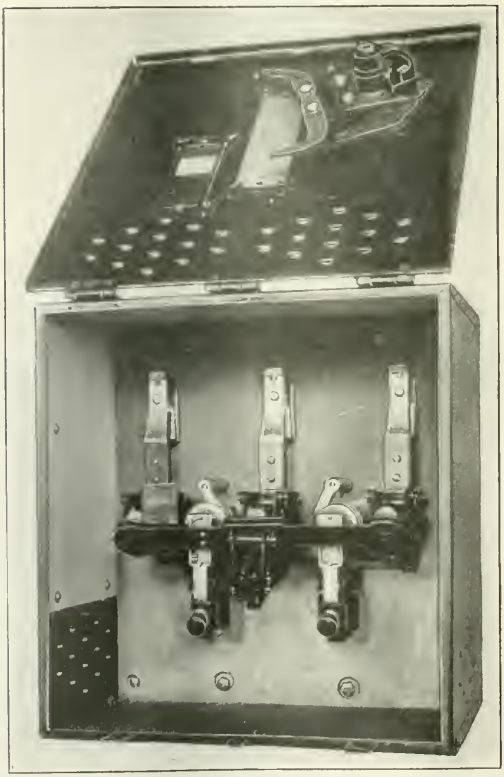


FIG. 3. THREE-PHASE BREAKER WITH BOX OPEN

Manual operation of this instrument is exactly similar to that of the one designed for direct- or single-phase current. Three phases are, however, carried instead of one.

turning the handle first to the left, then to the right. Its manipulation is so simple and safe that even a child can operate it with perfect impunity. Movement of the handle as described closes successively the switch elements, and it is this successive closure which the construction necessitates that renders it impossible to close the instrument against an overload or short-circuit. A push upon the knob on the front of the operating handle of the Junior and Senior instruments opens the breaker instantly. To open the Auto instrument, it is necessary only to turn the handle to the left. Thus any of the devices may be made to take the place of a knife switch and fuses.

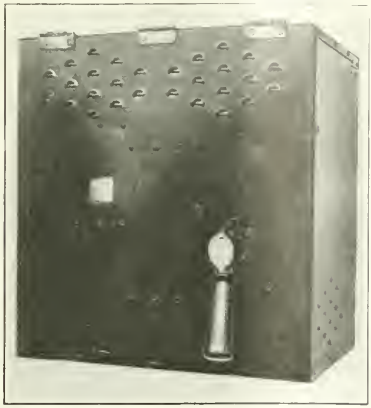


FIG. 4. EXTERIOR OF THREE-PHASE BREAKER
The protecting box is similar to that employed on the single-phase and direct-current instrument. The operating handle in this case is L- instead of T-shaped.

Wiring connections to any of these instruments are simply and quickly made. Safety to everything and everyone concerned has been the primary object sought in the design of this breaker. It does not "age." Operation in response to overload is controlled by a scientifically proportioned electro-magnet, which when traversed by a current of predetermined magnitude unfailingly releases the locking mechanism.

The case may be fastened with a padlock, so that no unauthorized persons can tamper with the mechanism inside or alter its adjustment. The same means may be employed also to prevent manipulation of the lever and consequently closure of the contacts when work is being done upon the line which the instrument protects. Practically foolproof in design and of sturdy construction, this instrument is admirably adapted for use wherever air-brake circuit breakers, fuses or knife switches are installed.

Conditioning Renton Mine After Severe Gas Explosion

Apparatus Men Work in Two-Hour Shifts, Preliminary Restoration Men in Shifts of Four Hours—Three Crews of Seventy Men Each Condition Plant for Operation—Rock Piles in Crosscuts Faced with Cement Mortar

By Alphonse F. Brosky
Pittsburgh, Pa.

ON THE morning of July 19, 1920, Renton No. 3 mine of the Union Collieries Co., eighteen miles northeast of Pittsburgh, Pa., was the scene of a mine explosion. In this disaster nine men were killed. The underground damage was enormous; in the shafts guides and buntons were ripped loose, and with other damage for a time made hoisting impossible; brattices, overcasts and stoppings were demolished; timbers were dislodged, resulting in serious roof falls, and some of the tracks were torn up. The general conditions underground were in such a chaotic state that long-experienced operating men who viewed the scene said that a clean-up would take from six months to one year.

Yet ten weeks after the explosion, coal was being hoisted from the mine, and today the daily output is greater than that of a year ago. As the company had the full and unfailing confidence of the miners and had all necessary supplies on hand, no unnecessary delays occurred in the reconstruction of the mine.

The relations between the company and its employees have always been of the best. The houses are of good design and are not crowded together, as in many of our mining towns. The well-kept lawns and thriving gardens exemplify the progress made in the Americanization of the foreigners of the mixed population of Renton. Every man is judged by his good qualities and not by his nationality; be he Pole, Hungarian or Italian, no discrimination is made. This determination to disregard ethnic differences was largely responsible for the good faith of the people after the explosion.

Underground, all the ventilation guides excepting one brattice and three stoppings were blown out—every one of the overcasts was demolished. The explosion

MAIN LANDING LOOKING TOWARD MAIN SHAFT
This brick lining was not damaged by the explosion, though a large fall occurred directly behind this lining at the junction of the east and west turnouts.

doors at the air compartment were shattered. At one place 50 ft. of curtain wall in the air compartment had been blown out. Here and there, throughout the remaining length of this wall, holes had been punched through. In order to restore ventilation, the coal-hoisting shaft was used as a downcast, necessitating the sealing of the smaller shaft. The fan, which fortunately was not damaged, was used as an exhaust.

Air being provided, the next problem was that of restoring the hoisting equipment. No. 1 cage of the main shaft was lowered the first day to within 20 ft. of the bottom, ladders being used temporarily in descending the remaining distance, which was cumbered by four loaded wagons, which were standing in the main haulage at the time of the explosion and had been shot into the sump at the shaft bottom, filling up the fairway. When these were removed the cage was lowered to the bottom. As only one cage was operated at this time, only 12 men were allowed to descend on it at one time, the discovery being made that more than this number overtaxed the hoisting engine. Two men were continually kept on the hand brake. Six weeks after the explosion the shafts had been restored to use.

Exploratory and Preliminary Work

Working in advance of the restoration crew were two breathing-apparatus crews which traveled two headings ahead. The advance crews consisted of five men each, and the restoration crew contained twenty men, including a foreman. The former carefully explored the roadways, examined conditions and advised the crew following accordingly. The apparatus men worked in two-hour shifts, the restoration crew working in four-hour shifts. Of the latter, six men set up brattices, and the remaining men carried material. As all the material had to be carried, the hazards of the work and the difficulties were increased. All this time dangerous falls were occurring; these often took place a few feet in advance or in the rear of the crews. In spite of the dangers encountered, not one man was injured during the restoration work, although several men were overcome by afterdamp. Four canaries died during the exploration work.

HEADFRAME OF MAIN SHAFT AT RENTON

To provide against delay owing to possible damage of the shaft equipment an extra hoisting sheave and a Lepley cage are kept at the head of the shaft.

Over 200 Men Worked on Final Conditioning

After the ventilation was fairly well restored the clean-up crew started to work. Three crews of seventy men each worked in three eight-hour shifts. These clean-up crews included muckers, trackmen, timbermen, linemen and pumpers. Where breaks in the track were found they were quickly repaired by the trackmen. Timbermen replaced dislodged timbers, and were closely followed by the linemen. It was impossible to maintain this order of working at all times, however, as conditions often made a change advisable. These well-organized crews working as by clock-work, together with the abundance of supplies on hand, were largely responsible for such rapid progress. The tracks were little damaged, except for a stretch of four rail lengths in the main haulage, where the track was completely sundered.

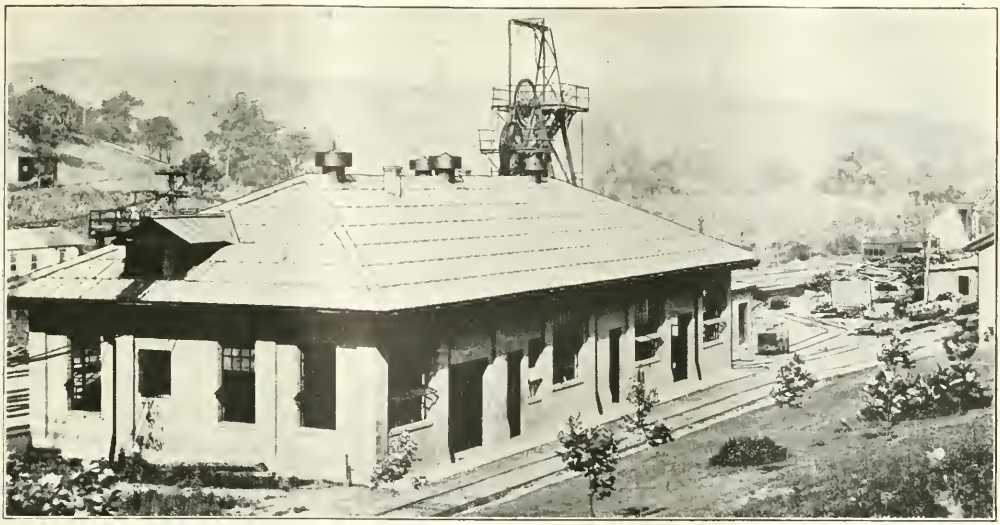
Rock Stoppings Faced by Cement and Sand

At first the fallen roof rock was removed to crosscuts which had been originally sealed with stoppings. The rock was tightly stowed in these places, in many instances occupying sixty or more feet of their length. In every instance where crosscuts were so filled, one end of these fills was plastered with a rich cement-and-sand mix. At other places stoppings were built of the same material 6 ft. thick and plastered in the same manner.

Many expressed the opinion that this procedure was unwise, thinking that these stoppings would settle and sag. But one year after their completion these stoppings show no signs of disintegration. What rock could not be disposed of in the manner described was hoisted to the surface, about 125 wagons of rock being removed from the mine daily for a period of ten weeks. After this time a smaller quantity of rock was hoisted, as the mining of coal had now begun.

The most severe roof fall occurred on the south end of the shaft bottom. Many thousands of tons of slate were removed from this place, leaving a void of 6 ft. above the usual roof height. Ordinarily, this condition would be considered safe, but as it was close to the cage landing, it was thought advisable to support the roof. Brick pillars 18 in. wide and 7 ft. high were built at 4-ft. centers along the ribs of the affected region. Twelve-inch I-beams were then laid on these supports and 2-in. lagging, capped with tie cribbing and reaching to the roof, completed the work.

About 50 ft. of brick lining with an arched roof runs north, at the end of which are located the east and west turnouts. This lining was not damaged by the blast, though a severe fall took place at the turnout itself. On each side of the main haulage, running parallel to it and across the portals of the turnouts, were placed two 18-in. steel I-beams, supported by massive brick pillars; surmounting and running perpendicular to these large beams were strung 12-in. steel I-beams. The usual 2-in. lagging and tie cribbing were used to support the roof. In other places where the dislodging of timbers had caused severe falls, the roof is now remarkably safe, a



RENTON SURFACE PLANT AFTER THE DAMAGE DONE BY EXPLOSION HAD BEEN REPAIRED

white sandstone having been exposed and the heading being well arched. The motor barn was completely demolished, but has since been rebuilt.

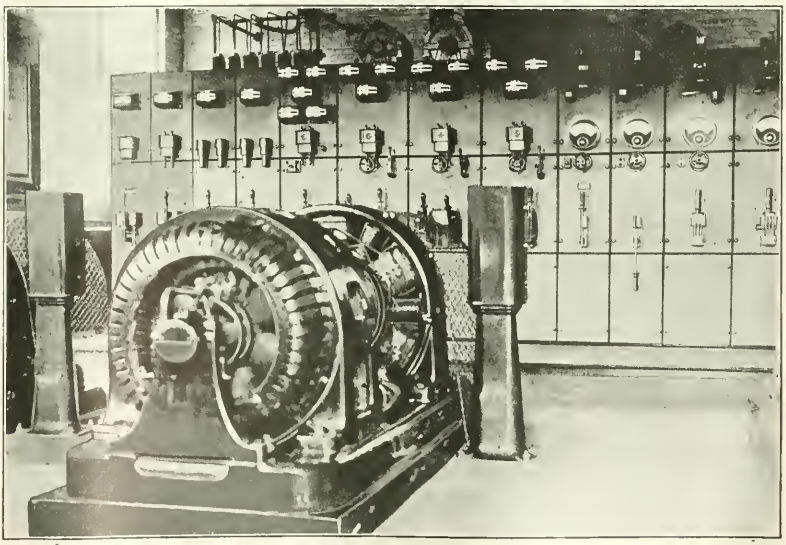
Practically little damage was done to the surface plant. Material shot up through the shaft, pierced the tile roofing of the buildings in many places, but the machinery was not damaged. The headframes required a certain amount of adjustment, and the hoisting sheaves, hoisting cable and the like had to be replaced.

It might be well to give a brief description of a few of the features of the plant as it is today. Coal is hoisted 517 ft. to the surface in two Lepley self-dumping cages, each making a round trip in one minute. The 84-in. Freeport seam in which the mine is working has a small band of boney in the center. Great care is exercised on the tipples to prevent any impurity from passing to the cars.

Two Marcus screens are installed, only one of which is in use at present, as the tonnage for which the plant is laid out is not yet being produced. The coal as it leaves the hoppers and falls on the screen is sprayed with water. This provision does away with much of the dust usually present about tipples. Five men are employed at the picking table, so that the coal dumped into the railroad cars compares favorably with any unwashed coal in the field. The present daily output of the mine is about 2,300 tons, although the tipple capacity approaches 4,000.

Switch Panel

The power plant has three 435-hp. 60-cycle 2,000-volt synchronous motors and the same number of 250-volt direct-current generators. The switch panel shown is for the direct current, the alternating-current switchboard being immediately behind it. The three spiral coils at the top center of the illustration are lightning arresters.



Problems of Operating Men

Edited by James T. Beard

Safety Requires Doing More Than Is Commonly Specified in the Mining Law

Not What We Preach but What We Practice Marks the Degree of Safety Attained. Mining Laws Cannot Specify Every Danger. Practice of Safety Is Higher Than the Law

WITH deep interest I have read more than one reference bearing on the requirements of our mining laws in respect to safety in mines. Most astonishing of all, however, is the statement made by Robert A. Marshall, at the close of his letter, *Coal Age*, July 21, p. 101, to the effect that no mine official should be asked to go beyond what is required in the law in making the mine safe.

This statement concludes Mr. Marshall's comments on a previous letter of Oscar H. Jones appearing in the issue for May 26, p. 956, and expressing the opinion that it is the duty of all mine officials to make and enforce regulations that will insure safety in matters not clearly specified in the law.

Preaching Safety of No Avail Unless Practiced in the Mine

The question of making our mines safer is an important one, in which every employee should be interested. Rules and regulations should be strictly observed and violations promptly punished. It is not what we preach, but what we practice, that will make the mine safe. There is a wide difference between the preaching and the practice of safety.

However widely we may differ on other questions pertaining to mining, there should be full agreement in respect to matters of safety. I heartily agree with the statement of R. W. Lightburn (Jan. 6, p. 22), who says "the question is more one of making the mine safe, regardless of what the mining law requires."

Doing What Safety Requires

The same truth is expressed by my neighbor, here in Tennessee, Mr. Jones, in the letter to which I have already referred. In my opinion, to do no more toward making conditions in a mine safe than what is specifically stated in the mining law would not, in many cases, be sufficient to insure the safe operation of the mine.

In one instance that has been brought to the attention of *Coal Age* readers, through the discussion of a doubtful clause in the Pennsylvania bituminous law respecting the use of open lights on the return current coming from a place requiring the use of safety lamps, the question was raised of whether the fireboss violated the law by permitting the miners working in five rooms on the return airway to use open lights when safety lamps were in use at the face of those headings, which were generating gas in dangerous quantity.

Varying Opinions Show Laws Not Specific Regarding All Dangers

A discussion of that question developed a difference of opinion regarding the violation of the law by the fireboss, although it was generally agreed that it would have been safer had he forbidden the miners to use open lights in those rooms. My opinion is that, setting aside the question of the law and its violation, if the headings were dangerous from having struck gas feeders the same condition would likely occur at any time at the face of one of those rooms.

Speaking of mining laws, specifying clearly all dangers to be encountered in the mine, as referred to by Mr. Marshall (July 21, p. 101), there is danger of interpreting the law in so straight a manner that, like the Indian's tree, we shall lean over the other way and make the law a menace rather than a safeguard. Practical common sense must be our guide to real safety.

Smoking in Mines Dangerous

Another question of mine safety that was recently discussed in *Coal Age* related to the smoking of cigars and cigarettes in mines generating gas. Commenting on that question, James Ashworth, mining engineer (Apr. 21, p. 716), asked in substance the question as to whether it would not be better to practice a little more prevention of danger in coal mining, instead of continuing to preach so strongly "safety first" when we disregard its actual practice in the mine.

It may be true that a lighted cigarette will not ignite gas; but if the experiment is to be made in a body of gas accumulated in the mine I am going to let the other fellow do it and ask him to wait till I get outside. In this discussion, also, the general opinion was expressed that no matches, tobacco, pipes or other articles for smoking should be permitted in a gassy mine.

Some years ago, while acting as fireboss in a very gassy mine where locked safety lamps were used exclusively and the rules forbade the taking of matches or other articles for smoking into the mine, the superintendent came to me one day, on the main entry, having a lighted cigar in his mouth. At my request, he put out his cigar, and I then took the opportunity to impress on his mind that it was impossible to make employees obey the rules when these were violated by mine officials.

All practical mining men will agree, I believe, that no law can be so framed as to be intelligently applied to meet the manifold unsafe conditions that continually arise in the mining of coal. Bearing this fact in mind, the lawmakers, in Tennessee, passed an enactment authorizing the chief mine inspector and his assistants, in conjunction with mine officials, to formulate rules and regulations that would bring these varying conditions in mines under better control and insure safety.

Classification of Tennessee Mines Increases Safety

One broad and important provision of the Tennessee Mining Law divides the mines in this state into four classes, having respect to the generation of explosive gas and dust in dangerous quantities and the number of persons employed in said mines. All mines are designated as belonging to one of these classes and governed accordingly.

In addition to this classification, the requirements of the law applying to the mines in each class are such as relate to the conditions known to exist in such mines. Also, the certificates of competency granted by the examining board, and the examination of candidates for the positions of mine foreman, assistant foreman or fireboss, are graded accordingly.

Even with this careful classification, respecting mining conditions in the Tennessee law, instances can be cited to show that the law cannot go into detail in every instance. For example, our law requires that breakthroughs on entries shall be 60 ft. apart, in Class-A mines. I have had experience in gassy entries going to the rise that could not be driven with safety that distance ahead of the last breakthrough.

In all such instances, it is my conviction that the mine foreman, assistant foreman and fireboss must act on the side of safety regardless of the requirements of the mining law.

John Rose.
Former State Mine Inspector.
Dayton, Tenn.

Gravity-Plane Problem

Numerous suggestions made by different writers to enable a single gravity plane or incline to serve two mines located at different elevations on a hillslope.

IN ORDER to make possible an intelligent study of the gravity-plane problem presented by a Pennsylvania superintendent, in *Coal Age*, June 2, p. 999, more data should have been submitted than is given in that inquiry. For example, any conclusion to be of value would have to be based on the information derived from the following sources:

A profile should be prepared showing the position of the knuckles at the two upper landings and the tipple at the bottom of the incline, together with the location of all switches and headsheaves. A plan should be given showing the layout of the tracks on the tipple and the connection of the tracks on each landing with the incline.

The inquirer should state whether the ropes are attached directly to the mine cars, or whether dillies or monitor cars are used. If the mine cars are used on the plane the number of cars run in a trip should be given; also the average weight of a car empty and loaded.

Daily Tonnage of Each Mine

It is important to know, moreover, whether the brake-sheaves are supplied with any other power than gravity; what daily production of coal is desired, and the proportion of output from each mine. It may be intended that the new mine shall be developed only fast enough to maintain a constant production of coal as the output from the old mine decreases. In that case, it should be stated how much more coal the upper mine will put out before the supply will be exhausted.

My experience with a number of different gravity systems enables me to say that not one of them is satisfactorily serving two levels. Inasmuch as the two levels in the present instance are but 100 ft. apart, my advice is to deliver the old-mine coal to the new-mine level, either by a switchback or a separate gravity tram. I would then operate the main incline entirely from the lower level.

As has already been suggested, it may be possible, by the use of an extra length of rope and proper couplings to serve both levels. However, this can hardly be done without confusion, delay and danger, resulting in a higher cost of production.

BERT LLOYD,
Mining Engineer.
Colorado Springs, Col.

Another Letter

WITH a desire to help to solve the problem of a single gravity incline serving two mines located at different levels, 100 ft. apart, allow me to describe briefly an arrangement that is in successful operation on a slope, at an up-to-date colliery in this locality.

The slope has an inclination of 25 or 30 deg. and is double-tracked its entire length. A sufficient space has been excavated at each landing from which coal is hoisted. I see no reason why the same system would not apply to the lowering of coal from openings on a hillside to the tipple below.

As indicated in the accompanying figure, adopting the same plan, the rails

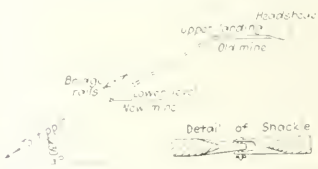


DIAGRAM SHOWING PROFILE OF INCLINE

on the incline are made continuous from the knuckle of the upper landing to the tipple at the foot of the plane, except that there is provided a movable section of bridge-rails at the lower level.

On each landing there is laid a steel plate on which the cars can be run and turned about ready to be lowered on the incline. Instead of this steel plate, a turntable can be used, if so desired, which may make the cars more readily handled.

When the empty trip has arrived at the upper landing and it is desired to lower the next trip from the landing at the new mine, an extra length of rope is coupled to the end of the main rope at the upper landing. As has already been explained in the reply to this inquiry and referred to by other writers, this extra length of rope lies at the side of the track when not in use and requires no explanation.

The lower end of this extra rope is now coupled to the car that has been run out from the lower landing, and this is lowered to the tipple. At the same time, an empty car is drawn up the plane to the level from which the loaded car was taken.

It is understood, of course, that the movable section of bridge-rails is taken out whenever it is desired to serve the lower level. Or, if desired, this section can be hinged at its upper end and raised sufficiently to permit the passage of the car from the level onto the incline, provided the construction of the bridge is such as not to interfere with the haulage rope.

This arrangement works like clockwork in the mine and would undoubtedly give equal satisfaction above ground. I have shown a detail of the rope shackle used for coupling the extra length of rope to the main rope.

MAC.
River Herbert West,
N. S., Canada.

Third Letter

REGARDING the question of making a single gravity incline serve two mines situated at different elevations above the tipple, my plan would be to build and operate two independent planes.

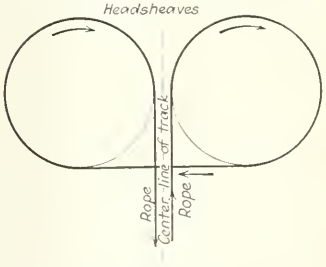
In the present instance, however, I would reconstruct this double track plane by tearing out one of the tracks from the upper level down to the landing at the new mine. There will then remain two lines of track, one extending from the upper level of the old mine to the tipple and the other from the lower level at the new mine to the tipple, the first being 1,100 ft. in length and the second 1,000 ft. in length.

At the middle point and on the outer side of each of these tracks, I would build a sidetrack or parting to enable the descending and ascending cars to pass each other on each incline. The parting of the track leading from the old mine would be 50 ft. above the one on the track leading from the new mine.

Both of these partings should be equipped with latch switches. The movement of the cars as they pass through these switches will throw the latches into position for the next car returning. In this way, the switches are automatic, each car ascending or descending setting the switch for the next car returning.

Some will doubtless prefer that the latches be equipped with double springs, believing that the springs will close the latches more completely. If the track gage is properly arranged, however, and the latches are kept in good condition, there should be no danger that the movement of the cars will not properly close the switch for the next returning car.

Allow me to suggest that, in this arrangement, the headsheave on each landing will serve but a single track



and it will be better to have the ropes run on and off the sheaves on the inner side, as I have indicated in the accompanying figure. This will have the advantage also of giving a full three-quarter turn of the rope around each sheave, and will bring both cables in line with the center of the track. Of course, the brakes must act on both sheaves in order to utilize the total adhesion of the rope.

Peru, Ill. GASTON F. LIBIEZ.

[The two preceding letters suggest radical changes in the present incline. One requires the building of a separate track system for serving No.-2 mine, which would be contrary to the information desired in regard to utilizing the present track for that purpose. The

other proposes to lay plates on the incline at each landing, apparently for the purpose of doing away with switches and crossovers at those points. The idea of laying plates on which to turn the cars and run them onto the sidetrack, at each landing, could not be considered as practicable in the operation of a gravity plane.

What was asked by this inquirer is information that will enable him to utilize the present track system to serve both mines. In the letters presented, several good points have been brought forward, which should prove of great assistance in the solution of this problem.—EDITOR.]

Fourth Letter

THERE are two plans that I would like to offer for the purpose of enabling a single gravity plane to serve two mines one located above the other. Both of these plans have been in operation for several years and are giving excellent service at the present time.

It is not stated in the inquiry that started this discussion, whether the mine cars are run over the incline, or a monitor car is in use. The plans I am about to present relate to both of these conditions, however, and I hope will be of interest.

FIRST PLAN, USING MONITOR CARS

First, we will assume that two monitor cars are used on the incline and the mine cars are dumped into these at each landing. We will say that each monitor car has a capacity of ten tons and will make an average of twelve trips an hour, which would mean an output of 120 tons per hour, or 960 tons in an eight-hour shift, making the possible output from the two mines 1920 tons a day.

A dumphouse or tiphouse should be built over the incline at each landing, and a bin or hopper having a capacity of from 75 to 100 tons constructed just below the tipple horns, but giving a sufficient clearance for the monitor car to pass under the bin.

The bin must be arranged with a door operated by a lever. There should be a door over each track of the incline so as to load either of the monitor cars. At any time when it is desired, a monitor car can be half-loaded at the upper landing and the loading completed at the lower landing.

Wherever it has been installed and used, this system has given good satisfaction. I should have stated that a signal-light system is employed to signal between the two landings and the tipple at the foot of the incline. If properly arranged, such a signal system will afford no opportunity for misunderstanding and will insure safety in operation.

SECOND PLAN, USING MINE CARS

The second plan considers the case where the mine cars are run over the incline and dumped at the tipplehouse below. In this case, as in the first instance mentioned, a dumphouse is constructed over the incline at the lower level, the mine cars from that level being dumped into a bin as before. The cars from the upper level are the only ones brought over the incline.

When it is desired to load coal from the lower level, one or more empties are attached to the loaded trip at the upper level. The trip is then stopped at the lower landing and these empties are filled from the bin at that level, after which the entire trip is lowered to the foot of the incline. Or, an entire empty trip can be lowered from the upper landing and loaded at the lower level if that is desired.

For the sake of illustration, we will assume a six-car trip of empties is ready to be hoisted at the foot of the incline. It is evident that to start this trip and overbalance its weight and the weight of the haulage rope on the incline, it will be necessary to lower a larger number of empties for loading at the lower level, or start with some loads from the upper level.

In either of the cases here mentioned there will be no extra incline to build, or switches to install and the system will require no extra room. Should it become necessary to increase the tonnage of the mine, all that will be required will be to install monitor cars of larger capacity, or lower a larger number of mine cars in a trip.

I have assumed that the plane makes twelve trips an hour, making the total output from the two mines, in eight hours, 1920 tons. When everything is in proper condition, however, it will be possible to make fifteen trips per hour and thus increase the tonnage 25 per cent and provide for a total output of 2,400 tons of coal from the two mines.

When the mine cars are to be loaded on the incline at the lower level an extra apron of sheet steel should be provided and hung on hinges so as to make it adjustable to the height of the car and avoid waste of coal in dumping.

OSCAR H. JONES,
Brier Hill Collieries.
Crawford, Penn.

[Practically the same two systems are described in a letter by James Jones, Crawford, Tenn.—Editor.]

Inquiries Of General Interest

Recovering a Misfire in Blasting

No Attempt Should Be Made to Drill Out the Stemming or in Any Way to Tamper with a Shot That Has Misfired—Drill a Hold About a Foot or 18 In. from the First Hole and Blow Out the Charge

AT ONE of our mines, a miner has drilled a hole 5 ft. 6 in. deep, in an extra hard sandstone at the face of a heading, using a jackhamer drill for the purpose. The shot was intended to lift or break a rock 3½ ft. thick and 6 ft. wide. The miner was working by himself that day and charged the hole with ten joints of 40 per cent dynamite, which he tamped with clay to the mouth of the hole.

The shot failed to explode and the miner has now left and is working in another coal field. For certain reasons, we do not want to drill another shothole and desire to know how this hole can be unloaded in the safest manner possible. What makes the matter worse is that we do not know in which joint of the dynamite the exploder is inserted. We hope that some one will be able to help us solve this problem.

Crawford, Tenn. MINE FOREMAN.

It is never safe to attempt to draw a charge that has been misfired. We have known of cases where miners have taken the exact measurement from the mouth of the hole to the charge, before tamping the hole, so that in case the shot would fail to explode, they could drill out the stemming to within two or three inches of the charge and insert a fresh primer that would enable them to fire the hole successfully.

This practice, however, cannot be recommended and the miner who follows it will sooner or later forfeit his life as a result. In the present instance, such a proceeding would be extremely dangerous, as the depth of the stemming is not known, neither the location of the primer in the charge.

The only safe method of proceeding with a misfire is to drill a second hole, say a foot to one side of the first, taking every precaution to avoid the risk of striking the charge when drilling the second hole. Even by this method there is danger that some of the dynamite of the first charge will remain unexploded and extraordinary care must be used in removing the broken rock, after the shot has been fired. It is customary, when firing a second hole to blow out a charge that has misfired, to make a careful search for any unexploded cartridges that may remain after the shot is fired.

Profit and Loss in Mining

Conditions in a certain mine cause a loss on one side and a profit on the other side of the shaft, and it is required to determise the net profit or loss.

IN ORDER to test my knowledge of arithmetic, perhaps, a friend has given me the following question, re-

garding the solution of which I am not at all certain:

In the development of a particular mine, coal was produced on one side of the shaft at a considerable loss, owing to faults and bad roof. On the other side of the shaft, the conditions were normal and the coal mined at a profit. The selling price of the coal was $2.40 per ton. The cost-sheet shows that, while there was a loss of twenty-five per cent in working the coal on the one side of the shaft, there was a gain of twenty-five per cent in working that on the other side. The question is asked, Was this development a paying or a losing proposition? STUDENT.

McComas, W. Va.

If there was a loss of twenty-five per cent in mining the coal on one side of the shaft and all the coal sold for $2.40 per ton, the returns, here, are seventy-five per cent of the cost of production, which is 2.40 ÷ 0.75 = $3.20 per ton, on the faulty side of the mine.

Again, the coal mined at a profit of twenty-five per cent and sold at $2.40 per ton shows the cost of production, in that case, to be 2.40 ÷ 1.25 = $1.92 per ton.

The average cost of production is, therefore (3.20 + 1.92) ÷ 2 = $2.56 per ton of coal mined. Selling at a price of $2.40 per ton, the net loss is 2.56 — 2.40 = 16c. per ton. The development is therefore a losing proposition. This is a question often asked in the study of "Profit and Loss," intended to catch the unwary. The percentage of gain or loss is always estimated on the cost price.

Examination Questions Answered

Bituminous Mine Inspectors' Examination Pittsburgh, Pa., March, 1921

(Selected Questions)

QUESTION—*What are the duties of a mine inspector with respect to the following: (a) In case of a mine explosion? (b) What would be your method of procedure when violations of the mine law were reported to you? (c) In case a condition arises at a mine that endangers life and health, what action would you take? (d) How often would you examine a mine as an inspector and what report would you make? (e) What maps are required and what should they show?*

ANSWER—(a) Proceed at once to the mine and take charge of the rescue work that may be already in progress. In the meantime, notify the nearest available rescue teams and stations. Having arrived at the mine and made a hurried examination regarding the situation, condition of the ventilating apparatus, the means available for entering the mine, rescue appliances and other supplies, call for volunteers, select the most experienced men, organize them under reliable leadership and see that they are equipped with safety lamps and the necessary tools and supplies. Enter the mine with the men, following the intake air, and do everything possible to find and rescue any survivors of the disaster.

(b) Investigate promptly any violation of the mine law reported and ascertain, if possible, where the responsibility rests. It is the duty of the inspector to see that every violation of the law is suitably punished and, if necessary, hale the transgressor before a judge of the court of quarter-sessions in the county.

(c) Whenever danger is known to exist in a mine, the same must be reported at once, the inspector making a full written report and, if necessary, withdrawing the men and closing the mine until the danger is removed. Before permitting the men to return to their places in the mine, the inspector must make a thorough examination and see that all requirements have been complied with by the company and the mine made safe for work.

(d) The Anthracite Mine Law requires the inspector to examine and report the conditions of each working place in each colliery every four months. If necessary, in the judgment of the inspector, he should make more frequent examinations of mines where dangers are likely to develop. This report should be submitted to the company and a duplicate posted in a conspicuous place, in the mine opening, in a glass covered case, where it will be protected from the weather and can be read by the miners working in the mine.

(e) The law requires that an accurate map or plan of the workings of a colliery shall be drawn to a scale of 100 ft. to the inch and show all the workings or excavations in each and every seam of coal, the tunnels, and passages connecting them and give also the inclination of the strata, in degrees, and the tidal elevation of the shaft or slope bottom and at different points throughout the mine, as required by the inspector. The map must show the boundary lines of the property, the date of each survey and the location of any dam built to prevent the flooding of the mine, together with its elevation and the area of the section that may be covered by the water.

QUESTION—*What one cause produces the greatest number of accidents in the bituminous mines of this state, and what would you recommend to reduce such accidents to a minimum?*

ANSWER—The greatest number of accidents in mines is caused by falls of roof and coal at the working face. To reduce these to a minimum safety inspectors should be employed to make frequent and careful inspections of the working faces while the men are at work. A plentiful supply of timber of the proper kind should be kept constantly on hand, in each working place, and a systematic method of timbering should be adopted wherever this is practicable.

QUESTION—*An airway passes 10,000 cu.ft. of air per minute; what must be the increase in pressure in order to pass the same amount through an airway whose cross-section has the same area, but whose rubbing surface is 1.6 times as great?*

ANSWER—For the same quantity of air in circulation and the same sectional area, the unit pressure varies directly as the rubbing surface. Therefore, to pass the same quantity of air under these conditions, the pressure must be increased 1.6 times the original pressure.

QUESTION—*How would you approach the burning section of a mine; and, in case the condition necessitated the sealing off of the burning section, what steps would you take to insure the safety of the workers and the success of their work?*

ANSWER—The burning section must be approached from the intake side, in order to avoid the danger of being overcome by the gases produced by the fire.

Should it be necessary to seal off the burning section, the men should be promptly withdrawn from the mine and only such persons be permitted to enter as are required for the work of building the stoppings. A danger signal must be placed at the entrance of the mine and the place carefully guarded to prevent any one from entering, except those engaged in the work. In building the stoppings, every precaution should be taken to insure safety. No open lights may be used and the stoppings should be built in such a manner and order as will reduce the danger of an explosive mixture forming in the enclosed area to a minimum.

In general, the first stopping should be started at the return end and the work proceed in regular order from that point to the intake end. Some will prefer to leave a small opening in the stopping at the return end and close this at the same time that the intake stopping is closed. All stoppings must be well built and carefully sealed, and pipes should be built in, at the floor and the roof, to allow for drainage and the inspection of the condition of the air from time to time, as may be required.

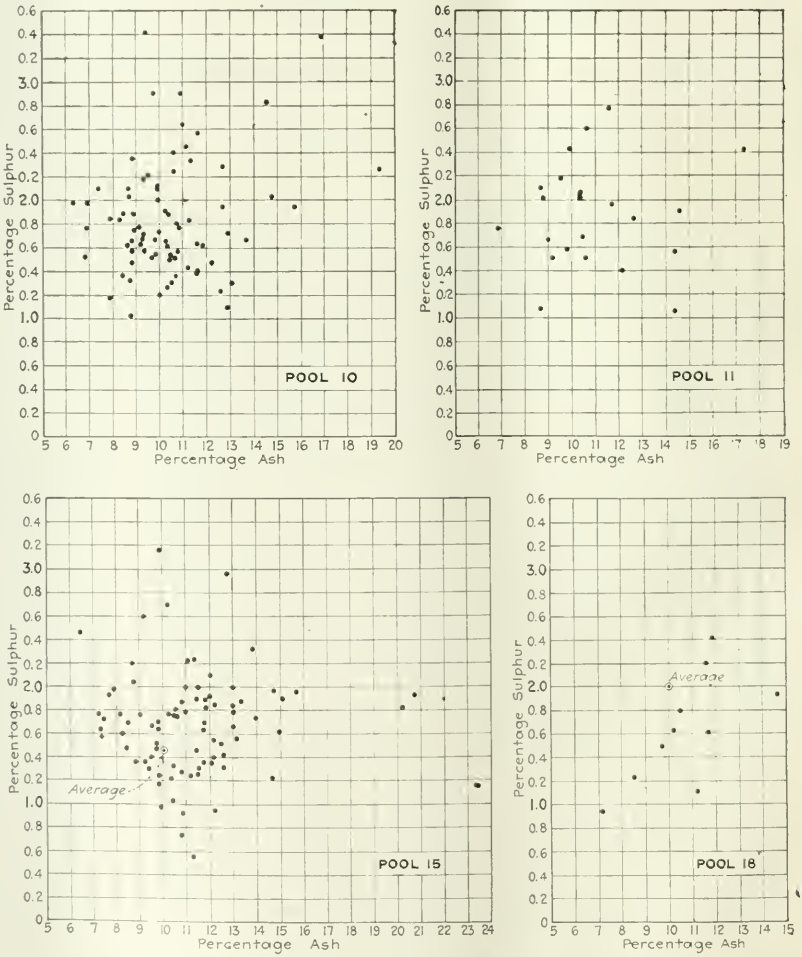
Public Service Co. Analyses at Variance with Dr. Payne's Data on Tidewater Pool Coals

Actual Experience Shows Estimates of Volatile Too High on Pools 11, 12, 14, 15 and 18—Higher Ash Found Except in Pool 18—Tables Agree in Showing High Quality of Pool 18

By G. A. de Graaf*

MY EXPERIENCE with "pool" coal does not fully bear out the average analyses given by Dr. H. M. Payne in his article in *Coal Age* (March 17, 1921), and for the information of others who may be buying coal by the tidewater classifications and to add to the published data on this important subject I have put together some of the figures collected in the past year in our laboratory.

The following table, showing in parallel columns the averages for pools 10, 11, 12, 14, 15 and 18 as reported by Dr. Payne and as shown by careful averaging of analyses of more than two hundred barge samples as received at our stations, indicates that Dr. Payne's estimates of volatile in every instance except pool 10 are considerably above our actual experience with the particular pools; that he is from one to four per cent low on ash in every instance except that of pool 18; that on sulphur he is too low on pools 10, 12, 14 and 15 and too high on pools 11 and 18; that his averages of heat value for pools 11 and 12 are below what I have found by actual tests and too high on pools 10, 14, 15 and 18. It is interesting to note that as reported by Dr. Payne the pools considered in order of low percentages of ash are 12, 10, 11, 14, 15 and 18, while our experience would place the order as 18, 12, 11, 15, 10 and 14. The maximum range in ash between pools as disclosed by averages of our tests is about 1.8 per cent, whereas Dr. Payne shows 2.7 per cent. As regards sulphur we agree in finding that, of the six pools under discussion, 14 is the lowest, but he finds 11 the highest while I find 10 the highest. My experience would indicate that he has placed the low sulphur too low and the high too high. As between 12 and 18 I find a difference of but 0.18 per cent and he reports 0.82 per cent.



RELATION OF ASH TO SULPHUR IN SAMPLES OF COMPLETE BARGES OF POOL COAL

*Chemist, Public Service Electric Co., Newark, New Jersey.

Pool 14, which my figures show to be lowest of the six in heat value, doubtless because so high in ash, Dr. Payne records as second highest. As between the highest and lowest in these pools I find less than 500 B.t.u.; Dr. Payne shows nearly 1,300.

What to me is quite interesting is the good showing, as disclosed by Dr. Payne's figures as well as mine, for pool 18. This pool, I understand, has the reputation in the trade of being generally poor. Neither of these sets of average analyses bears this out, for I find pool 18 as good as 11, and superior to 10, while Dr. Payne shows it higher in heat value than any of the other six under discussion, but little inferior to 10 in sulphur and generally superior to pool 11. Listed as "Fair Low Volatile Steam," I do not understand why Dr. Payne shows the volatile matter in this pool as 29 per cent, my experience showing that it is a low volatile, being under 24 per cent.

The wide variation in quality between barge lots of coal in the same pool classification is almost astounding. Whether this is due to faulty classification of mines or actual variation in the preparation is not known. In the accompanying diagrams the relations of ash and sulphur are shown for lots of coal in pools 10, 11, 15 and 18, sampled and tested by us.

AVERAGE ANALYSES OF POOL COAL

	Volatile — Per Cent		Ash — Per Cent		Sulphur — Per Cent		B.t.u.	
Pool	Payne	DeGraaf	Payne	DeGraaf	Payne	DeGraaf	Payne	DeGraaf
10	23 48	22.90	7.58	10 39	1.69	1 83	13,850	13,758
11	24.00	23.01	9 00	10 98	2 25	1 90	13,350	13,621
12	28 07	25 14	7 30	10 85	1 18	1 46	12,710	13,713
14	28 00	27 35	9 50	12 19	1 00	1 23	13,930	13,289
15	28 00	24 77	10.00	11 28	1 44	1 64	13,875	13,395
18	29.00	23.55	10.00	10 66	2 00	1 64	14,000	13,621

Voluntary Publicity as a Cure for Intermittent Operation of Soft Coal Industry

To Win Good Will and Co-operation Producer Must Acquaint the Public with Actual Conditions—Aggressive Presentation of Mine Workers' Case Has Put Owners at Disadvantage

By Thomas Robson Hay

PUBLICITY! What is it? In the last analysis, isn't it pretty much putting your best foot forward? You have a commodity which you want to sell, presumably at a profit. But in order to do so, you must produce it economically, distribute it at minimum cost and promptly and give satisfaction. When your product is all you claim for it—perhaps a little more, but never any less—the financial success of your business, assuming good management, is fundamentally dependent on the good-will, co-operation and interest of your customer. In the case of the coal industry, the customer is the general public, whether the domestic or industrial consumer. Why not cultivate this public in a spirit of service?

How much does the public know of the actual conditions of coal mining? How much does it know of the physical limitations and handicaps of individual operations, all affecting working conditions and safety and production costs? How much does it know of the fundamental reasons affecting variations in the sale price of coal for different mines, different localities, and at different seasons of the year? What does it know of the character and extent of the modern safety-first precautions as carried out in mining operations? What does it know of the real reasons for the operation of coal-mining properties for only a fraction of the total work year and of the possible practicable and available means for effecting reasonably continuous operation the year round? What does it know of the real equity and fairness of the miner's demands for increased wages and a shorter work day?

Demand for Coal Is Primarily Seasonal

First of all, some explanation of the fundamental and controlling conditions surrounding the mining, shipment and distribution of coal should be set forth. The demand for coal is primarily seasonal, both in industry and in the home. It is seasonal in industry to the extent that work is at a higher pressure and because the external conditions of temperature are more severe in winter than in summer. The railroads require more coal in winter than in summer, because of the larger volume of traffic offered and moved and because of the severe obstacles to traffic movement, such as cold, ice, snow and wind. The domestic use of coal in the winter months is, of course, larger because of the requirements for heating.

From the point of view of the coal industry, as a whole, seasonal freight rates as a method of equalizing and regulating the mining and distribution of coal so as to assure uninterrupted flow to the consumer has not been favored. It is objectionable in that it tends to favor one field, having low production costs, against another field, having, by virtue of existing physical conditions, higher costs. The benefits of such a system of rates probably would be incidental rather than general in that while inducing large industrial plants to take coal in the slack season of demand to the extent of their local storage facilities, would not benefit industry, the domestic consumer or the coal miner and operator to an appreciable extent, because of the lack of sufficient and extensive storage facilities.

Coal Lacks Storage Facilities of Grain Business

Let us consider the fundamental conditions of the grain market relative to the coal market as a means for showing what is possible in the way of benefiting the coal industry. Both markets are seasonal, the one as to production, the other as to demand. In the case of grain, elevators are erected to shelter and store the crop as it is harvested, from which point it is distributed as required. With coal no such facilities exist. There are several reasons for this. In the first place, coal is more bulky and is, to some extent, more apt to deteriorate and to be lost—by spontaneous combustion. Secondly, it is only within recent years that the demands of industry and the concentrations of population in urban centers have created serious obstacles to the smooth flow of coal from mine to consumer, as required. Thirdly, in the absence of an active public demand, conditions have been allowed to drift and it is only slowly that the public is coming to realize that the present condition of the soft coal industry is uneconomic and wasteful, and that it can and should be rectified.

The public, superficially at least, understands conditions surrounding the production of grain, as nearly everyone, at one time or another, has been on a farm. On the other hand, the public knows practically nothing about coal and the conditions of mining, except what is seen and heard of the dirt and danger and what is read in the popular periodicals, which is too often written from the miner's or the socialistic point of view.

Another important point to be noted is that the miner has, for practical purposes, a fixed place of employment. He may be underemployed, at times, but he is certainly

not casually employed. His living, housing and wage conditions and hours of labor are generally more pleasant than are those of the farm hand. Because he is more or less permanent as to place of work, the miner is capable of organization and has his organs of publicity, which enable him, collectively, to place his case aggressively and, too often, unfairly, before the public.

From a psychological point of view it should be noted that the farmer is almost universally an individual operating with small capital and on a relatively small scale. To that extent his case is personal. The coal operator, on the other hand, usually is a capitalist, in name if not in fact. His scale of operations, judged by the capital invested, is relatively and often actually large and his relations with the public, as a whole, absolutely impersonal and corporate.

The methods of publicity will consist mainly in public and civic participation in muncipal, state and Government affairs, always with the idea of creating an intelligent popular understanding of the fundamental conditions and handicaps underlying the mining, distribution and sale of coal and also with a view to contributing, in any manner possible, to the public convenience, comfort and welfare. If the coal operator does not take the trouble to put his business intelligently and fairly before the public he can certainly expect no one else to do it. In this day of change and upheaval such a course is necessary if the coal industry is to avoid falling into the hands of doctrinaire and Governmental theorists for experiment and exploitation.

Coal, in one form or another, is at the bottom of our industrial and social structure. In the operation of the railroads and traction systems, in the production of electric heat, light and power, in the production of artificial gas, of steel, heat, ice, and of many other commodities in everyday use it is the primary element. This being the case, why not capitalize the fact and take advantage of the key position of this important and far-reaching industrial asset?

Educate Public in Coal Mining and Marketing

The form of this publicity will be varied, but for its primary aim will have public education as to the difficulties and handicaps encountered in the mining and marketing of coal. First of all, it should be clearly pointed out that the production price of coal will vary according to the locality and physical conditions in the mines.

It is in the matter, primarily, of visible living conditions and environment, and only to a less extent of wages, that the coal miner makes his appeal to the public. Let us return to the comparison with the farm hand. Who will say that the miner's lot is as bad? True, he works in dirt. His appearance at the end of a day's work is not as clean as that of the farm hand and his occupation is somewhat more hazardous, but it is no dirtier or more hazardous than that of the steel worker. In neither case are the miner's hours as long or as physically tiring. His work is essentially intermittent, with varying lengths of rest. His living conditions and environment are certainly more pleasant than are those of the steel worker. His food and living quarters are, or can be, more palatable and cleanly than is the case with the casually employed farm hand. The miner is certainly no more exploited than is the farm hand and he has the advantage of being a skilled worker.

Fundamentally, the miner's grievance is that though he is ready and willing to work every day conditions beyond his control, such as car shortage, lack of orders, etc., prevent. It is this condition that makes of him not a casual laborer, in the strict sense of the word, but rather causes him to be temporarily unemployed and, to a certain extent, underemployed. A man may be said to be underemployed when his average daily wages, taken over an appreciable period, are insufficient to afford adequate subsistence. The conditions of intermittent employment generally characteristic of the coal industry is at the bottom of all wage demands.

Seasonal fluctuations of demand, resulting in intermittent employment, or of temporary unemployment, if you please, really is a question not of unemployment as such but of wages. From an economic point of view, no industry is self-supporting unless it pays real wages sufficient to keep men not only while they are at work, but also while they must stand idle and in reserve.

The connection between miners' wages and the question of publicity is just this. The prevailing apparently high wage scale is fixed, under normal conditions, by the fact of intermittent employment, due to the seasonal nature of coal demand and of the mine operation. This seasonal demand, with resulting slack and busy periods of mine operation, is due to the lack of any regularizing medium. Inasmuch as the physical conditions affecting demand cannot be changed, any regularizing medium must be artificial. Seasonal freight rates, as mentioned, are only palliative and do not go far enough. Practically, the only other available medium is storage. The present obstacles to any comprehensive system of coal storage are custom, public ignorance and indifference and lack of present easily available facilities.

Regularization Would Benefit the Operator

The operator would benefit by regularization because his income would be more stable and certain. Instead of being compelled to equip his mines for a maximum production that may be required for only a relatively short period of each year, his mine would be equipped to produce a previously determined average tonnage month in and month out. Regularization would not only make for a more friendly spirit of co-operation between operator and miner but would relieve the operator of much of the unjustified accusation and invective to which he is now subjected.

The miner would benefit because his employment and income would be more stable and dependable. Because of his resulting generally continuous employment, his day wages in all probability would be reduced, but his annual income would be increased, because of his practically continuous employment.

The public would benefit because the supply would tend at all times to equal the demand and at a fair and more or less stable price. Strikes and labor disputes would become less frequent. Railroad and terminal congestion would be reduced and the movement of other needed commodities not delayed.

Some have suggested nationalization as the only remedy for the present admittedly bad situation. Though theoretically a sound economic tenet, practically such administration and operation of any business on a large scale has never been satisfactory, either in this country or abroad. It is not evident how such a step, in the present state of the coal industry, would be beneficial or advantageous to either the operator, the miner or the public. The physical conditions affecting the production, transportation and distribution of coal would not be changed simply by a change of ownership and control.

Why should not a constructive campaign of publicity point out to the great consuming public the fallacies of nationalization and show that, regardless of theory, its practical effect would be to make the price of coal higher, not lower, and its delivery more uncertain than has ever been in the case under the present private management? Our present highly inefficient and expensive Government in Washington with its superfluous and unnecessary bureaus and commissions, duplicating and bucking each other is only an example of what can be expected if "Government in business" rather than the reverse is to be continued.

As has been pointed out, the present state of the industry requires that employment be irregular and intermittent. Labor has learned neither to constructively attack nor to combat irregularity of earning as it has low rates of pay.

Capital, by virtue of its position, must show the way and lead the fight in any intelligent and constructive effort at reform. The best and simplest and most readily available weapon for the consummation of the desired end is publicity. It is on the foundations of right knowledge and fair dealing and understanding that any radical, and, at the same time, beneficial departure from established practice must rest.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

THE observers of business, according to a review of business conditions for August, issued by the National City Bank of New York, are almost unanimous in their assurance that there is a "better feeling" about business. "Just exactly what this recurring phrase means is difficult to state," the review continues. "It might be descriptive of any of a dozen psychological changes that could enter into the situation. If it means that people generally have begun to realize the causes that have thrown industry out of balance, and to appreciate the things that must be corrected before conditions come into equilibrium again, then we should say that the reported 'better feeling' constituted an important advance toward normalcy. If, however, the 'better feeling' means simply that people are merely smiling and waiting more patiently, rather than setting themselves seriously to the task of wage and price reductions and other readjustments that are necessary, then we fear that it signifies but little.

"There is fresh evidence constantly that the readjustments are taking place. They are slow, but it takes time for a knowledge of conditions to reach all classes and divisions of the population, and for them to make up their minds to give the co-operation that is necessary to bring industry back into balance. Meanwhile, it will aid in the cultivation of patience to realize that conditions are by no means so bad as they might be, and that considering all the circumstances the volume of business is really surprisingly large.

"The monthly letter of the Federal Reserve Bank of New York for August gives a table showing a calculation in percentage figures of the production in this country of eleven important commodities. These figures show a very uneven state of industry, but they do not indicate anything like complete prostration. July is the midsummer month and normally not one of great activity, but business prospects in the commodities of common trade are considered good for a maintenance of the present volume and perhaps some increase of demand in the fall. It is now more than a year since dealers have bought goods freely for stocks."

Steel Mills Increase Operations

Steel plants of the Youngstown district began Aug. 1, a week of decidedly increased operation, with open-hearth steel production at about 50 per cent of capacity, considerably better than for many weeks. A blast furnace idle since May 21 was put in operation by the Sharon Steel Hoop Co., and rolling mill and sheet mill operations were increased at all the large plants. The Carnegie Steel Co.'s schedule for the week was for 85 per cent operation at its Ohio works and increases were made in the schedules of the Republic Iron & Steel Co. and the Brier Hill Steel Co.

More men were at work in the mills of the Shenango Valley, Pa., last week than for several months, the Sharon Steel Hoop Co., the Petroleum Iron Works, the Standard Tank Car Co. and the Sharon Pressed Steel plant having increased their operations. The Pittsburgh Steel Co. and the American Sheet and Tin Plate plant at Monessen also resumed last week. About 3,000 men are employed in the two plants.

Industrial Gain in Philadelphia

Industrial conditions in Philadelphia showed slight improvement for July, according to a survey completed July 31 by the Chamber of Commerce. In 72 per cent of the city's business establishments employment has increased slightly, while 8 per cent reported no change, and the remaining 20 per cent reported slight cuts. Predictions are made for still greater decreases in the ranks of unemployed for August.

Idle Freight Cars Reduced 10,000

Freight cars temporarily out of service totaled 555,168 on July 23, according to reports received from the railroads by the car service division of the American Railway Association. This is a reduction of approximately 10,000 since July 15. In reaching this total, the car service division takes into account the total number of cars now in excess of current freight requirements as well as the number of cars now awaiting repairs above 7 per cent of the total. Officials believe that this percentage, while higher than the accepted maximum of the pre-war period, probably represents a better standard for present comparisons, due to the difficult conditions respecting labor and materials during the past three years.

More Rail Employees Return

The Chicago & Northwestern R.R. announces that operations were resumed with a full force in the car shops at Chicago Monday, Aug. 1. At the same time the locomotive shops re-employed 25 per cent of the usual force. About 1,200 men got their jobs back.

The middle division officials of the Pennsylvania Railroad Co. ordered the return of 76 furloughed men, effective Aug. 1. The Altoona works has recalled 150 men. In all 300 men were recalled last week in the shops at Altoona, Pa. One hundred men were taken on at the Hollidaysburg repair shops July 28.

Pottery Industry Slumps

The pottery industry of the United States is operating on less than a 50 per cent basis, and the prospects for increased production are not considered bright by members of the United States Potters' Association, in session at Atlantic City to discuss wage readjustments with the National Brotherhood of Operative Potters. The potters have felt depression only in the last few months, it was stated, being one of the last industries hit.

More Go to Work in Michigan

Michigan industries have added 34,000 employees to their working forces since April 1 and are now operating on a basis of about three-fifths of their peak time, according to employment engineers' reports given to the Employers' Association of the Chambers of Commerce of twenty-four leading cities of the state. The compilation shows there are now 310,512 employees at work in the factories of these twenty-four cities, compared with 276,500 at work April 1, and a low ebb of 136,000 men when the industrial depression was at its worst.

Baltimore Coal Exchange Is Indicted as Monopoly by Grand Jury

ALLEGING a conspiracy to create a monopoly through the manipulation and fixing of the price of anthracite coal in Baltimore and the State of Maryland, the Grand Jury brought indictments Tuesday, Aug. 2, against the officers, directors and individual members of the Baltimore Coal Exchange. The men indicted, twenty-six in number, are said to represent firms and individuals who handle 90 per cent of the hard coal sold at retail in Baltimore.

There are eight counts in the indictment, which charges that the Baltimore Coal Exchange is a corporation, without capital stock and membership in which is voluntary, and that the members and firms mentioned were parties to a trust, agreement, combination, confederation and understanding under the name of the Baltimore Coal Exchange, to create a monopoly in anthracite coal in Baltimore, contrary to the law.

Among those mentioned in the indictment were Hugh C. Hill, president of the exchange; J. Edward Waesche, of the Chesapeake Coal Co.; J. Harry West, Enterprise Coal Co.; Charles N. Parkinson, American Ice Co.; Benjamin F. Lucas, City Ice Co., and Bushrod M. Watts, all being among the better known dealers of the city. The Carroll Independent Coal Co. also was indicted as a corporation.

Robert F. Carman, U. S. District Attorney, in a statement made Aug. 3, said that if the evidence of State's Attorney Robert F. Leach, Jr., disclosed co-operation on the part of coal operators with the plans and purposes of the Exchange the Sherman Anti-Trust act would clearly apply, in which event the Federal Government would take independent action against the indicted officers and directors.

International First-Aid and Mine-Rescue Meet to Be Held at St. Louis

UNDER the auspices of the U. S. Bureau of Mines, the American Red Cross, the United Mine Workers, and coal operators' associations, the sixth annual International First-Aid and Mine-Rescue Meet will be held at St. Louis Sept. 1, 2 and 3. Virtually every mining district in the country will be represented and several Canadian and Mexican mining regions are expected to participate. The British and Belgian governments have announced their intention of sending representatives.

Dr. E. R. Hunter, of the American Red Cross first-aid service, who served as chief judge at the Denver contest last year, will act in a similar capacity at St. Louis. In addition to the prizes offered by the National Safety Council and other organizations, the American Red Cross will present medals to the most proficient teams. To help carry on its first-aid work throughout the country, the Red Cross desires the support of the people generally, and it is hoped that during the fifth annual Roll Call, Nov. 11-24, the membership will be greatly increased.

Census Figures Show Growth of Bituminous Mining Industry Between 1909 and 1919

A STATEMENT of the general results of the bituminous coal industry in the United States covering the calendar year 1919 was issued July 30, 1921, by the Bureau of the Census, Department of Commerce. It consists of a preliminary summary comparing the figures for 1909 and 1919, by totals, and is subject to such change and correction as may be found necessary on further examination of the reports. The statistics cover mining of coal of all kinds except Pennsylvania anthracite.

The word "enterprises" as used in the census reports may mean more than one mine provided they are operated by a single organization and located in the same state or producing district. The number of mines reported is the count of individual mines or closely-related groups of mines operated as a unit. It does not include a very large number of small coal mines producing for local consumption.

The growth of the bituminous coal-mining industry for the decade 1909 to 1919 is shown by increases in all the principal data: The number of enterprises nearly doubled; the number of individual mines operated increased by more than one-third. The statistics show small increase in the total number of persons engaged, large increase in the number of salaried employees, and slight increase in the average number of wage earners. There also are shown large increases in power used and in capital invested, and very large increases in the principal expenses of operation and in the value of products. Only moderate increase is shown in the quantity of coal produced.

COMPARATIVE STATISTICS, BITUMINOUS MINING, 1919 AND 1909

	Producing Enterprises 1919	Producing Enterprises 1909	Per Cent Increase
Number of enterprises	6,634	3,506	89 2
Number of mines	8,314	6,016	38 2
Persons engaged	583,155	534,814	9 0
Proprietors and firm members, total	4,237	3,739	13 3
Number performing manual labor in or about the mines	1,838	1,713	7 3
Salaried employees	33,562	19,159	75 2
Wage earners (average number)	545,356	511,916	6 5
Wage earners, Dec. 15, total	616,947	570,030	8 2
Above ground	108,685	94,173	15 4
Below ground	508,262	475,857	6 8
Power used (horsepower)	2,154,517	1,228,026	75 4
Capital	$1,903,652,355	$1,062,411,843	79.2
Principal expenses:			
Salaries	68,644,930	21,811,710	214 7
Wages	681,937,911	294,344,241	131 7
Contract work	2,855,966	2,209,672	29 2.
Supplies and materials	142,308,281	40,530,631	251 1
Fuel and power	37,155,089	7,513,894	394 5
Royalties and rents	22,242,440	12,093,442	63 9
Taxes	34,571,558	4,485,840	670 7
Products, total value[1]	1,144,656,425	469,466,096	143 8
Coal—			
Quantity (tons, 2,000 pounds)	459,971,070	376,952,534	22 0
Value at mine	$1,143,001,507	$401,555,972	184 6

[1] Includes $1,654,918, received in 1919 for by-products, work done and power and miscellaneous materials sold.

The growth of the mining industry as a whole is shown in a preliminary statement of the general results of the 1920 census of mines, quarries, and wells of the United States, covering the year 1919, also issued July 30. It consists of a comparative summary for the years 1909 and 1919, by totals. The returns were taken for the calendar year ending Dec. 31, 1919, or the business year of the establishment most nearly conforming to that calendar year.

The statistics show slight increase in the number of enterprises, with moderate decrease in the number of individual mines and quarries and large increase in the number of individual wells operated by them. Of the total number of enterprises shown, 11,466 in 1919 and 12,122 in 1909 were engaged in mining and quarrying industries and 9,814 in 1919 and 7,793 in 1909 in the petroleum and natural-gas industry. There is also shown very slight increase in the number of wage earners and the total number of persons engaged in the industries. In contrast to these small changes, large increases are shown in power used, capital invested, principal expenses of operation, and the value of products.

COMPARATIVE STATISTICS, MINES, QUARRIES AND WELLS, 1919 AND 1909

	Producing Enterprises 1919	Producing Enterprises 1909	Per Cent Increase[1]
Number of enterprises	21,280	19,915	6 9
Number of mines and quarries	13,766	18,164	-24 2
Number of petroleum and natural-gas wells	260,673	166,320	56 7
Number of natural-gas-gasoline plants	1,117	[2]	
Persons engaged	1,077,570	1,041,682	3 4
Proprietors and firm members, total	21,907	29,922	26 8
Number performing manual labor in or about the mines, quarries and wells	5,257	8,861	40 7
Salaried employees	74,154	44,127	68 0
Wage earners (average number)	981,509	967,633	1 4
Wage earners, Dec. 15, total	1,088,190	1,065,283	2 1
Above ground	382,230	366,962	4 2
Below ground	705,960	698,321	1 1
Power used (horsepower)	6,724,057	4,608,253	45 9
Capital	$6,955,466,831	$3,380,525,841	105 8
Principal expenses:			
Salaries	149,328,985	53,393,551	179 7
Wages	1,285,928,275	586,774,079	120 9
Contract work	81,418,289	28,887,898	181 8
Supplies and materials	555,222,936	202,729,754	173 9
Fuel and power	122,095,769	45,136,550	170 5
Royalties and rents	174,393,730	63,873,585	172 6
Taxes	140,998,714	17,796,763	692 3
Value of products	$3,228,023,845	$1,238,410,322	160 7

[1] A minus sign (-) denotes decrease.
[2] Not available.

New York Central Railroad Plans Sales Campaign to Avert Winter Coal Shortage

NOW is a good time to buy coal, according to the New York Central R.R. The officials on this road have sufficient confidence in the public to believe that a direct appeal on the subject of coal will produce results. Coal represents an important part of the traffic on this railroad, as it does on many others, and coal in plentiful supply is equally or more essential to the continued and successful operation of the industries and public utilities in the large territory served by this important transportation system.

Instead of waiting for a possible coal-car shortage that would interfere with the industries as well as the railroad, these people are going before the traveling and coal-consuming public with a direct and plain statement of fact regarding coal—what it means to the carrier and what it means to the consumer.

The essential and important feature about the New York Central R.R. advertisement, which is appearing in newspapers throughout the country, East, West, North and South—Seattle, Los Angeles, San Francisco, New Orleans, Denver, St. Paul; in fact in every important city in the country and many smaller towns east of the Mississippi—is that no effort is made to scare the public into buying coal. The whole appeal is that of the salesman.

As representing the reasoning back of this and the feeling of helpful co-operation toward the coal industry animating the officials of this road, the following letter from G. N. Snider, coal traffic manager of the New York Central Lines, to C. H. B. Chapin, secretary, the Empire State Gas and Electric Association, Grand Central Terminal, New York City, will be interesting to readers of *Coal Age:*

Quotes Authorities for "Buy-Now" Movement

"Noting your letter of July 20 and its enclosed bulletin, No. 24, from the American Gas Association, quoting recent letters from Chairman Clark of the Interstate Commerce Commission and the Secretary of Commerce to the American Gas Association, urging the propriety of storing a winter supply of bituminous coal this summer at present prices, which, according to Secretary Hoover, are not too high.

"As very largely serving the gas and electric public utilities in New York State represented by your association, permit me to say for the New York Central R.R. that at the present time we have a very considerable unused surplus of cars and other transportation facilities, as indeed have all other railroads in this section of the country.

"At the present time we know that bituminous coal is being offered for immediate shipment at less than its actual cost of production and that as the wage scale contract prescribed by the U. S. Bituminous Coal Commission will not expire until March 31, 1922, there is almost no likelihood of a prior general reduction in the cost of mining coal.

"In view of the time necessary to perform the mechanical work of providing general increases or decreases in railroad rates, and the fact that no general decreases on coal are now in contemplation, according to the published announcement of Chairman Clark of the Interstate Commerce Commission, there is almost no possibility of any reduction in coal rates before next April.

"For many years past the expiration of two-year wage contracts on March 31 has almost invariably caused mining in the bituminous coal regions to be suspended from one to two months thereafter while new agreements were being negotiated.

"Should we have very severe weather this coming winter (last winter having been unusually mild) this railroad will, as usual, do its utmost to move current coal shipments to public utilities and other users of coal, but there may be times when weather difficulties are practically insurmountable.

"In view of the various conditions outlined herein, and while adequate transportation is available and the coal market is such that the grade and quality of coal desired may be readily secured, we believe that in the exercise of ordinary prudence and foresight the public utilities and other bituminous coal consumers should by all means provide themselves now with a sufficient reserve of bituminous coal both to carry them over any periods of interrupted winter service and to remove the pressure of their necessities from the first three months of next year if there is then in sight a considerable suspension of mining after April 1."

BULLETIN
United States Bituminous Coal Commission, Interstate Commerce Commission and Geological Survey urgently recommend bituminous coal users to lay in winter fuel reserves now
NEW YORK CENTRAL LINES

Coal For The Winter

Not many months ago, factories, public utilities and other large consumers of bituminous coal were buying any coal they could get, and paying any price demanded. Railroads were congested with coal trains moving from the mines, and long strings of "empties" going back for more. Freight cars had to be rationed for other commodities. All business suffered.

Now there is a surplus of both coal and transport. But the country is entering the harvest season when the movement of the crops creates a heavy demand for cars.

Coal consumers who now anticipate a portion of their winter needs by ordering fuel for early delivery have the advantage of a "buyers' market," and the certainty of prompt rail deliveries. The buyer of coal now can obtain the precise grade of fuel best suited for his use.

The New York Central Lines, consuming 12 to 15 million tons of coal a year for locomotive power, have built up their own fuel reserves as insurance against the uncertainties of the coming winter.

At the present time, we have facilities and equipment for the movement of coal to industries along our Lines that have not yet made adequate provision for winter reserves.

NEW YORK CENTRAL LINES

BOSTON & ALBANY – MICHIGAN CENTRAL – BIG FOUR – LAKE ERIE & WESTERN
KANAWHA & MICHIGAN – TOLEDO & OHIO CENTRAL – PITTSBURGH & LAKE ERIE
NEW YORK CENTRAL AND SUBSIDIARY LINES

PREMIERE OF THE FIRST BIG NATIONAL COAL ADVERTISING CAMPAIGN

Commerce Commission Decides Coal Cases In Favor of Southern Illinois Field

THE decision of the Interstate Commerce Commission in the Illinois coal cases was announced Aug. 8. In these cases complaints were made assailing as unreasonable, discriminatory and prejudicial the rates on bituminous coal from mines in the Fulton-Peoria, Third Vein, Springfield and Belleville districts and from the so-called inner group, all in Illinois, to destinations in Illinois, Indiana, Iowa, Minnesota, Wisconsin, Michigan, Kansas, the Dakotas and Missouri. The commission rules as follows:

That the rates from the Third Vein, Springfield and Belleville districts to the Northwest are unduly prejudicial to the extent that they are less than 70 cents, 30 cents and 10 cents lower per ton, respectively than the rates from the Southern Illinois district to the same destination territory.

That the rates from the Fulton-Peoria district to certain points in Iowa are unduly prejudicial to the extent that they are less than 70 cents and 40 cents lower per ton than the rates from the southern Illinois and Springfield districts, respectively, to the same destinations.

That the rates from mines in the inner group to St. Louis and points in Missouri and southern Iowa, except Missouri river cities, to which the traffic moves through St. Louis, are unduly prejudicial to the extent that they are less than 22.5 cents lower per ton than the rates from mines in the southern Illinois group to the same destinations.

The commission also decided in the complaint of the Ohio Chamber of Commerce that the reconsignment rules and charges on coal and coke in all cars and on freight in open-top cars, effective August 20 last, in territory west of the Mississippi river on the lines of the C. B. & Q. are not unreasonable.

Central Pennsylvania Mine Workers Refuse To Consider Wage Decrease

IN RESPONSE to the communication from the Central Coal Association at Altoona, dated July 28, John Brophy, who has been asserting that he did not want a meeting with the operators because they had not said what they wanted to discuss, declares in a letter dated Aug. 4 that he will not consent to a meeting because the object of such a conference would be to discuss a wage reduction. He quotes John L. Lewis in saying that "There will be no reduction of wages in the organized sections of the coal-mining industry." He also quotes Lewis' declaration that the scale of wages was fixed by the U. S. Bituminous Commission created by the President, which is not true, for the present scale is a modification of that agreement resulting from continued strikes on the part of the mine workers. Even this agreement the mine workers of central Pennsylvania would not accept, though when it was posted by the operators the men went back to work.

Brophy declares that District No. 2 is in accord with John L. Lewis in his declaration against any wage reduction before April 1, 1922. Brophy further declares that Rule 26 of the present joint agreement reads "No agreement shall be made with any operator not a member of the association on a lower scale of wages or which shall provide for a reduction, under any circumstances, during the term thereof, which shall not be less than two years." Finally, Mr. Brophy says, there are matters that might be taken up with advantage to both parties, but wage questions are not among them. He would be glad to hold a conference to settle such matters.

Operators Oppose Rate Reduction of Ford

HENRY FORD'S efforts to effect freight reductions on his Detroit, Toledo & Ironton R.R. have given rise to a widespread belief that coal rates will be reduced generally. The reduction proposed by Mr. Ford is being protested by coal companies that would be discriminated against if the requested reductions were put into effect. There is no basis for such a belief. It is highly improbable that the Ford reductions will be granted and inquiry at the Interstate Commerce Commission brings forth the emphatic declaration that no development in the rate-reduction matter is expected in the near future.

Referring to Henry Ford as "an over-zealous entrepreneur who should not be permitted" for purposes of his own to break down freight rates, "upon which a number of railroads principally depended for their livelihood," the Northern West Virginia Coal Association protested Aug. 5 to the Interstate Commerce Commission against coal-rate reductions proposed by Mr. Ford's road. The association was joined in its protest by other coal operators' organizations in the Harlan, Hazard and Southern Appalachian districts.

The protest declared that the reductions proposed on coal shipped from river points by the Detroit, Toledo & Ironton, as well as rates on coal originating at other points on the road, would break down the entire rate structure in the Ohio territory. The rate which it is proposed to reduce, it was explained, is fundamentally based upon the Hocking rate, which is the key tariff for the district.

Tidewater Exchange Revises Working Rules

THE revised rules of the Tidewater Coal Exchange, Inc. which were sent to the members this week show many changes, some of which are important. This work has been under way for several weeks by the Rules Committee and after several hearings with other committees representing the Exchange and the Carriers, has been finally completed.

Nothing definite could be learned concerning the changes but it was intimated that members may expect to see Rule No. 18, otherwise known as the Demurrage Rule greatly altered. This rule has been the bone of contention among the members of the Exchange, but it is believed that provisions of the new rule will obviate all trouble. Some rules, it was said, have been entirely eliminated, and changes have been made in others.

The schedules in bankruptcy of the old Tidewater Coal Exchange filed in the United States District Court of the Southern District of New York on August 8 show liabilities of $2,402,779, and assets, including debt due on open accounts and bank deposits of $2,385,228. The liabilities include $801,275 due the United States in taxes and other debts, while the assets include $1,952,799 due on demurrage charges.

Detective Shoots Down Sid Hatfield

C. E. LIVELY, who as a detective became a member of the United Mine Workers of America and later ran a little store in Matewan to gain the confidence of the strikers and keep track of their doings, on Aug. 1 met Sid Hatfield and Ed Chambers in the court-house yard in Welch, W. Va.

Bantering between Lively and Hatfield was followed by quarreling, and shots are said to have been fired by Lively, Hatfield and Chambers, in the course of which the two latter were killed. Smiling Sid was twenty-four years of age. He was born at Matewan, and worked in the mines. He became chief of police under Mayor C. C. Testerman.

Lively and four of his companions have been placed under arrest. Witnesses say that of two guns carried by Hatfield one had been discharged and that shells had been fired from Chambers' gun.

LEHIGH VALLEY, FACED BY STRIKE, CLOSES COLLIERY FOR REPAIRS.—On July 28 the Twin Shaft of the Seneca Colliery, at Pittston, Pa., was shut down over a wage dispute. The Lehigh Valley Coal Co., which owns the mine, decided that it was a good time to make repairs and closed the mine down. The general grievance committee of the Lehigh Valley Coal Co. has been considering several grievances presented at the many collieries of that corporation, among others that of No. 9 Colliery, Sugar Notch, where the men struck twice with but one intervening day at work, the dispute being about the seniority rights of a breaker boy. Last reports are to the effect that eight out of thirteen collieries in the northern field owned by the Lehigh Valley are on strike.

Governor's "Ad" Urges Alabama Domestic Coal Users To Buy Now; Fixes Sliding Margin

THAT there is certain to be a serious coal shortage during the coming winter unless domestic consumers lay in a supply for winter use as soon as possible, is the warning issued by Roy R. Cox, Acting State Fuel Administrator of Alabama. Failure of domestic coal consumers to buy when their needs can be easily supplied, together with the unusual laxness of the steam coal market, it is stated, has created a situation equal in seriousness to that with which the people of Alabama were confronted last winter, as it is impossible for the railroads to handle or the retailers to receive and deliver a full winter's supply of coal during the winter months alone.

Realizing the seriousness of the situation, the Governor and a committee of the domestic coal producers concluded to advise citizens through advertisements, one of which is reproduced on this page, as to prices of coal at the mines and established freight rates, and at the same time Governor Kilby, through the Fuel Administration, is endeavoring to prescribe a reasonable gross margin of profit to be charged by retailers. Owing to fixed overhead expenses which must be met by the retailer throughout the year, the margin determined is higher than it would be if the coal business were normal or nearly so.

The margin is divided into four classes: First, the cities of Birmingham, Montgomery and Mobile; second, all other towns of 6,000 population and over; third, all towns of 3,000 and up to 6,000 population; fourth, all towns of less than 3,000 population, and all dealers who do not maintain a coal yard but who deliver from the car to the consumer's bin, by contract or otherwise. For the first class a margin of $3.30 is considered fair, and in order that retailers in these cities may be able to offer some inducement to consumers to buy their coal at this time, the margin has been put on a sliding scale, lower at the present time, and increasing month by month, as follows: August, $3.10; September, $3.20; October, $3.30; November, $3.40; December, $3.50. For the second class, $2.80; for the third class, $2.50, and for the fourth class, $1 plus the cost of unloading and delivery.

Text of Warning Issued by Acting Fuel Administrator

The complete text of the Fuel Administration's announcement, issued by Acting Fuel Administrator Cox, follows:

Due to the fact that domestic coal consumers are not laying in a supply of coal against the winter's needs, and to the further fact of the unusual laxness in the steam-coal market a situation confronts us of equal seriousness with that which we went through last winter. Excepting the very few operators who are fortunate enough to have railroad and other public utility contracts for steam coal, no mine operators are working more than two days a week, and some of those mines which are working on a normal basis are steam-coal mines strictly, and produce no domestic coal whatever, and at the same time the domestic coal consumers are not buying in anything like normal summer quantities. The result of this latter condition is that the retail dealers who are able to get coal at all on their contracts have their yards stocked, and are unable to take more because of their inability to make any sales. Unless relief is obtained, these conditions will certainly result in a serious coal shortage during the winter, for it is impossible for the railroads to handle or the retailers to receive and deliver a full winter's supply of coal during the winter months alone.

Realizing the seriousness of the situation, and in an effort to ward against the possible shortage, the Governor and a committee of the domestic coal producers concluded to advise the public through advertisements in the newspapers of the state, of the facts regarding prices of coal at the mines and the established freight rates, and in addition the Governor, through the Fuel Administration, is undertaking to name a reasonable gross margin of profit to be charged by retailers. On Sunday, July 31, and Monday, Aug. 1, there will appear in the papers of Birmingham, Mobile and Montgomery, a display advertisement showing the prices at the mines for August, of domestic coal from 28 mines, which includes all the domestic coal producing mines in the state. This will be followed by advertisements showing prices for the retailer in 11 towns in representative sections of the state, and the established freight rate on each of the 28 coals to each of such towns. Further information regarding prices and freight rates will be furnished by the Fuel Administration upon request made to the Acting Fuel Administrator at Montgomery.

As thorough an investigation as is practical has been made into the whole subject, and the Fuel Administration does not see any hope of reduction in either mine prices or retail prices. This department would not be able to state whether the prices being charged at the mines are proper and reasonable without first going into extensive and time-consuming audits of the books of the operators, which has not been considered practicable for the purposes of this investigation. It can safely be stated, however, that the mines are operated on a fixed heavy overhead expense, including pumping and ventilating plants, which is just the same whether the mines operate full time, half time, or are shut down, and with the mines running now only two days a week, and the market such that steam coal, which comprises 65 per cent of the whole output from the domestic producing mines, is necessarily sold for less than the cost of production, the claim of the operators that they are running at a heavy loss on present domestic prices must be given full credence. It looks to be a question of coal at high prices or no coal at all, for the operators cannot be expected to run indefinitely and stand these heavy losses. It should be understood, however, that this department, in making this statement, is of the opinion that if coal production and coal sales were normal, the prices could and should be very much cheaper.

The question of margin of profit of the retailer is affected by the same condition that confronts the operator, namely, the small amount of business now being done as compared with a normal summer season. The retailer has a fixed overhead expense that runs on regardless of whether he is selling any coal or not, so that any margin that would net him a fair profit in normal times would not enable him to pay expenses at this time. The margin that has been determined upon is higher, therefore, than would be named if the coal business was normal, or nearly so.

The margin is divided into four classes: First, the cities of Birmingham, Mobile and Montgomery; second, all other towns of 6,000 population and over; third, all towns of 3,000 and up to

STATE OF ALABAMA
STATE FUEL ADMINISTRATION

Montgomery, August 1, 1921

To The Domestic Coal Consumers of Alabama:

For several weeks the State Fuel Administration, under the direction of the Governor, has been gathering data for the purpose of furnishing information to the public as to what prices they should have to pay for coal, both at this time and during the winter months. Such information is given in the table below, and is as complete as it has been possible to make it.

An effort has been made to be fair to the public, to the retailers and to the coal operators. The Fuel Administration believes there is no hope for any reduction in these prices and is convinced that it is the part of wisdom to advise all coal consumers to place their orders now. Buying now by the consumers will enable the retailers to handle more coal during the summer months, thereby enabling the mines to operate a greater percentage of the time, which will insure a greater production for the winter's needs, and the railroads are better able to transport the coal now than they will be later on.

This table shows the August prices at the twenty-eight mines in the state which produce domestic coal. The prices are from ten to twenty-five cents higher than were the July prices, and will continue to advance through November. The table also shows what is considered to be a reasonable gross margin of profit for the retailers in eleven towns in representative sections of Alabama, together with the freight rate on each of those coals to each of such towns. Any consumer may determine from this table what his retailer should charge for coal throughout August, for example, the maximum prices per ton delivered to home of consumer at Montgomery during August on a low price and a high price grade are arrived at as follows:

	Gamble	Montevallo
F. O. B. mine price	$3.25	$7.10
Freight rate	$2.06½	$1.87½
War tax on freight (3 per cent)	$0.06	$0.05½
Retailer's gross margin	$3.10	$3.10
DELIVERED COST TO HOUSEHOLDERS	$8.37½	$12.03

Other advertisements will be run at later dates, showing the prices for the succeeding months.

The State Fuel Administration will furnish information about prices of coal, and freight rates to any point in Alabama, upon request to this office.

ROY R. COX, Acting Fuel Administrator.

THE FOLLOWING ARE THE AUGUST PRICES PER TON (2,000 POUNDS) F. O. B. RAILROAD CARS AT MINES, TOGETHER WITH THE FREIGHT RATE PER TON (2,000 POUNDS) TO, AND RETAILERS' GROSS MARGINS AT, REPRESENTATIVE POINTS IN THE STATE, ON ALL THE SLACK COALS NOW BEING MINED IN ALABAMA

Name of Coal and Producing Field	Price	Freight Rates (per ton of 2,000 lbs.)											
	F. O. B. mine	Anniston	Bessemer	Birmingham	Decatur	Florence	Gadsden	Huntsville	Montgomery	Opelika	Selma	Tuscaloosa	Tuscumbia
Gamble	$3.25	$2.06½	$1.06¼	$1.06¼	$1.06¼	$1.63¾	$1.63¾	$1.06¼	$2.06½	$1.87½	$1.75	$1.06¼	$1.63¾
Calumet	$3.50-4.00	2.29	1.00	1.06¼	1.00	1.63¾	1.00	1.00	2.12½	1.75	1.69	1.00	
Carolina	3.50-4.00	2.29	1.00	1.06¼	1.00	1.63¾	1.00	1.00	2.12½	1.75	1.69	1.00	
Yeary	3.50	2.12½	93¾	1.12½	2.87½	1.50	2.00	1.93¾	2.00	1.93¾	1.88	1.12½	2.00
Pratt	3.50	2.12½	93¾	1.12½	2.87½	1.50	2.00	1.93¾	2.00	1.93¾	1.88	1.12½	1.93¾
Armar		2.12½	93¾		2.87½	1.63	2.00	1.93	2.00	1.88	1.88		1.93
Alberta		2.12½	93¾	1.06¼	2.87½	1.50	2.00	1.93¾	2.00	1.87½	1.50		1.93¾
Brookside		2.12½	93¾	1.06¼	2.87½		2.00	1.93¾	2.00	1.87½			1.93¾
Corona	4.00	2.29	1.00	1.06¼	1.00		1.00	1.00	2.12½	1.75			1.00
Jefferson	4.00	2.29	1.00	1.06¼	1.00		1.00	1.00	2.12½	1.75			1.00
Cahaba Mill	4.00	2.29	1.00	1.06¼	1.00		1.00	1.00	2.12½	1.75			1.00
Sipsey	4.00	2.29		1.06¼	1.00		1.00	1.00	2.12½	1.75			1.00
Corona	4.00	2.29	1.00	1.06¼	1.00	1.63¾	1.00	1.00	2.12½	1.75	1.69	1.00	1.63¾
Sterling	4.00	2.29	1.00	1.06¼	1.00	1.63¾	1.00	1.00	2.12½	1.75	1.69	1.00	1.63¾
Birmingham	4.00-4.50	2.29	1.00	1.06¼	1.00		1.00	1.00	2.12½	1.75			1.00
Empire	5.25-5.50	2.68	93	1.68	2.68		2.00	1.68	2.00	1.68			1.68
Pratt		2.12½	93¾	1.12½	2.87½		2.00	1.93¾	2.00	1.87½			1.93¾
Cahaba Field													
Belle Ellen	5.00	2.12½	93¾	1.62½	2.87½	1.50	2.00	1.93¾	2.00	1.68	1.12½	2.00	
Gurney	4.50	2.12½	93¾	1.62½	2.87½	1.50	2.00	1.93¾	2.00	1.68	1.12½	2.00	
Eureka	4.50	2.12½	93¾	1.62½	2.87½	1.50	2.00	1.93¾	2.00	1.68	1.12½	2.00	
Acton	4.50	2.12½	93¾	1.62½	2.87½	1.50	2.00	1.93¾	2.00	1.93¾	1.12½	1.68	
Coalmont	4.50	2.12½	93¾	1.62½	2.87½	1.50	2.00	1.93¾	2.00	1.93¾	1.12½	1.68	
Marvel	5.60-6.10	2.12½	93¾	1.62½	2.87½	1.50	2.00	1.93¾	2.00	1.68	1.12½	2.00	
Pinehurst	5.75-6.00	2.12½	93¾	1.62½	2.87½	1.50	2.00	1.93¾	2.00	1.68	1.12½	2.00	
Stratford	6.70	2.12½	93¾	1.62½	2.87½	1.50	2.00	1.93¾	2.00	1.68	1.12½	2.00	
Pioneer	7.00	2.12½	93¾	1.62½	2.87½	1.50	2.00	1.93¾	2.00	1.68	1.12½	2.00	
Diamond	7.10	2.12½	93¾	1.62½	2.87½	1.50	2.00	1.93¾	2.00	1.68	1.12½	2.00	
Montevallo	7.10	2.12½	93¾	1.62½	2.87½	1.50	2.00	1.93¾	2.00	1.68	1.12	2.00	
Retailers' Gross Margin		$2.50	$3.10	$2.50	$2.80	$2.50	$3.10	$ 3.10	$2.50	$2.80	$2.50	$2.50	$2.50

REPRODUCTION OF GOVERNOR KILBY'S 10 x 14 IN. "AD" TO ALABAMA DOMESTIC COAL USERS

6,000 population, and fourth, all towns of less than 3,000 population and all dealers who do not maintain a coal yard but who deliver from the car to the consumer's bin, by contract or otherwise. For the first class, a margin of $3.30 is considered fair, but in order that the retailers in these cities may be enabled to offer some inducement to consumers to buy their coal at this time the margin has been put on a sliding scale, lower now, and increasing month by month. The scale is as follows: August, $3.10; September, $3.20; October, $3.30; November, $3.40; December, $3.50. For the second class, $2.80; for the third class, $2.50, and for the fourth class, $1.00, plus the cost of unloading and delivery.

The freight rates quoted in the table to be published are the present established rates, to which should be added in each instance 3 per cent for war tax. There has been a good deal of publicity given to a supposed reduction in freight rates on coal at some early date. The Fuel Administration, from its investigation, is convinced that no reduction whatever is to be expected sufficiently early to affect the prices of coal the coming winter. On June 16, Mr. Hoover, Secretary of Commerce, publicly stated that the railroads and the representatives of the coal industry had been unable to reach any conclusion as to the proposed reduction in freight rates on coal, and that no voluntary agreement thereon was to be expected. On June 22, Chairman Clark, of the Interstate Commerce Commission, publicly stated as follows:

"I regard it as extremely unfortunate that there should have been so much agitation in regard to an early reduction in rates on coal or other commodities, and, in some instances, on freight traffic generally. I think that the result of these rumors, which in the main have no real foundation, has been to stagnate industry and commerce. There is not to my knowledge now pending before the commission any formal proceedings in which general reductions of coal rates under Section 1 of the act are sought."

Daily Press of United States More Moderate In Articles Relating to Coal

DAILY newspapers of the United States, in the opinion of a Philadelphia editor, are beginning to show gratifying growth of sanity in articles relating to coal. The change is especially noticeable in the press of New England, from which locality has emanated much wild talk concerning coal since 1917.

The *Boston Commercial Bulletin*, in its issue of July 16, has an unusually clear article on the steam sizes. The paper says that although people complain that the price of hard coal is increasing while other commodity costs are decreasing, the coal companies are far from prosperous, owing to high wages, inefficient labor, costly materials, and, in some cases, excessive royalties. It is laid down that one way to escape this is to make use of the steam sizes for domestic purposes. This, it is pointed out, will help the consumer by giving a proportion of cheaper fuel, and it will also help the operator by giving him a fair price, or something a little nearer a fair price, for these byproduct sizes. This, the paper thinks, will check increases in the cost of prepared sizes. There is given some good, simple advice on the use of steam sizes, particularly by means of a simple blower attachment, and the methods used in the firing of river coal in Harrisburg are cited.

Equally sensible talk appears in the *Springfield Union* of July 17, wherein a special article written by J. H. Fifield recommends the purchasing of household fuel now. He says that it is a fallacy to think coal will be any cheaper in the autumn, and he gives it as his opinion—not backed by facts, to be sure—that coal will get dearer every month until next April. Mr. Fifield says that the proper course for New England consumers is to buy at once. He does not think it is necessary for consumers, who might be seriously inconvenienced, to put in the whole winter's supply, but he does urge small-lot buying, and says that this will save the situation if it be generally applied. He makes it clear that the only considerable storage space available for household coal is in the cellars of consumers. His article is carefully written, and goes into much detail regarding new taxes, circular prices, market conditions which affect spot coal, etc. He truly says that if demand is put off until the winter it becomes not so much a question of getting the coal as of inability to handle it.

The *Knickerbocker Press*, of Albany, N. Y., says editorially that anthracite will not be cheaper this year. It goes into great length on the physical problems in anthracite mining and the effects of legislation and high wages on the cost of production. The effect of high royalties is set out, and the disasters of government management, as exemplified in England, are referred to. Here is this paper's view:

"The solution of the coal situation is to get back to a peace-time basis, step by step, along with the other types of industry as to the wage rate; to educate some of the United States Senators and Representatives and state Legislatures and impress them with the danger of tampering with so staple an industry; to create an interest on the part of the people generally so that they will study this great question; to keep coal moving direct to the consumers' storage, whether it be in their cellar bins for heating and cooking purposes or their storage yards for steaming purposes." Otherwise, the paper thinks, bituminous coal, coke, carbocoal and domestic grades of bituminous are going to crowd anthracite from the market.

Coal-Mine Fatalities Decrease with Curtailment of Production

REPORTS to the U. S. Bureau of Mines from the various state mine inspectors show that 155 men were killed by accidents at coal mines in June, 1921, representing a decrease of 64 fatalities, or about 29 per cent, from the record for the same month last year. Based upon an estimated production of 42,106,000 net tons in June, 1921, the fatality rate is 3.68 per million tons produced, as compared with a rate of 4.22 for June a year ago. An interesting feature of bituminous coal-mining operations in June was the entire freedom from fatal accidents caused by explosions of gas or coal dust. The anthracite industry was less fortunate, as several small explosions of gas resulted in the loss of five lives.

At the anthracite mines in Pennsylvania 40 men were killed, while 115 men lost their lives at bituminous mines throughout the country. West Virginia lost 32 men by accidents at bituminous mines, followed by Pennsylvania with 21, Illinois 17, Ohio and Kentucky 7 each, Indiana 6, and 5 each in Alabama and Colorado.

During the first half of the present year 970 men were killed by accidents at coal mines, against 1,093 during the first half of 1920, a decrease of 123, or about 11 per cent. For the same months the output of coal was 242,000,000 tons for 1921 and 301,000,000 for 1920, a decrease of 59,000,000 tons, or nearly 20 per cent. These figures represent a fatality rate of 4.01 per million tons mined in 1921 and 3.63 per million tons mined in 1920.

Drop in Living Cost Less Than 1 Per Cent Between June 1 and July 1

THE cost of living of wage earners in the United States, according to figures recently issued by the National Industrial Conference Board, decreased less than 1 per cent as a whole between June 1 and July 1. As the record stands, the cost of living July 1 was 61.6 per cent above the average in July, 1914.

It is just one year since the Anthracite Commission concluded its hearings in Scranton, where the existing cost of living was so stressed by the representatives of the mine workers as a reason for an increased wage scale. The Conference Board's report shows that, compared with the cost of living last July, this year (July 1) shows a decline of 21 per cent.

In detail, the changes, as of July 1, from living costs in July, 1920, are as follows: Food, 34.2 per cent decrease; shelter, 8.2 per cent increase; clothing, 38.7 per cent decrease; fuel, 1 per cent decrease; light, 34.8 per cent increase; sundries, no change; weighted average all items, 21 per cent decrease.

ALL THE COAL DEALERS ask are high prices and low temperatures, and they'll do the rest—of us.—*Brook'yn Eagle.*

Opposing Elimination of Cotton Exchanges, Senator Ransdell Urges Formation of Coal Exchange

LEGISLATION has been initiated by Senator Dial, of South Carolina, which if enacted into law would destroy the cotton exchanges. He argues that the price of cotton is depressed by the action of these exchanges. In meeting that argument, Senator Ransdell, of Louisiana, has information to the effect that there is sentiment in the administration for a coal exchange as an important step necessary to the stabilization of the coal industry. It is known that this plan is regarded as being sound by eminent engineers and economists. His information is to the effect that a proposition to establish a coal exchange will be brought forward in the near future in the hope that it ultimately will be established, so as to reduce the fluctuations in the prices of coal and to contribute generally to the stabilization of the industry. His information is that producers of coal in general favor such a proposition. While Senator Ransdell's interest in a coal exchange may be ascribed largely to his desire to meet the attack being made on cotton exchanges, it is expected that the use of that example will have the effect of precipitating the discussion of the merits to the coal industry of such an establishment.

In this connection it develops that the matter has been the subject of some discussion within the American Wholesale Coal Association, and its managing director, George H. Cushing, has gone on record, in substance, as follows:

"I have been a firm believer for years in a coal exchange. It is an ideal for which we should work, but its prompt development hardly is possible. Before coal can be dealt in on an exchange there must be a classification and a gradation of the coal. There must be a very thorough inspection system. Coal is not a commodity that can be measured by engineering work. Its value depends many times upon the use to which it is put. It varies in quality in different parts of the same mine. It varies in quality between mines in the same field. Classification is difficult. Schemes of classification that have been developed hardly are practicable. The double basis of classification presents a very difficult but perhaps not an insurmountable obstacle.

"Coal cannot be inspected as can grain and lumber. Those commodities need be subjected only to an ocular test to prove their quality. In coal it is a matter of chemical determination, which not only involves elaborate and costly sampling, but which requires time. The establishment of an exchange must be predicated on the possibility of first grading the coal, and then inspecting it. To work this out will take time. Any revolution within an industry requires patient work, but the benefits which would come to the industry will be such as to justify the effort."

Says Industrial Court Increased Kansas Miners' Working Opportunities

AFTER a year and a half of operation, the Kansas Court of Industrial Relations has more than justified its organization, according to a statement by Governor Henry J. Allen, issued July 25.

"Each of the twenty-eight orders and judgments of the court rendered thus far has been accepted by both sides of the controversy excepting the last, which is now pending on appeal before the State Supreme Court," Governor Allen said. "Employers and employees alike are coming to regard the court as an up-to-date method for settling industrial disputes.

"The result in the coal mining district has been most striking. Under conditions created by the Industrial Court last year the miners were enabled to work 30 per cent more than the year before, with the resultant increase in production of fuel for the public and wages to the miners."

Duluth-Superior Coal Receipts, July, 1921, Nearly Double Those of July, 1920

COAL receipts at Duluth and Superior from July 1 to Aug. 1, as compared with the same period in 1920, were as follows, in net tons:

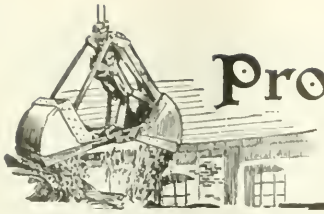
	1920		1921	
	Anth.	Bit	Anth.	Bit
Northwestern	43,000	67,100	112,000	264,000
Berwind		52,500		83,500
Pittsburgh	38,000	81,800	56,700	238,800
Carnegie	42,300	45,000	23,500	127,300
Hanna	21,000	74,600	33,500	95,400
Reeves			6,100	35,800
Boston		7,500	9,500	32,600
Inland		28,000		129,500
Clarkson		42,000	7,500	89,000
Northern	18,400	7,700	9,700	70,800
Zenith Furnace		26,700		59,200
Philadelphia & Reading		9,700	21,000	76,300
Corporation		225,400		168,200
Reiss	15,300	23,700	21,300	82,700
Pursglove		6,700		34,700
Lehigh	33,700		19,300	
Great Lakes		28,000	9,200	46,300
July receipts	211,700	726,400	329,300	1,634,100
Total to July 1st	392,070	959,000	456,600	3,788,400
Total to Aug. 1st	603,770	1,685,400	785,900	5,422,500

Anthracite receipts in excess of last year, 182,130 tons.
Bituminous receipts in excess of last year, 3,737,100 tons.

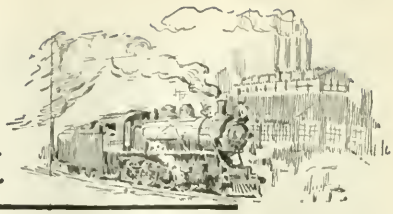
Coal Consumption by Electric Plants, January-June, Far Below Last Year

ELECTRIC power produced during January, February, March, April and May, 1920 and 1921, according to the United States Geological Survey, required the combustion of coal indicated in the following table, net tons:

	1921				
State	January	February	March	April	May
Alabama	8,839	8,675	8,050	7,241	13,335
Arizona	626	675	575	580	150
Arkansas	11,604	11,712	11,324	12,222	11,919
California	0	0	0	0	0
Colorado	32,452	27,928	28,654	28,104	26,654
Connecticut	56,183	53,216	50,438	46,743	48,382
Delaware	9,106	8,070	7,895	6,799	6,657
District of Columbia	21,703	18,901	19,572	18,279	18,768
Florida	2,197	2,200	1,926	2,047	2,003
Georgia	8,184	7,171	6,549	6,681	5,943
Idaho	0	0	0	0	0
Illinois	375,066	327,123	334,651	304,497	304,497
Indiana	171,857	152,634	158,590	150,495	146,620
Iowa	89,984	78,335	75,141	68,280	64,363
Kansas	44,374	33,756	30,836	22,955	21,318
Kentucky	43,436	38,935	39,950	37,427	38,482
Louisiana	13,198	12,034	11,917	10,065	9,338
Maine	51	39	104	140	198
Maryland	24,559	18,283	16,586	16,215	18,210
Massachusetts	128,173	124,261	103,130	88,797	93,453
Michigan	119,109	109,963	111,136	108,094	106,987
Minnesota	54,853	50,434	40,437	22,647	23,914
Mississippi	12,121	11,085	10,785	9,352	9,352
Missouri	110,001	94,486	95,948	88,916	88,391
Montana	3,698	3,682	3,799	3,336	3,561
Nebraska	41,710	36,463	35,186	32,661	31,808
Nevada	221	184	176	180	117
New Hampshire	3,557	2,769	2,314	2,234	2,682
New Jersey	117,410	100,255	96,130	89,467	92,664
New Mexico	4,129	3,449	3,664	3,368	2,406
New York	405,664	352,402	360,255	343,910	338,350
North Carolina	8,385	7,254	7,493	6,558	6,712
North Dakota	16,739	14,716	14,716	12,224	12,059
Ohio	303,599	268,859	284,825	258,952	244,179
Oklahoma	12,409	7,992	5,172	4,487	3,968
Oregon	165	126	120	119	65
Pennsylvania	446,380	411,025	409,437	376,968	384,521
Rhode Island	13,843	12,044	11,546	11,085	9,607
South Carolina	9,301	8,845	9,288	10,270	6,471
South Dakota	8,162	7,384	6,690	5,950	5,467
Tennessee	23,422	19,606	21,136	19,253	18,244
Texas	20,361	15,474	20,034	22,045	19,590
Utah	11	5	0	0	0
Vermont	193	0	181	58	14
Virginia	38,425	30,472	32,932	30,809	32,021
Washington	3,583	3,108	3,219	2,828	2,482
West Virginia	85,459	79,204	81,675	77,375	89,425
Wisconsin	70,463	60,900	58,504	45,035	46,269
Wyoming	9,189	7,822	7,902	6,747	6,732
Totals	2,984,154	2,643,955	2,640,588	2,422,495	2,418,348
Totals for corresponding months, 1920	3,593,755	3,251,027	3,263,159	2,929,462	2,836,664



Production and the Market



Weekly Review

PRODUCTION of bituminous coal holds steadily at the low rate of about one and a quarter million tons a day or just over 7,300,000 tons a week. The output in July is tentatively estimated at 30,394,000 tons, a decrease of 3,502,000 tons below June. This record for July was 4,000,000 tons below that of July, 1914, a year of business depression, and shows the widespread extent of the existing industrial inactivity. It is pointed out by the Geological Survey that at the rate for the seven months to the end of July, the year 1921 will record an output of soft coal less than 400,000,000 tons. No year since 1909 has seen such a poor demand. Compared with an average of eight preceding years, production in 1921 is now 52,000,000 in arrears.

Production of anthracite has likewise begun to fall. For the past six weeks the failure of demand for certain of the domestic sizes has caused heavy accumulations not only in retail yards but in producers' storage piles, and the prices on these sizes from independent producers have been receding week by week. One after another small operation has closed for lack of business at prices offering not even a return of production costs, and now local strikes have appeared to close operations of some of the larger companies.

It is exceedingly significant that in twenty-five bituminous coal-producing districts east of the Mississippi, according to the reports of the Geological Survey for the week ended July 23, but nine were operating half-time or better and of the nine, one, Eastern Ohio, pays tribute to the United Mine Workers, the others, Somerset, Cumberland, Piedmont, Tug River, Logan, Hazard, Harlan, Southwestern Virginia and Alabama, all being either entirely non-union or bound to the check-off by very loose ties, as the Maryland field. West of the Mississippi practically every state is reporting operating time 50 per cent or better.

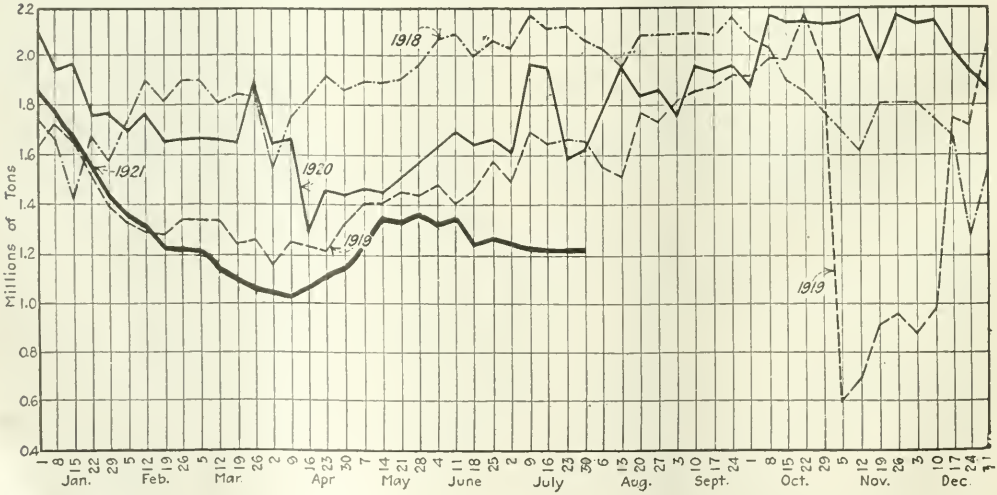
Screenings Show Comparative Price Strength

That there have been no serious declines in prices of soft coal is due more to the relative strength of screenings, now in comparatively short supply because the mines are not producing lump coal for retail trade or for shipment up the Lakes, than to any other feature.

Coal Age index of spot prices for bituminous coal is unchanged at 90, several slight advances counterbalancing a decline in Pocahontas.

Anthracite shippers are taking advantage of the lull in Eastern demand to increase the movement up Lakes, shipments through Buffalo having been 185,900 tons in the week of July 23, the greatest this year, exceeding by 65,000 tons the week preceding. More than half the total is going to Duluth-Superior.

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

Despite the absence of any encouraging news in the statistics of production, price and distribution, there is a general feeling, perhaps engendered by the cooler weather with which August opened, that soon—very soon—business is coming back with some of the old time vigor. Many say they have already visible evidence in the form of definite inquiries. Some buying of bargain lots is proceeding for fall and winter reserves, and here and there buyers with short-term contracts are taking more coal in anticipation of higher prices later.

BITUMINOUS

The output during the last week of July was 7,361,000 net tons, a slight decline from the figures of the two preceding weeks. Production has hovered around the 1,250,000-ton mark for the last three weeks and early reports of loadings suggest but a slight decline in output for the first week in August.

The railroads serving New England report a decrease in the quantity of anthracite forwarded over the Hudson gateways, but no change in the movement of bituminous coal. A total of 2,543 cars of anthracite and 3,029 cars of bituminous were forwarded as against 3,160 and 3,018 cars, respectively, during the week preceding. In the corresponding week of 1920 the anthracite amounted to 2,806 cars and the bituminous 6,368 cars, according to figures furnished by the American Railway Association.

CARS OF COAL FORWARDED OVER THE HUDSON TO NEW ENGLAND

	1921		1920	
Week Ended	Anthracite	Bituminous	Anthracite	Bituminous
July 16	3,090	2,444	2,066	6,154
July 23	3,160	3,018	2,377	7,033
July 30	2,543	3,029	2,806	6,368

In addition to the weekly record of cars of coal passing eastbound through the Hudson gateways, which furnishes a rough current index of the New England rail movement, there are available in monthly form from the Massachusetts Fuel Administration much more accurate records of the tonnage actually received at New England.

RECEIPTS OF ANTHRACITE AND BITUMINOUS COAL IN NEW ENGLAND

	By Tide	All-Rail	Total
Anthracite			
March, 1921	304,341	898,645	1,202,986
April, 1921	305,703	598,897	904,600
May, 1921	373,976	666,702	1,040,678
Year to May 31, 1921	1,649,770	3,571,846	5,221,616
Year to May 31, 1920	1,259,717	2,767,307	4,027,024
Year to May 31, 1919	1,142,262	2,675,752	3,818,014
Bituminous			
March, 1921	594,012	741,306	1,335,318
April, 1921	603,917	585,797	1,189,714
May, 1921	587,684	649,914	1,237,598
Year to May 31, 1921	3,036,465	3,678,556	6,715,021
Year to May 31, 1920	3,895,061	3,870,677	7,765,738
Year to May 31, 1919	3,325,351	3,360,303	6,685,654

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

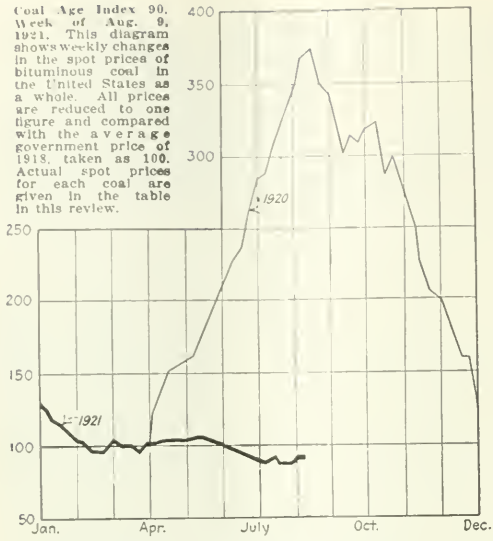
Low-Volatile, Eastern	Market Quoted	July 5, 1921	July 26, 1921	Aug. 2, 1921	Aug. 9, 1921†
Pocahontas lump	Columbus	$5 75	$5 40	$5 25	*$5.00@$5.25*
Pocahontas mine run	Columbus	3 25	3 15	3 15	*2.75@ 3.00*
Pocahontas screenings	Columbus	2 35	2 30	2 40	*2.00@ 2.25*
Pocahontas lump	Chicago	5 65	5 15	5 40	*4.75@ 5.25*
Pocahontas mine run	Chicago	2 50	3 15	3 00	*2.50@ 3.00*
*Smokeless mine run	Boston	5 90	5 70	5 60	5 50@ 5 65
Clearfield mine run	Boston	2 10	1 95	1 90	1 65@ 2 15
Cambria mine run	Boston	2 80	2 70	2 70	*2.35@ 2.85*
Somerset mine run	Boston	1 90	1 75	1 75	*1.50@ 1.90*
Pool 1 (Navy Standard)	New York	3 15	3 15	3 15	3 00@ 3 25
Pool 1 (Navy Standard)	Philadelphia	2 80	2 80	2 80	**2 85@ 3 00**
Pool 1 (Navy Standard)	Baltimore	2 75	2 45	2 40	**2 40@ 2 50**
Pool 9 (Super. Low Vol.)	New York	2 55	2 50	2 60	*2.35@ 2.75*
Pool 9 (Super. Low Vol.)	Philadelphia	2 40	2 40	2 40	*2.25@ 2.40*
Pool 9 (Super. Low Vol.)	Baltimore	2 55	2 20	2 20	2 15@ 2 25
Pool 10 (H. Gr. Low Vol.)	New York	2 25	2 25	2 35	2 15@ 2.50
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2 20	2 20	2 20	*1.90@ 2.15*
Pool 10 (H. Gr. Low Vol.)	Baltimore	2 25	2.00	2 00	2 00
Pool 11 (Low Vol.)	New York	1.95	1 90	1 95	1 85@ 2 00
Pool 11 (Low Vol.)	Philadelphia	1.90	1 90	1 90	*1.65@ 1.85*
Pool 11 (Low Vol.)	Baltimore	2.10	1 75	1 75	*1.70*
High-Volatile, Eastern					
Pool 54-64 (Gas and Steam)	New York	2 00	1.70	1 75	**1 70@ 2 00**
Pool 54-64 (Gas and Steam)	Philadelphia	1.75	1.75	1 75	*1.50@ 1.75*
Pool 54-64 (Gas and Steam)	Baltimore	1.85	1.50	1 50	1 40@ 1 60
Pittsburgh sc'd. gas	Pittsburgh	2 50	2 95	2 70	2.60@ 2 80
Pittsburgh mine run (steam)	Pittsburgh	1 85	2 10	2 10	2.00@ 2 15
Pittsburgh slack (gas)	Pittsburgh	1 60	1 45	1 70	1 60@ 1 75
Kanawha lump	Columbus	3 40	3 15	2 90	**3 00@ 3 50**
Kanawha mine run	Columbus	2 15	2 15	2 00	**2 00@ 2 25**
Kanawha screenings	Columbus	1 15	1 20	1 35	**1 35@ 1 60**
Hocking lump	Columbus	3 15	3 15	3 15	3 00@ 3 25
Hocking mine run	Columbus	2 15	2 15	2 15	2.00@ 2 25
Hocking screenings	Columbus	1 10	1 30	1 30	**1 40@ 1 60**
Pitts. No. 8 lump	Cleveland	3 25	3 25	3 25	3.00@ 3 50
Pitts. No. 8 mine run	Cleveland	$2.20	$2.20	$2.30	**$2 25@$2 35**
Pitts. No. 8 screenings	Cleveland	1.20	1.35	1 45	**1 70@ 1 85**
Midwest					
Franklin, Ill. lump	Chicago	3 80	3 55	3 55	3.00@ 4 05
Franklin, Ill. mine run	Chicago	2 90	3.15	3.15	2 75@ 3 55
Franklin, Ill. screenings	Chicago	1 90	1 90	1 90	*1.65@ 2.00*
Central, Ill. lump	Chicago	2 65	2 50	2 50	**2 50@ 3 00**
Central Ill. mine run	Chicago	2 40	2 25	2.25	*1.90@ 2.50*
Central Ill. screenings	Chicago	1 65	1 60	1 60	**1 40@ 1 75**
Ind. 4th Vein lump	Chicago	2.90	3 65	3 60	3 50@ 3 65
Ind. 4th Vein mine run	Chicago	2 50	3 05	3 10	2 90@ 3 25
Ind. 4th Vein screenings	Chicago	1 70	2 15	2 15	2 00@ 2 25
Ind. 5th Vein lump	Chicago	2 75	2 90	2 90	2.75@ 3 00
Ind. 5th Vein mine run	Chicago	2 40	2 60	2 45	2 25@ 2 65
Ind. 5th Vein screenings	Chicago	1 70	1 90	1 65	1.50@ 1 75
Standard lump	St. Louis	2.25	2 25	2 25	*2.00@ 2.50*
Standard mine run	St. Louis	1 75	1 70	1 70	**1 75**
Standard screenings	St. Louis	0 85	1.00	1 00	**1 00@ 1 25**
West Ky. lump	Louisville	2 75	2 90	2 95	**2 60@ 3 40**
West Ky. mine run	Louisville	2 10	2 30	2 35	*1.90@ 2.55*
West Ky. screenings	Louisville	1 45	1 55	1 65	**1 40@ 2 00**
South and Southwest					
Big Seam lump	Birmingham	3 50	3 55	3.55	**3 25@ 4 20**
Big Seam mine run	Birmingham	2 25	2 15	2.15	2 00@ 2 25
S. E. Ky. lump	Louisville	3 45	3 15	3 50	**3 50@ 3 65**
S. E. Ky. mine run	Louisville	2 25	2 20	2 35	*2.15@ 2.40*
S. E. Ky. screenings	Louisville	1 25	1 35	1.50	**1 50@ 1 75**
Kansas lump	Kansas City	5 40	5 50	5 50	5 50
Kansas mine run	Kansas City	4 25	4 40	4 40	4 40
Kansas screenings	Kansas City	3 25	3 25	3 25	3.25

* Gross tons, f. o. b. vessel, Hampton Roads.
† Advance over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	July 26, 1921 Independent	July 26, 1921 Company	Aug. 2, 1921 Independent	Aug. 2, 1921 Company	Aug. 9, 1921† Independent	Aug. 9, 1921† Company
Broken	New York	$2 61	$8 00@$8.25	$7.40@$7.75	$8.00@$8.15	$7.50@$7 75	.....	$7 50@$7 75
Broken	Philadelphia	2 66	8 00@ 8 20	7.55@ 7.85	8.00@ 8.20	7.65@ 7.85	*$7.50@ 8.20*	7 65@ 7.85
*Broken	Chicago	5 62	12 40	12 45	12 40	12 45	12 40	12 45
Egg	New York	2 61	7 55@ 7 85	7 40@ 7.75	7.55@ 7 85	7.50@ 7 75	*7.40@ 7 75*	7.50@ 7 75
Egg	Philadelphia	2 66	8 00@ 8 20	7 55@ 7.85	8 00@ 8.20	7.65@ 7.85	*7 60@ 8 20*	7 65@ 7 85
*Egg	Chicago	5 62	12 40	12 45	12 40	12 45	12 40	12 45
Stove	New York	2 61	8 00@ 8 25	7 70@ 8.10	7 70@ 8 00	7 80@ 8 10	**7 80@ 8 00**	7 80@ 8 10
Stove	Philadelphia	2 66	8.40@ 8 50	7.90@ 8.25	8 25@ 8 35	7.95@ 8 25	*8 00@ 8 35*	7 95@ 8 25
*Stove	Chicago	5.62	12 70	12 70	12 70	12 70	12 70	12 70
Chestnut	New York	2 61	7 50@ 7 75	7.70@ 8.10	7 50@ 7 75	7 80@ 8 10	*7 25@ 7.75*	7.80@ 8 10
Chestnut	Philadelphia	2 66	8.25@ 8 60	7.80@ 8 25	8.00@ 8.40	7.95@ 8 25	*7.75@ 8 25*	7.95@ 8 25
*Chestnut	Chicago	5 62	12 70	12 70	12 70	12 70	12 70	**12 80**
Pea	New York	2 47	4 50@ 5 00	5 95@ 6.45	4.50@ 5 50	6.05@ 6 45	*4 50@ 5 25*	6 05@ 6 45
Pea	Philadelphia	2 38	4 50@ 6 00	6.00@ 6.20	4 50@ 6 00	6.10@ 6.20	*4 50@ 5 75*	6 10@ 6 20
*Pea	Chicago	5 62	11 10	11.20	11 10	11 20	11 10	11 20
Buckwheat No 1	New York	2.47	2 50@ 3 25	3.50	2.50@ 3.25	3.50	*2 50@ 3.00*	3 50
Buckwheat No. 1	Philadelphia	2.38	2.50@ 3 00	3 50	2 50@ 3 00	3 50	2 50@ 3 00	3 50
Rice	New York	2.47	1.60@ 2 00	2.50	1 75@ 2.25	2.50	*1 50@ 2 00*	2 50
Rice	Philadelphia	2.38	1 75@ 2 00	2.50	1 75@ 2 00	2 50	1 75@ 2 00	2 50
Barley	New York	2.47	0.60@ 1 25	1.50	0 75@ 1.25	1 50	0 75@ 1 25	1 50
Barley	Philadelphia	2 38	0 75@ 1.25	1.50	0 75@ 1 25	1.50	0 75@ 1 25	1 50
Birdseye	New York	2 47	.....	2.50	.....	2 50	.....	2 50

* Prices and freight rates net tons; quotations f.o.b. cars, Chicago.
† Advances over previous week shown in **heavy type**, declines in *italics*.

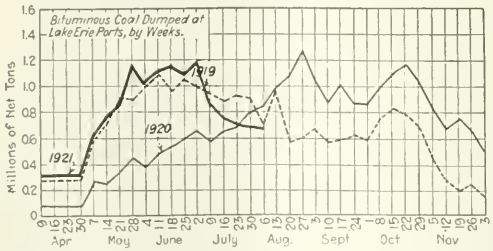


Coal Age Index 90. Week of Aug. 9, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.

In the Lake trade July shipments will show a big decrease compared with June. It is said shippers are having trouble taking care of their contract tonnage and few wild carriers are getting cargoes. Some of the lower docks have laid off night crews and no coal is being dumped on Sunday. Reports from the upper docks indicate that coal is going forward more freely, which is expected to have a beneficial effect at the lower ports. The railroads are averaging around 13,000 cars on hand at lower ports awaiting dumping, as compared with 22,000 cars several weeks ago. Upbound Soo passages of coal in July amounted to 2,915,184 net tons, of which 2,469,430 were bituminous and 445,754 anthracite.

July shipments to the interior from the Head-of-the-Lakes docks were the heaviest of any month this year and indicate a growing demand. The Inland movement was 13,448 cars, nearly double the May figure and 3,891 cars more than were shipped in June.

Lake dumpings for the week ended Aug. 7 were 698,781 net tons, divided; 673,310 tons cargo and 24,471 vessel fuel. Dumpings for the week preceding totaled 745,173 tons. Lake tonnage for the season to date now stands at 14,117,600, nearly twice that of the same period in 1920—7,646,775 tons.



Dumpings for foreign account at Hampton Roads during the week ended July 30 were 108,068 net tons cargo and 74,189 bunkers, a total of 182,257 tons, barely 40 per cent of the average in June when the demand accompanying the British strike was at its height.

During the week ended Aug. 4, the Hampton Roads piers dumped 367,841 gross tons for all accounts as against 340,504 tons during the week preceding. In view of the lighter export movement, it is apparent that New England is now the target of the water coal shippers. Canvassing for business in that section is strong and Pocahontas and New River agencies, aided by the low marine freights now prevailing, are extending their territory further into the New England all-rail markets for the Pennsylvania coals.

The sudden release of so much tonnage ordinarily destined overseas has caused a lowering of smokeless prices. In the Western markets Pocahontas mine run was obtainable last week as low as $2.50 per ton f.o.b. mines. This low selling price is causing many contract consumers to demand a revision of their agreements made earlier in the year, in some cases the request is for a reduction from the contract price of $3.50 to a new figure of $2.75.

ANTHRACITE

Production took a slump in the last week of July. The total output was 1,750,000 net tons, a decrease of 87,000 tons when compared with the week of July 23. Much coal is going in storage at the mine and it is becoming increasingly difficult to maintain the steady production of the last month.

Uncertainty prevails regarding the outcome on anthracite production of the application of the Kohler-Fowler mine cave bills. These acts of the Pennsylvania State Legislature, it will be recalled, become effective Aug. 27, and provide that operators of anthracite mines either pay a tax to the state of 2 per cent on value of output or stand the consequences in the shape of a $5,000 fine and a year in jail if a mine subsidence should cause property damage or loss of life. It is understood that some producers have adopted a determined attitude and expect to close their collieries on Aug. 26, rather than meet the terms of the law. A bad situation may develop should it not be possible to find some compromise solution to this time-worn and perplexing problem of the hard coal men and the people in the northern anthracite region.

COKE

Production of beehive coke appears to have settled down to a weekly rate of about 40,000 tons. The total output during the last week in July was 45,000 net tons, according to the Geological Survey.

There are some indications of renewed activity, but so far the demand has been satisfied with offerings of byproduct coke. Connellsville quotations are unchanged.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

(NET TONS)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date *a*
July 16*b*	7,401,000	211,949,000	10,880,000	278,721,000
Daily average..	1,233,000	1,276,000	1,813,000	1,673,000
July 23*b* ..	7,383,000	219,332,000	10,470,000	289,191,000
Daily average..	1,231,000	1,274,000	1,745,000	1,675,000
July 30*c* ..	7,361,000	226,693,000	9,371,000	298,562,000
Daily average	1,227,000	1,273,000	1,562,000	1,672,000

(*a*) Less 2 days' production during New Year's week to equalize number of days covered for the last two years. (*b*) Revised from last report. (*c*) Subject to revision.

ANTHRACITE

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date *a*
July 16 ..	1,876,000	49,510,000	1,840,000	47,989,000
July 23 ..	1,837,000	51,347,000	1,819,000	49,808,000
July 30 ..	1,750,000	53,037,000	1,912,000	51,720,000

(*a*) Less 2 days' production during New Year's week to equalize number of days covered for the last two years.

BEEHIVE COKE

Week Ended July 30 1921 *a*	Week Ended July 23 1921 *b*	Week Ended July 31 1920	1921 to Date	1920 to Date *c*
45,000	41,000	395,000	3,562,000	12,411,000

(*a*) Subject to revision. (*b*) Revised from last report. (*c*) Less two days' production during New Year's week to equalize number of days covered for the last two years.

Foreign Market And Export News

British Prices Decline as Output Increases

Pre-Strike Production Rate Finds Dull Market—Buyers Wait Lower Prices—France Urges Increased Reparations Tonnage

Once again after years of governmental control, British coal is subject to the old laws of supply and demand. Slowly even yet, the factors that set the price level are feeling their way to a new understanding not controlled by the hand of officialdom and many are the shifts that are taking place. For the first few weeks every tendency was for prices to mount, as, coming off a starvation diet, buyers flocked into a market bare of supplies. Consumers were displeased thinking that as the miners had been forced to accept a lower wage and since the government was subsidizing the operators, the price of coal should go down. Instead, the demand exceeding the initial limited supply, quotations mounted through the first month of post-strike production, but in the last ten days a reaction has set in that has pulled prices for some coals again downward and is making the market hesitate on the others.

Best Admiralty large coal was quoted f.o.b. Cardiff on Aug. 1, at 45s.@46s., but six days later the price as cabled to *Coal Age*, was 40s.@42s. 6d. Likewise best small steams declined in the week just past from 25s.@27s. 6d. to 20s.@22s. 6d. Newcastle-on-Tyne quotations on Aug. 6, were for best steams, 37s. 6d.@40s., compared with 42s. 6d. the week previous and best gas was quoted at 37s. 6d., a drop from 38s. 9d. Best bunkers were 35s.@37s. 6d., unchanged from the week before.

As production increased, it having been 4,332,000 gross tons in the week ended July 23, and a substantial gain over the preceding weeks, supply overtook what was really a weak demand and this accounts for the decline in prices. In the last half of July, considerable American coal started on its way before the strike settlement, arrived, and its disposal has been a problem for the government. It appears that some of it has been sold in competition with Cardiff coal at Cardiff, but at considerable loss to the government, the cost having averaged around 65s. because of vessel demurrage, and the price of coal at which it was offered being around 40s.

London reports considerable inquiry for export from old customers, but that the prices are as yet too high to induce purchase.

French Coal Buyers Playing Market for Lower Prices

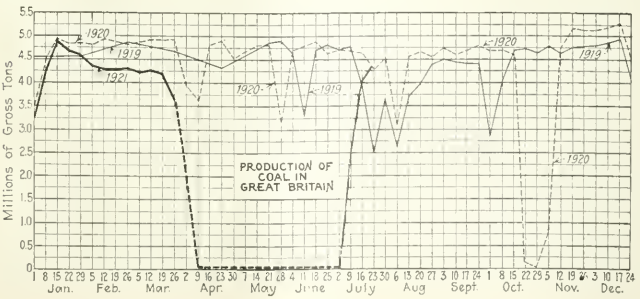
(Special Correspondence)

Owing to the 14th of July, which this year entailed a four days' holiday in all offices, and the coming summer holidays, business and trading are at a standstill. French mines now seem to be in a hole again for a market for certain qualities of low-grade coal which the English readily book along with good grades, but which the French consumer, used to carefully screened and cleaned coals when supplied by the French mines, refuses to accept.

House coal dealers are pushing their sales for next winter storage. Many of them want to get through with their contracts to hurry off to the seaside, the abnormal heat prevailing being anything but conducive to work.

There is a great effort on the part of the English coal exporters to book business at the present prices which, however, are not considered very attractive by the French buyers. In other sections there is nothing to report, except that every effort is made to get Germany to increase her deliveries up to the mark of her obligations.

Prices of various grades of domestic coals mined in France have a weak tendency, and the same situation is developing in industrial coals. The war (and especially since the armistice) has taught French importers how to put foreign suppliers in competition and they are now also holding foreign prices in the face of French operators to get the latter to come to more reasonable terms.



Pier and Bunker Prices, Gross Tons

(Foreign Bunker Quotations by Cable to Coal Age)

PIERS

	July 30	Aug 6
Pool 9, New York	$5 90@$6 15	$5 90@$6 10
Pool 10, New York	5 50@ 5 70	5 40@ 5 75
Pool 71, New York	5 90@ 6 00	5 90@ 6 00
Pool 1, Hampton Roads	5 75@ 6 00	5 50@ 6 00
Pools 5-6-7, Hampton Roads	4 75@ 5 25	4 75@ 5 25

BUNKERS

Pool 9, New York	$6 25@$6 50	$6 20@$6 45
Pool 10, New York	5 75@ 6 10	5 70@ 6 10
Belgian, Antwerp	1 35 fr.	
Welsh, Gibraltar		60 s. f.o.b.
Welsh, Port Said		80 s. f.o.b.
Welsh, Singapore		102 s. 6d. f.o.b.
Welsh, Rio Janeiro		90 s. f.o.b.
Welsh, Algiers		60 s. f.o.b.
Welsh, Malta		75 s. f.o.b.
Welsh, Lisbon		85 s. f.o.b.
Welsh, La Plata		80 s. f.o.b.
Welsh, Madeira		65s. f.a.s.
Welsh, Teneriffe		65s. f.a.s.
Welsh, Genoa		69 s. t.i.b.
Durham, Newcastle		35s.@ 37s 6d. f.o.b.

C. I. F. Prices, American Coal

(In Gross Tons)

	July 30 Low Vol.	July 30 High Vol.	Aug. 6 Low Vol.	Aug. 6 High Vol.
River Plate	$10 15	$9 60	$9 95	$9 05
French Atlantic	11 15	10 40	10 95	9 15
United Kingdom			10 80	10 00
West Italy	11 65	11 00	11 40	10 50
Scandinavia	11 50	10 85	11 00	10 50
Rotterdam				
Port Said			12 00	11 25

Lamberts Point Lead in July Dumpings At Hampton Roads

July dumpings were reduced to a proximity to the average months of the year's duller periods. A total of 1,638,318 tons were dumped at the piers, in contrast to the 2,227,000 tons which went over these prices in June.

The N. & W. piers at Lamberts Point lead the July dumpings with a total of 731,708 tons; the Virginian piers at Sewalls Point were lowest with 334,928 tons; and the C. & O. piers at Newport News dumped 561,682 tons.

PIER SITUATION

	Week Ended July 28	Week Ended Aug 4
N. & W. Piers, Lamberts Point		
Cars on hand	3,067	2,633
Tons on hand	151,387	124,849
Tons dumped	149,907	212,282
Tonnage waiting	28,175	7,400
Virginian Ry. Piers, Sewalls Point		
Cars on hand	2,343	2,052
Tons on hand	131,850	102,600
Tons dumped	101,184	83,811
Tonnage waiting	28,501	15,407
C. & O. Piers, Newport News		
Cars on hand	2,633	2,309
Tons on hand	131,650	115,450
Tons dumped	89,413	71,748
Tonnage waiting	2,790	5,485

Mine shipments have gradually decreased, as witnessed by the fact that all three piers report fewer cars on hand. The accumulations have gone down, due, to some extent, to the willingness on the part of shippers to sacrifice profits to avoid demurrage.

The market appears exceedingly dull, but shippers are optimistic and believe the lull in trade is only temporary.

After Early Summer Slump German Output Recovers—Coal Tax to Aid Reparations Program

An official statement issued by the German government and cabled to *Coal Age* on Aug. 3, states that production of coal in Upper Silesia in the first half of July was 891,000 metric tons, which represents a gain over the average semi-monthly rate of 830,000 tons in the first five months of this year. Political troubles have interfered with mining activity in this field for several months, but the lack of output has not greatly inconvenienced any except in parts of South Germany.

A cable of the same date gives the production of coal in the Ruhr in the week ended July 23, as 1,779,000 metric tons, approximately equal to the rate in June, but some 200,000 tons in excess of the weekly rate early in July.

According to H. O. Herzog, correspondent of *Coal Age* in Berlin, the absence of shipments from Upper Silesia and the decrease in production in the Ruhr early in the summer, due to the abolishment of extra shifts, no shortage actually exists. The Ruhr output in June was 7,753,000 metric tons. In the week ended July 9, production dropped to 1,574,000 tons, about 200,000 tons from the weekly rate in June. The only part of the country where a certain stringency of supply is observed is South Germany, due to the river transportation having been handicapped by low water, and to the fact that South Germany is to a certain extent supplied from Upper Silesia.

Production Declined in May

Production of pit coal in May and in the first five months of 1921 is shown in metric tons by the following figures:

	May	January to May
Westphalia	6,954,607	37,542,953
Upper Silesia	.....	8,308,529
Lower Silesia	253,638	1,831,981
Rhineland	436,088	2,387,277
Clausthal	34,108	195,141
Halle	2,675	17,267
Total for Prussia	7,681,116	50,283,148
Bavaria	4,271	32,552
Saxony	353,087	1,874,709
Smaller fields	12,293	68,787
Total for Germany	8,050,767	52,259,196

Daily production in the Ruhr district was less than in the preceding months by about 4,000 tons, and remains behind that of February by 37,000 tons. In spite of the promises made by the miners' association to balance the abolishment of extra shifts by higher individual production, no such increase has taken place.

Large quantities of coal could be exported, as the German industry is still able to undercut foreign competition, but as long as the coal tribute to Entente countries is not definitely settled, exports will have to be treated with great reserve. Provision is, however, already made for taking up extra shifts at a given time, which can be seen from the fact that a law regulating working time to seven hours—a fundamental requirement of the miners' unions for again discussing extra shifts—has been put into the legal machinery, in spite of the resistance of the mine owners. Another step which is in contemplation is the intended increase of the coal tax. This is now 20 per cent of the sales price, and it will probably be raised to 25 or 30 per cent.

The government declares that an increase of the coal tax is absolutely necessary for raising the reparations payments. Another reason for this is the coal tribute to the Entente countries, for which Germany receives credit only at the rate of domestic prices. By raising to the level of prices in Belgium and France, it is hoped that their requirements of German coal would materially diminish. Many stories are circulated of the damages wrought to German interests by the cheap reparations coal. The fact is not lost sight of that by removing the difference between German and foreign coal prices, the desire for the latter would become stronger.

Dutch Miners Strike; May Develop Emergency Demand for American Coal

A dispatch to *Coal Age* from the Hague under date of Aug. 3, states that the coal miners in Holland are on strike against a reduction in wages demanded by the Netherlands government. It is reported that the pumpers are still at work, stokers being partially supplied by students. The Netherlands Union Railway and Tramway Workers have declared their sympathy with and offered their financial support to the striking miners.

Production of coal in the Netherlands is about 3,500,000 metric tons a year. Imports available for domestic consumption, that is exclusive of re-exports and of foreign bunkers, range normally from 2,000,000 to 2,400,000 metric tons a year. Imports are mainly from Germany and Belgium, although in 1920 more than 70,000 tons a month of American coal was imported into Holland.

Quotations to *Coal Age* by cable, from Rotterdam under date of Aug. 5, are that the market on American gas coal is $8@$8.50 per gross ton, and British steam coal 42s. per gross ton.

Hampton Roads Clearances Week Ended Aug. 4

		Tons
	For Atlantic Islands	
Am. Schr.	Virginia Pendleton, for St. Thomas	2,209
	For Argentine	
Du. S.S.	Wolsum	5,610
	For Brazil	
Am. Schr.	Alice May Davenport, for Buenos Aires	1,769
Jap. S.S.	Yaye Maru, for Rio de Janeiro	6,583
	For Cuba	
Dan. S.S.	Nordamerika, for Havana	4,257
Nor. S.S.	Joseph Cuneo, for Antilla	788
Br. S.S.	Norman Monarch, for Havana	6,790
Am. S.S.	West Catanace, for San Diego	7,467
Am. S.S.	Mooseheusic, for Havana	4,634
	For Greece	
Br. S.S.	Aldgate, for Piraeus	5,229
	For Italy	
Ital. S.S.	Atlantico, for Genoa	4,621
Ital. S.S.	Iris, for Genoa	2,353
Ital. S.S.	Labicum, for Spezia	5,974
Ital. S.S.	Lodovica, for Trieste	3,313
Nor. S.S.	Rovair, for Santiago	991
Am.S.S.	Manta, for San Juan	2,390

Reports From the Market Centers

New England

BOSTON

Market Very Quiet—"Distress" Coal a Feature—Rail Movement Shows Small Increase — Hampton Roads Agencies Active—Anthracite Demand Light.

Bituminous—There are practically no buying developments in any direction, the market continuing as heretofore in a state of extreme dullness. There are almost no relieving factors; industrial consumption remains light, with no prospect of early change on production that require heavy machinery.

A few special lines, like silk goods and ginghams, are in demand, but the manufacturing situation as a whole in this territory is extremely quiet. Certain of the mills in important centers like Lowell and Lawrence, Mass., have discharged 50 per cent of their help and have advised them to look for employment in other trades. There are few signs here of any industrial revival.

"Market cargoes" are still coming forward, particularly from Hampton Roads. Frequent efforts to force these shipments upon unreceptive buyers have resulted in new low levels for Pocahontas and New River on board cars for Inland delivery. A price of $7.15 per gross ton has been quoted on "distress" coal on cars Boston. Such coal is absorbed only with great difficulty, for those consumers who would normally be disposed to buy on any such range of price find themselves well stocked with earlier purchases that seemed "right" at the time.

Even shippers of the most favorably known grades of Pennsylvania coals are being hard put to it to move tonnage on current prices. Some of the largest steam-using centers here are near enough to Tidewater to be affected by low offerings on the smokeless

grades. Business which certain Pennsylvania shippers have been enjoying since the first year of the war has, much of it, shifted to the Pocahontas and New River agencies; although the aggregate is small, chiefly because so little fuel is being used.

All the Hampton Roads shippers are closely canvassing the territory they can reach. Coal on cars at the loading piers now runs up to high tonnages, and none but strenuous measures are employed to move it. Off-shore business at present is by no means broad enough to include more than a few interests, and in consequence the hunt for a market in New England is all the more keen. The low range of marine freights is a very helpful factor to these shippers, but at that the net return to the mines must be even less than on the fair grades in central Pennsylvania.

Anthracite — The old-line companies appear to have orders for egg and stove that will see them through August, and here and there are retailers who are interested to the extent of patching out their quotas of those sizes in order to be ready for fall business. Meanwhile, most of the so-called "independents" are making most valiant attempts to dispose of anything at all.

Tidewater—East

NEW YORK

Anthracite Demand Quiet—Independent Operations Suspend in Part — Buckwheats Stronger—Bituminous Turning Point May Be Here — Improvement Looked For.

Anthracite—Numerous appeals being made from many sources that consumers lay in their winter coal have apparently fallen flat, with the result that the demand has slumped and suspensions in the collieries are becoming more frequent. In addition to these enforced shut-downs, the mine workers have become dissatisfied and there are numerous labor disturbances. Unless the public wakes up soon, further curtailment may be necessary.

Some surprise was occasioned this week when one of the large producing companies announced an increase of 10c. per ton in its prices for broken coal and 20c. per ton to the July price for stove, but omitted any increase in the prices for egg, chestnut and pea. Some of the independents announced increases over their July schedules, but many of them are taking orders under the company price lists, while others are curtailing production because of the small demand.

The suspension of mining had a tendency to strengthen the market for the buckwheats. There is not so much of these coals here, but quotations remain low. Alongside quotations for buckwheat were heard as low as $5.50; for rice, $4.90, and for barley, about $1 lower. The range of prices for company and independent coals is shown in the Weekly Review.

Bituminous—The optimistic feeling prevalent in many lines of other business has invaded the coal offices, but so far has not resulted in a rush of orders. However, there have been many inquiries regarding September deliveries. Taken altogether, the indications are that the turning point is about here and that business will soon pick up.

Purchasing agents who have refused or neglected all through the year to make contracts and have been buying their necessary requirements in the open market, at prices much below what they would have paid under contract, are beginning to realize that if they want to have full bins before snow flies they must get busy. They are noticing that the grain movement is under way and that many cars have already been taken out of the coal-carrying business. They also realize that unless demand increases shortly, there is danger of production being further decreased by the closing down of additional mines.

The movement of coal to this market is increasing, but not in quantities sufficient to cause any congestion. Demand for the cheaper grades is slow, most buyers asking for either Pool 9 or 10 coals. Individual coals are in demand, some buyers, it is reported, being willing to pay small increases over quotations for pool coals if assured of the grades they want.

An encouraging sign in market conditions is the improvement in the demand, for slack. A few weeks ago quotations ranged around $1.50, while present figures with some dealers are $1.75@$2.

Quotations for Pool 9, f.o.b. piers ranged $5.90@$6.10; Pool 10, $5.40@$5.75 and Pool 71, $5.90@$6.

PHILADELPHIA

Dealers Buy Little Anthracite — Stove Only Wanted Size—Dealers Strong Financially—Steam Sizes Weak—Bituminous Prices Trifle Lower — Light Spot Deliveries—More Inquiries.

Anthracite—Early in the week there was just the slightest semblance of better business in the retail trade, due to two cold days, which impressed some people with the idea that it would not be long before they would need coal again. With the recurrence of warmer weather, this flash in the pan faded away and retailers continue in their attitude of waiting for something to turn up.

Stove continues to be the only wanted size, but not because there is not sufficient on hand to make deliveries. It is simply a case of less of this coal being on hand than any other size, and the general purpose seems to be to get the bins filled with this size. All companies are keeping to prices as announced on Aug. 1 and premiums are unheard of. Some shippers are so badly in need of pea orders that they are shading this size much below their circulars, but are moving very little at that.

Bituminous—The trade remains quiet, but with an occasional report of somewhat better business. Consumers are being strongly urged from all directions to take in coal, and the variety of prices and grades brought to their notice causes them to take much time in placing business. Often they are inclined to try out a small tonnage of a new grade offered at a low price, and in this way there is much switching of custom. Regardless of grade, it is generally remarked that coal is coming to hand in better preparation than for years, and is really top-notch in this respect.

The principal buying at this time is by those consumers who can lay in a winter's supply at one time, and there have been a few orders of this kind lately, running from 100 to 1,000 tons. These small consumers seem satisfied that freight reductions are still far off and that coal at present prices is a real bargain.

With wage adjustments among non-union men in the districts around Johnstown, Windber and Somerset estimated to figure out 50c.@75c. a ton less than Cambria and Clearfield scales, shippers from the latter fields are placed at a disadvantage, which has resulted in a further lowering of prices, with the possible exception of Pool 1, which is inclined to be firm, and occasionally a bit higher than recently.

The outlook at Tide is not particularly good. There is only a fair bunker trade, with prices unchanged, and oversea shipments are really unimportant compared with a year ago.

BUFFALO

No Improvement Felt in Coal Circles—Prices Unchanged—Hard Coal Dull—Lake Shipping Active.

Bituminous—Statements are becoming rather common in the daily papers to the effect that business conditions are improving. The Buffalo papers do not care to be behind in the good work and so are apparently looking for business men, especially manufacturers, who are willing to talk in the same way. They are finding them.

We too often get bad business conditions because we predict them and do not try hard enough to avoid them, but at the same time a fictitious tone to affairs can do very little good. Business must not be crowded into an activity that will not hold. When the times are ready for a revival, industries will be the first to indicate it and will speak with authority.

Prices are much as before, although slack has firmed up at the expense of the sizes: Quotations: $3 for Youghiogheny gas lump, $2.75 for Pittsburgh and No. 8 lump, $2.50 for Allegheny Valley mine run and $2 for slack, to which add $2.36 to Allegheny Valley and $2.51 to other coals to cover freight.

Anthracite—Some distributors think there is a slight stir in the demand and hope it will continue, for it will make the late fall and winter rush less of a riot. What is not bought now will have to be bought later. Reports from Canada and the Upper Lakes agree that the coal is still piling up in dealers' bins and on the docks.

Retail prices went up 10c. on Aug. 1, making coal to the curb $12.80 for grate and egg, $13.05 for stove and chestnut, $10.95 for pea and $8.75 (not advanced) for buckwheat. Stove is very scarce and seldom sold in quantity unless the buyer will take a certain proportion of other sizes.

Independent mines are running at a slow rate. Asking prices, f.o.b. mines, run from $8.15 to $7.45, but circulars are of a somewhat urgent nature and often close by asking for an offer. It is hard for jobbers to keep up a steady trade.

Lakes—Loading is beyond all precedent. The total for last week was 182,800 tons, a record breaker, of which 116,100 tons cleared for Duluth and Superior, 27,500 for Milwaukee, 24,200 for Fort William, 7,800 for Chicago, and 7,200 for Waukegan.

Freight rates remain at 60c.@65c. to Chicago, 65c. to Waukegan, 60c. to Milwaukee, and 50c. to Duluth and Fort William.

Coke—There is a rumor that furnace owners are looking for a stir in the iron trade soon and that some of them claim to feel it already. The moment that comes the trade will jump. Meanwhile prices remain at $4@$4.25 for 72-hr. foundry, $3@$3.25 for 48-hr. furnace and $2.75 for stock, with domestic sizes $5@$5.25.

BALTIMORE

Better Line of Inquiry on Future Deliveries — Spot Market Extremely Dull and Prices Soft—Export Movement on More Natural Basis — Hard Coal Men in Trouble.

Bituminous—With the exception of a better line of inquiry that is developing in some offices as an apparent result of the plans of business interests generally of providing for possible resumption in the early fall, the coal market remains extremely flat and uninteresting as to demand, with prices abnormally low.

Best grade steam and gas coals are on the market at a net mine price from $2@$2.40, and were there any material number of bargain hunters for coal supplies for immediate and future delivery, they would have their hearts gladdened by the ease with which they can at this time pick up the best of fuels at prices below actual production costs, or so near to such costs as to wipe out even a fair margin of profit to the mine interest.

Export movement from Baltimore for the month of July, totaled 289,185 tons cargo and 30,637 tons bunker. For the first two days of August, so far reported, there was loaded 10,674 tons cargo, with no bunkers taken.

Anthracite—There is a complete cessation of hard coal buying in this city, apparently largely as a result of the campaign of misrepresentation conducted in certain newspapers and political circles against the hard-coal merchants of Baltimore, which resulted last week in the indictment of the Baltimore dealers on a charge of conspiring to fix prices.

Both before and after the indictment the coal men have urged the public to buy coal at once, pointing out that a withholding of all orders at this time in the belief that lower prices will result therefrom, is a distinct fallacy. The trade points out that as fall approaches, prices will of necessity be higher and there will also be great difficulty in supplying customers who will all want coal at one time.

Northwest

MILWAUKEE

Market Improved by Increasing Demand—Full Yards Must Be Relieved—Anthracite Quotations Advanced.

Dealers report a betterment in local deliveries, and there is an increased movement to the interior. However, the number of consumers supplied is still from 30 to 40 per cent below normal. It seems difficult to dissipate the idea that prices are due for a drop. Yards are almost full to overflowing.

The August price of anthracite has not been officially made. However, dealers are quoting egg at $15.85, stove and chestnut at $16.10, pea $14.35, and buckwheat $12.10, an advance of 10c. per ton on July prices. It transpires that while the usual advance of 10c. on July 1 was withheld for some reason by those controlling the anthracite supply, most of the Milwaukee dealers added the 10c. There is no change in the price list of bituminous coal.

Receipts by Lake during July were 459,387 tons, of which 124,934 are anthracite and 334,453 soft coal. The season's receipts are 1,994,383 tons, against 985,055 tons during the same period last year. The increase is divided as follows: Anthracite 154,854 tons, bituminous 854,474 tons.

DULUTH

Dock Storage Space Is Scarce—Vessel Unloading Delayed—Interior Movement Picks Up—Anthracite Receipts Increase.

Slight increases in shipments from Duluth docks, together with storage space for some 200,000 tons of coal which still remains to be filled, are holding the docks at Duluth-Superior harbor open so that some coal may still be shipped in. The condition is growing more serious every day, however. Last week several loaded ships were held in the harbor until the particular docks to which they were consigned were emptied sufficiently by shipments to permit unloading.

Receipts for July exceeded by 1,026,300 tons shipments during July last year. Last month 1,634,100 tons of bituminous and 329,300 tons of anthracite came to the docks, against 726,400 of bituminous and 211,700 of anthracite the same month a year ago. Receipts this year so far are 785,900 tons of hard and 5,422,500 of soft coal, or a total of 6,208,400 tons.

Nearly half of the total supply of anthracite received at the local docks this year came in during July. From this dealers are hoping that there will be an increase in anthracite shipments and that no shortage of hard coal will occur this year.

Dealers are holding more firmly to anthracite prices and are refusing to make any concessions to obtain business. Youghiogheny and Hocking gas coals are offered at $7, with $7.25 quoted for steam coal. Splint is $7.25 and run of pile in all classes is quoted at 75c. under the quotations for lump. Screenings are $3.85@$4, with no chance of lowering.

With the first of the month the regular 10c. increase in anthracite prices went into effect. Egg stands at $12.65 at the dock, stove and nut at $12.90, buckwheat $8.50 and pea $10.90. Dealers in Duluth operate on a $2.50 margin.

Shipments of coal from the docks of Duluth-Superior harbor for the month of July were 13,448 cars, which is 3,891 cars more than in June. Last month scored the heaviest shipments of the year. In July, 1920, 15,052 cars left the coal docks. The mark for this May was 7,883 cars, showing that a healthy increase has taken place in the last two months.

Inland West

DETROIT

Steam Buying Still Confined to Bargain Lots—Domestic Market Sluggish—Anthracite Trading Unimproved.

Bituminous—Buyers are not yet manifesting any interest in steam or domestic sizes of bituminous in the Detroit market, according to wholesalers and jobbers, who say that sales of steam coal are limited very largely to bargain offerings.

Some of the steam plants are reported creating small reserves by purchases of stock offered from time to time at distress prices. Otherwise, the amount of business transacted is discouragingly small.

Emphasis is placed on the fact that those who do not buy now are running a risk of being forced into the market when far less favorable conditions will be found in transportation matters and with prices at a higher level than at present.

While there is a tendency to ascribe the lack of domestic business to the unemployment of many household consumers, the jobbers place considerable stress on the fact that if those who are in a position to do so would make their purchases now, a considerable quantity of coal would be sold and the retail dealers would be enabled to renew supplies in their yards to safeguard the requirements of those who, though unable to buy coal now, will be forced to obtain a supply later in the year.

Smokeless lump and egg is quoted at the mines at $5.25, mine run at $3 and slack $1.50@$2. West Virginia 4-in. lump is $3.25, 2-in. lump $2.90@$3, egg $2.75, mine run $2.15, nut and slack $1.50. Ohio lump is $3.25, 1¼-in. lump

$3, egg $2.75, mine run $2.50, nut and slack $1.50.

Anthracite—Sales of household sizes of anthracite are very light, unwillingness to buy at present prices being given as the cause.

COLUMBUS

Trade Falling — Gradual Increase in Domestic Demand—Screenings Showing Marked Strength—Production Still at Low Point.

Domestic trade is now attracting the bulk of attention. Retailers are showing a tendency to buy more liberally as they want to be in a position to take care of current business. Householders are coming into the market more and more, although some are still waiting for reduced freight rates which they believe will be reflected in lower prices.

Retail stocks in Central Ohio are rather spotty. Some dealers have large stocks, while others have been staying pretty close to the shore. Consequently, these last dealers are the best customers at this time, when householders are coming into the market. Retail prices are steady at former levels. Hocking lump retails around $6.50 and rescreened varieties $6.75. Splints are quoted $7.50, while Pocahontas is $9.50@$10. Anthracite is moving fairly well around $14@$15.

The steam business is practically dead. Little tonnage, outside of coal for public utilities, is moving. Railroads are only taking a small tonnage, while schools and public institutions are now fairly well supplied. The demand for screenings is holding up and prices are advancing, due largely to reduced production of lump. With the Lake trade dwindling, the output of screenings has been further curtailed, although increased domestic production will soon right the situation.

The Hocking Valley docks at Toledo loaded 181,122 tons during the week ended July 30, as compared with 122,328 tons the previous week. The total loaded for the season is 2,409,292 tons. During the same week the T. & O. C. docks loaded 37,857 tons, as compared with 66,629 tons the previous week, making 631,880 tons for the season.

CINCINNATI

Temporary Market Flurry — No General Improvement — Retail Prices Unchanged.

First-of-the-month orders somewhat bolstered up a lifeless market, but by mid-week this flurry had passed and things were back in the same old rut. Lake business has sloughed off, buying being practically nil.

Kentucky nut and slack is being held $1.20@$1.40 with sales down to $1. West Virginia offerings hold 25c. above this with few sales over $1.50. Mine run is variously priced, good coal bringing up to $2 and off-grades down to $1.60. Kentucky lump is $3.25@$3.50, and West Virginia has a gamut of prices running $2.75@$3.50.

Smokeless business picked up a little, with egg and lump $5@$5.50. Nut is quoted $4@$4.25 and mine run $2.50@$3.50. Slack is practically out of the market, the quotations being mostly for poorer grades at $1.85@$2.

Retail prices have shown no signs of changing. Retailers who are heavy handlers of smokeless say they cannot see any prospect of a reduction until lump reaches the $4 basis. Top grade Pocahontas is held at $10.25 down to $9.75, mine run $7.50@$7.75 and screenings $6. Bituminous lump, better grades are $8.25@$8.75, average, $7.25@$7.50; mine run $6.25, and screenings $4.45@$5.

CLEVELAND

Pocahontas Quotations Softening — Slack Still Strong—Demand for Industrial Coal Slightly Better — Lake Shipments Decline.

Bituminous—Explanation of the remarkable stiffening of slack coal in the last few weeks is to be found in the report of Lake shipments for July. The total movement up the Lake of cargo fuel during the month was 3,554,686 tons, compared with 4,658,309 tons in June, a reduction of more than 1,104,000 tons, or 23 per cent. This large curtailment of shipments, caused by the congestion of coal at lower ports and the tardy distribution of the fuel from upper docks into consuming channels, naturally has cut down the production of slack. For the season to Aug. 1 the Lake movement has been 13,015,062 tons, compared with 6,253,738 tons for the same period in 1920; 12,617,285 in 1919, and 11,305,995 in 1918.

Although the demand for slack, due to the scarcity, is the largest of all grades, compared with the supply, dealers report a slight increase in buying of other kinds of industrial fuel. This reflects the somewhat better plant operations in the iron and steel and some other industries. Whether or not this improvement is to expand into an unmistakeable buying movement remains to be seen. One dealer says that more inquiries have been received for coal in the last few days than for the same length of time in months.

Anthracite and Pocahontas — A development of interest in the Pocahontas market has been the drop of spot mine prices by about 75c. Most retailers are preparing to revise their delivered price in accordance. An interesting angle of the situation is that all of the large yards contracted for their Pocahontas mine run at the beginning of the season at $3.50 a ton. It is now selling at a mine price of $2.75. The smaller dealers, who are without contracts, are able to buy this coal cheaper than the large yards and to undersell them on the retail market. As a result the large dealers have served notice upon the operators that the contracts must be revised downward. Refusal would mean that dealers could order deliveries stopped and buy in the open market.

Receipts of bituminous coal at Cleveland for the week ended July 30 amounted to 546 cars, divided; 402 industrial, 144 retail, representing an increase of sixty-two cars over the previous week. The normal requirements of Cleveland are said to be around 1,200 cars of bituminous coal per week.

ST. LOUIS

Conditions Continue Quiet—No Activity Anywhere—Car Shortage Forerunners Appear—No Price Changes.

There is nothing to break the monotony of the weary waiting days that the trade puts in, until some rift in the clouds will indicate a move in the right direction.

Steam, which moved up a notch or two since the middle of July, does not keep on. It improved a little in price, and that is all. Screenings demand has been some better, but not enough to cause any stir.

Locally, steam is easy. There is only a slight call and this is mostly for a little storage. In the country, the steam coals are in an extremely sluggish position.

Domestic shows no change. Carterville is doing the best, but this is next to nothing. A few dealers have ordered a little Mt. Olive and Standard, but it is so small that it does not count.

No smokeless is moving and anthracite receipts are light. Coke trading is at a standstill. There are no increases in prices. Country domestic is picking up some in western and northern Missouri. In the South there is nothing doing to speak of.

South

BIRMINGHAM

Market Tone Slightly Better—Supply Much in Excess of Commercial Demand —State Program to Aid Domestic Mines.

While actual results of better trade conditions are not in evidence at this time, there is a feeling among coal men that a change for the better is to be expected in the near future, though of course anything approaching a normal market is not contemplated for some time to come. There is a slight revival in some industrial lines, but not sufficient activity as yet to affect the coal market favorably.

Although the retail domestic trade is still lagging badly there is a belief expressed that as a result of the information given the public by the State Fuel Administration in a statement showing the prices of domestic lump for the month of August, f.o.b. mines, the freight rates to the principal points in the State and a reasonable margin to be charged by the retailer, consumers will conclude that lower prices are not to prevail and will begin to place orders accordingly, which will in turn enable domestic mines to speed up production.

Acting Fuel Administrator Roy R. Cox has issued an appeal to the public

to no longer delay laying in their winter coal, as prompt action only can forestall a serious shortage during the coming winter months. Lump quotations f.o.b. mines with freight rates to Birmingham ranging 87½c. to $106½ per ton, are as follows: Big Seam $3.25 @ $4.20, Carbon Hill $4.15, Black Creek $4.42 @ $6.00, Cahaba $4.90 @ $7.10, Corona $4.95, Montevallo $6.30@$7.10.

The data compiled by the State Fuel Administration is only published for the information of the public and as a check against retail prices charged consumers by the dealers, the suggested margin for the dealers in Montgomery, Mobile and Birmingham being $3.10 per ton and other points $2.50 to $2.80.

LOUISVILLE

Market on Rebound from Low Demand —Some Jobbers Guaranteeing Prices— Screenings Show Further Strength.

As the result of a hold-up in Lake shipments, overproduction of screenings has stopped, and the low price level on screenings is now around $1.35. Lump coal cannot be touched today for less than $3@$3.50. Mine run is a little firmer, but average quotations do not show much increase.

Producers are loaded up with screenings orders for future delivery. Retailers are making numerous inquiries for prices, especially for September delivery, when the anticipated consumer stocking of prepared should at last start.

Some consumers who have played for a lower market have closed orders where prices have been guaranteed until the close of the year. Jobbers do not figure that they are taking any chances in guaranteeing present low prices, in view of the fact that winter demand is bound to be far more active for heating, if not for actual industrial consumption.

Production is larger than at this time last year, as smaller business is finding a full car supply. Industrially there is no marked improvement in any one line. However, the cement, lime, brick and clay people are busier.

West

DENVER

Production Increases — Agitation for Lower Prices—Demand Still Lags

Coal mining shows a tendency to increase despite the agitation going the rounds for a whirl at the coal leasing act of 1920. The city of Denver is just getting out "from under" one municipal coal yard experience that was hazardous and costly, but efforts are being made to have the City Council act again with probably like hazards.

Some newspapers are saying that lignite can be put in the consumer's cellar for $3.50, as against the present price of $6.35@$8.50, and bituminous, retailing at $11@$12, could be sold for $6, if the city took up 2,560 acres in northern Colorado, or several sections of federal coal land in the north and south.

Meantime, mines are working part time and operators are wondering how much longer the consumer will wait before getting in his winter supply. The millennium for the consumer as the latter has it pictured to him is a long way off.

Tonnage of a year ago has not been maintained this summer, although the week ended July 23 showed an increase of 20,000 tons over the previous week, when 160,000 tons were mined. The output of a year ago was about 225,000 tons. Lack of orders was responsible for most of this "lost tonnage," some little trouble being experienced by inability to get the proper cars for loading when wanted.

News From the Coal Fields

Northern Appalachian

ANTHRACITE

Operations Hindered by Labor Troubles —Demand Is Weaker—Heavy Storing at Mines.

Operating conditions took a slump last week. There is a strike in the Panther Valley and 6,000 men are out. All of the mines of the Lehigh Coal & Navigation Co. are closed. The Lehigh & Wilkes-Barre Coal Co. has had some trouble at one of the collieries and it has been shut down, off and on, for some time. The Lehigh Valley has eight mines on strike out of thirteen which it owns in the northern coal district.

Some of the larger independent companies are operating only three days a week and a number of the smaller producers are closed down altogether. One of the large companies is only operating part time and nearly all producers are stocking coal at the mines. Not much change is expected during this month, and it will be Sept. 1 at the earliest before any marked resumption will take place.

CONNELLSVILLE

Byproduct Coke Purchased Instead of Connellsville — Reduced Frick Scale — Prices Unchanged.

The first important development in the open market showing a trend toward byproduct coke in this period of close price figuring is the contract between the Sharon Steel Hoop Co. and the Youngstown Sheet & Tube Co., whereby the latter is to furnish byproduct to the former for operating the Mary furnace at Lowellville, Ohio. The furnace has just been started. Prices reported on the transaction are purely conjectural, the only thing certain is that the delivered cost is much below what could have been done with Connellsville. It is possible that coke now in stock will be used quite largely. There was a possibility that the Wickwire-Spencer Steel Co., Buffalo, would buy byproduct coke from a nearby operation but, as reported a week ago, Connellsville coke was brought at $3 net to the consumer.

The spot furnace coke market continues very quiet. It is only very occasionally that any coke is sold for furnace use. Other sales, for miscellaneous use, are of small lots, at $3 down to $2.75, the lower prices being probably for coke under the blast furnace standard. Soft coke brings $2.75 and less. Spot foundry coke continues in moderate demand with the market softer, though not quotably lower.

The Frick scale of Aug. 1 represents a reduction of a shade under 10 per cent. Per 100 bu. mining rates are $2.38 for pick mining room and rib coal, $2.63 for heading coal, $2.77 for wet heading coal and for machine mining $1.50, the rates being equivalent to 63c., 69c., 73c. and 39½c. respectively per 2,000 lbs. The rates in general average fully 10 per cent above the independent scale of July 1.

The market remains quotable as follows: Spot furnace, $2.90 @ $3; contract furnace, $3; spot foundry, $4 @ $4.50, per net ton at ovens.

PITTSBURGH

Demand Continues Light Account Non-Union Competition—Prices Unchanged.

Demand from consumers normally tributary to the district is light, and even of that, little of it is expressed in inquiry for Pittsburgh district coal, because it is possible to buy at materially lower prices from nearby non-union districts, particularly the Connellsville region. As good gas coal can rarely be obtained thus, there is a moderate demand for Pittsburgh district gas coal.

There is not much contract business in force, but shipments are fair against such contracts as exist. Shipments in the lake trade are now quite light, having been on the wane for several weeks.

Nothing definite has turned up yet as to revision of the wage scale, though in some quarters a reopening of the subject, upon the initiative of the miners, is regarded as far from improbable. The further reductions recently made in the Connellsville region increase the divergence in mining costs between the Pittsburgh and the Connellsville regions. Independent Connellsville operators made a further wage reduction July 1, while the H. C. Frick Coke Co. (Steel Corporation) made a second reduction Aug. 1. Present rates for pick mining

room and rib coal per 100 bu. are $2.06 on the independent scale and $2.38 on the Frick scale, equal to 54c. and 63c. respectively per ton.

The steel industry has made a turn for the better in operations, but the gain is small and it is doubtful whether mill operations will average more than 25 per cent for the month of August, July having shown barely 20 per cent.

Prices are largely nominal, there being scarcely any transactions: Slack, $1.60@$1.75; steam mine run, $2@$2.15; ¾-in. steam, $2.25; gas mine run, $2.20@$2.35; gas lump, $2.60@$2.80.

EASTERN OHIO

Production Increases—Lake Tonnage Slumps, But Is Offset by Better Industrial Demand—Slack Shows Strength.

Despite predictions to the contrary, production continues at a good clip and the week ended July 30 was the largest since the last week in May. Output aggregated 400,468 tons, or approximately 64 per cent of capacity. Tonnage mined was 4,450 tons ahead of the previous week. Production for the year, to July 30, is approximately 9,966,000 tons, or 53.5 per cent of total rated capacity.

Conditions in the general coal trade are at least no worse than during previous weeks, and by reason of lower volume to Lake and the aggregate tonnage mined continuing at a good rate it may reasonably be concluded that demand from a new quarter is entering the market. Railroads are increasing their orders and between 30 and 35 per cent of all tonnage mined is going to the carriers. Industrial conditions indicate a slight improvement, especially in iron and steel, and the rubber industry.

Inquiries are showing better tone, although the majority of consumers seem content to supply their needs from day to day in the spot market. One outstanding feature of the week has been a constant rise in the spot prices on slack, with this grade selling freely at $1.80. This is quite a contrast with the price of $1 several weeks ago, when it was reported that the largest order of the season, involving 100,000 tons, was closed with a public utility at that figure.

The reason given for the stiffening in slack prices is that a smaller quantity is now being produced because of Lake shipments slowing up. This situation is assisted by a slightly improved demand on the part of industry.

UNIONTOWN

Demand Slowly Returning—Keen Competition—Furnace Coke Spotty.

Negotiations are expected to be completed in the immediate future for the largest coal order to be placed in the Connellsville region for some time. Reports say that one consumer is negotiating for the purchase of 400 cars, 200 of Pittsburgh vein and 200 of the Sewickley vein.

With the slowly returning business, jobbers and operators are beginning to appreciate just what real competition is. A year ago there was the keenest competition for coal tonnage on the rising market. Today, dealers are literally fighting for every ton of coal they sell. The operator who has built up his business upon the basis of satisfaction to his customers is now beginning to reap his returns.

It is not unusual in certain offices to receive an order duplicating one previously executed. In some instances these "repeat" orders carry a price provision, but in others the buyer has sufficient confidence in the jobber to permit him to name his own price.

There is some talk that in the near future several large coal consumers will be in the market to place orders. It is rumored that the coal will be purchased for storage purposes at the present low prices in anticipation of needs which may arise in the near future.

Furnace coke continues exceedingly spotty, the price for what little is being moved being determined largely upon the brand. No additional contracts have been signed, but jobbers report that spot inquiries are picking up. Average quotations are $3@$3.25, with some off-grade tonnage moving below that figure. There is a luke-warm demand for foundry, with the price ranging $4@$4.50. Grades of coal range $1.75@$1.85 for steam and $2 for by-product.

UPPER POTOMAC

Industry Marks Time—Prices Too Low for Acceptance.

The end of July found the industry marking time, with comparatively few mines in operation. Standing orders alone permitted mines to run, spot orders offering being at such low prices as to preclude their acceptance. Even the better classified coals found a negligible market. Tidewater business was virtually at a standstill.

CENTRAL PENNSYLVANIA

Production Slumps—Union Operations Seriously Hindered by Non-Union Wage Cuts—Early Action Necessary.

July production totaled 51,000 cars, a loss of 5,964 cars, or 295,000 tons compared with June, when 56,964 cars were shipped from the district. The outlook for August, in the union mines, is less favorable, for the reason that the effect of the wage cut in Somerset County and in the Westmoreland-Connellsville field is beginning to be felt.

Practically all the Somerset mines are now back to the 1917 wage scale and will be able to produce coal at a labor cost of $2.15 a ton in the unionized portion of the central Pennsylvania field.

In the Westmoreland-Connellsville field, a further reduction of 10 per cent was effective on Aug. 1. These mines are now producing at a cost of 55c. per ton for pick mining against $1.20 in the central Pennsylvania field. Day wages in the other fields average $4.50, while in this field the rate is $7.50. The outside wage is 33.3c. in the Westmoreland field while here the rate is 83⅓c.

The results since April 1, when the first readjustments were made in the competitive districts, are conclusive proof of the serious condition in which the central Pennsylvania operators find themselves.

FAIRMONT AND PANHANDLE

Mine Idleness General—Tide and Lake Tonnage Dwindles—Prices for Slack Stronger.

FAIRMONT

Mine idleness was general during the last week of July as a result of "no markets." About the only coal moving was that supplied on contracts, railroad fuel taking about 40 per cent of the output. Tidewater shipments were almost nil and Lake tonnage was dwindling. Slack was becoming scarce and prices were advancing.

NORTHERN PANHANDLE

With the demand negligible, very little coal was being produced during the week. There was no Tidewater movement and Lake tonnage was smaller because of an accumulation at the docks. Slack was firmer at $1.25@$1.40. Mine run ranged $2@$2.25 and prepared $2.40@$2.65.

Middle Western

SOUTHERN ILLINOIS

Car Shortage Indications—Steam Shows Improvement—General Operating Conditions Not Satisfactory — Carterville Circular Being Cut.

The only thing of note last week was the reported car shortage on the Illinois Central R.R. This was not so much a car shortage as it was failure to get quick movement and also to move the cars under load.

It is only a matter of a few weeks until the real thing will be with us. The Baltimore & Ohio and Louisville & Nashville are beginning to feel the coming trouble. It is reported that about 50 per cent of the cars sent to the Louisville & Nashville in July for Frisco loading were rejected account of bad order.

Screenings still show a little activity. In Franklin County, the huge piles of screenings are being picked up. At many mines they are the cause of idleness.

The Carterville field continues to hold its own. It is by extreme effort, however, as domestic egg and nut is hard to move.

The big operators—about six in number—hold pretty well to the $4.05 price on domestic coal. The independents have dragged several association operators to their level of from $3 up, the average being $3.50 for domestic coal. Mine run is down to $2.75, and screenings from $1.35, up. Average working time varies from one to four days per week. Railroad tonnage is light.

Conditions in the Duquoin field are like those of the independents in the Carterville region.

Mt. Olive district shows no change, except that the price has been increased on country shipments of domestic from $3.50 to $3.75. St. Louis and Chicago prices show no change. Working time averages two days per week. Steam coal is going mostly on contracts.

The Standard field is just what it has been. In some places there is a slight increase in domestic movement. Railroad tonnage shows some increase. Working time is from one to three days a week, with no new mines resuming.

Prices range from $1 up on screenings, the average being $1.25. Mine run is $1.75, 2-in. lump $2 and upward; 6-in. lump, $2.50 up, and egg and nut, from $2 up. Shipments are scattered and business is hard to find.

INDIANA

Buying Still Being Delayed—Inquiries Are Picking Up—Prices Unchanged.

Demand for domestic coal is only fair. People apparently are delaying buying their coal in hopes that there will be a reduction in freight rates and a consequent drop in price. There does not seem to be much of a possibility of such a reduction and the people are overlooking an excellent opportunity to obtain prompt delivery.

Retail prices are somewhat lower than last spring and dealers are getting ample supplies of domestic coals, even the high-grade Eastern soft coals, such as Pocahontas—a situation that did not prevail a year ago.

The sudden change for lower temperatures and the first hint of autumn has caused an increase in domestic orders and there is quite a tendency on the part of the industrials to purchase. Jobbers have had more inquiries during the past week than for the two previous months from industrials. Prices are unchanged, but indications point to higher levels late this month.

WESTERN KENTUCKY

Operators More Optimistic—Domestic Demand Better — Prices Up—Good September Business Predicted.

Operators are optimistic concerning the outlook, and are slowly advancing prices for prepared sizes. Mine run is moving a little better at slightly increased prices. Screenings are in good demand at better figures.

There is a fair tonnage of prepared sizes, with much better movement anticipated, in view of the active inquiries from retailers for September deliveries. Consumers have not bought much coal and retail prospects are beginning to improve.

Western Kentucky is especially pleased with the prospects for through rates to Georgia points, which will enable the field to open a new market, from which it is now barred by combination rates. A number of mines are now running three days or better, instead of two.

Middle Appalachian

LOW-VOLATILE FIELDS

Tide Tonnage Declines as Pier Accumulation Grows—Production Suffers from Slump in Demand—Prices Weaker.

New River and the Gulf

New River production ran down to as low as 13,000 tons daily during the last week of July, which was the dullest of the season. The falling demand exerted a depressing effect on prices, prepared ranging $3.75@$4, mine run $2.50@$3 and slack $2@$2.25. Tidewater movement was much reduced and Lake shipments had also been cut down.

Dullness in the Winding Gulf region was very marked, as buying on a spot basis was negligible. Tidewater shipments declined although some producers continued to send coal to the piers where accumulations were growing. Prices were about on a par with those in the New River region.

Pocahontas and Tug River

There was a sharp decrease in the Pocahontas output, where "no market" losses were in excess of 300,000 tons a week. It was necessary to scale down Tidewater shipments because of the poor foreign demand and inability to market much coal in New England. Domestic prices were lower, ranging $3.75@$4 and slack was quoted $2@$2.25.

Tug River production was holding fairly well, being not far short of 80,000 tons during the week. Contracts were sufficient to keep mines in operation about four days, but spot sales were few and much less coal went to Tidewater than during the early part of the month.

HIGH-VOLATILE FIELDS

Stagnant Market Continues — Production Hard Hit—Resultant Coals Higher, with Lower Domestic Call.

Kanawha

Little coal was produced during the last week of July as a result of the insignificant demand and more mines closed down for an indefinite period. Domestic markets were so sluggish that slack became more scarce and prices increased somewhat, averaging $1.25@$1.50. There was no demand at Tidewater and Lake shipments also were small. No markets held production to about 30 per cent of potential capacity.

Logan and Thacker

Logan production declined somewhat because operators mining storage coal were nearly stocked to capacity, and little coal was being sold. Prices descended to a lower level, which kept operators from resuming work. Domestic grades were sluggish at $2.50@$3, which caused the resultant sizes to increase slightly.

Tonnage mined for storage purposes kept Thacker production at a higher figure than was observed in other high-volatile fields. Railroad fuel shipments also helped to maintain the output. There was very little spot buying owing to general market conditions.

Northeastern Kentucky

Owing to a slim demand the output did not exceed 35 per cent of capacity. Lake shipments were greatly curtailed and were limited largely to companies having their own docks in the Northwest. Continued industrial inactivity made for a very feeble steam demand.

Virginia

Production rate was unimproved, standing orders being the only ones in effect. This precluded more than 50 per cent production. Small mines with free coal continued to mark time, awaiting a revival of demand which did not loom as imminent.

Southern Appalachian

SOUTHEASTERN KENTUCKY

More Active Inquiry — Little Distress Coal — Low Domestic Demand Helps Screenings Price.

While several of the larger companies in the Straight Creek-Harlan fields are working on a reduced schedule and the tonnage shipped is somewhat less than during July, there seems to be more activity in inquiries, especially for mine run and screenings. Several mines are sold up several weeks ahead on screenings, but are unable to run full time on account of the low demand for block.

Price cutting seems to have reached an end and little coal is being sent out on consignment to be sacrificed to an indifferent buyer.

Best Harlan County block is bringing $3.25@$3.50, with Straight Creek holding up to $3.50@$3.75; mine run, $2.15@$2.40; 2x4 round, $2.90@$3.15, and screenings, $1.50@$1.75.

West

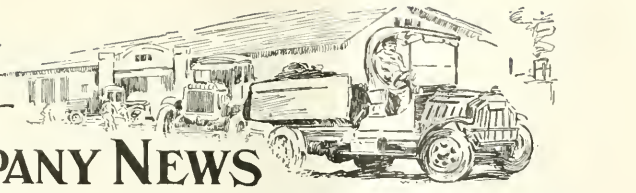
UTAH

Demand Is Improving—Car Shortage Noticeable—Fall Rush Expected.

There is a marked improvement in the coal situation. This is believed to be due to the rumor that operators had decided to add 50c. to the August prices. Car trouble has set in now and threatens to become serious. Men have already been laid off for lack of cars. Railroad officials claim that producers, being short on orders and long on output, have been utilizing empty cars for storage of coal. The D. & R. G., has increased its shop force and cars are being put in good condition as rapidly as possible.

Salt Lake City yards are filled, some of the big retailers adding new yards for storage purposes, in anticipation of the business which is expected to come with a rush in the early fall.

MINE And COMPANY NEWS



COLORADO

An area of over 200,000 acres in Colorado previously classified as coal land has been restored to entry upon report of the Geological Survey and 100,000 acres in New Mexico have been classified as non-coal. The Survey has reported on 249 applications for coal prospecting permits under the leasing law; 64 await action and 78 reports have been made on applications for coal leases.

The Colorado Collieries Co., a $1,000 000 concern, with headquarters in Denver, filed articles of incorporation July 15 with Secretary of State Milliken. The company, which will engage in a general business in coal and its by-products, will have as directors H. D. Lawrence, F. H. Underwood, D. E. Deadrick, F. J. Burbman and R. H. Johnson, according to the articles of incorporation.

The directors of the **Colorado Fuel & Iron Co.** have passed the dividend on the common stock. The last previous disbursement on the issue was ¾ of 1 per cent on May 25 last. The regular quarterly dividend of 2 per cent was declared on the preferred stock, payable Aug. 20 to stock of record Aug. 5.

KENTUCKY

The Amburgy Coal Co., Louisville, with mines in the Hazard field at Dalna, has started shipping again, after being down since March 15. The mine has been electrified, a new power house built and shaker screens installed. A number of new miners' homes have also been erected. K. U. Meguire, of the Harlan Coal Co., is head of the concern.

The Dark Fork Coal Mining Co., has leased additional mining properties in the Lotts Creek field, near Hazard, and plans extensions of operations, erection of more miners' homes, and increasing the force.

The Kentucky Block Fuel Co., W. A. Bishop, Gen. Mgr., is remodeling its plant at Elwood, Pike County. Jacobsen horizontal picking-table screens loading boom and chutes are being furnished by Jacobsen & Schraeder, Inc., of Chicago.

Fred K. Sackett, of Louisville who recently bought the controlling interest in the **Harlan Coal Co.** has added to his holdings through the purchase of 2,500 acres of unimproved coal lands which are soon to be developed.

MINNESOTA

An investigation into the coal situation at the head of the Lakes and in Minnesota will be conducted by the State Department of Agriculture, which is gathering data and will begin to take evidence from dealers and dock operators at an early date. The investigation is expected to ascertain the amount of coal in the hands of dealers in Minnesota, the amount at Duluth available for the state, estimates of the tonnage needed for this year, and the reasons for the disinclination on the part of the consumers to lay in their usual stocks of coal early in the season.

OHIO

Federal District Judge Sater has granted a temporary restraining order at the request of the **Faye Coal Co.**, of Columbus, stopping the **Corning Mining Co.**, of West Virginia from transferring, endorsing or assigning notes given by the plaintiff in payment for 480 acres of coal land in Perry County. The plaintiff wants a contract of purchase, made last September, rescinded on the ground that the Corning company induced the Faye company to purchase the land by misrepresentations.

The Cambridge Collieries Co., headquarters at Kirby Bldg., Cleveland, large operators in the Cambridge District, have purchased the property of the **Pittsburgh-Superior Coal Co.**, at Wegee, Belmont County. This mine, known as the Cook Mine, has a capacity of 400 tons per day and is located on the Powhattan branch of the Pennsylvania. The consideration involved was not given out. In addition to this newly acquired property, the Cambridge company also operates the Majestic Mine at Blairmont, on the Wheeling & Lake Erie.

The authorized capital of the **Tildesley Coal Co.**, has been decreased from $250,000 to $100,000, by papers filed with the Secretary of State, recently.

PENNSYLVANIA

Work is being rushed on the Big Mountain shaft of the **Philadelphia & Reading Coal and Iron Co.** Three shifts are on duty. Production will be considerably increased when the shaft is finished.

The Iron Trades Product Co., Pittsburgh, with branch offices at New York and Philadelphia, has been appointed exclusive sales agent for the product of the **Donley mine**, shipping from Johnetta, Armstrong County, on the Allegheny Valley Branch of the Pennsylvania.

Peale, Peacock & Kerr are installing a set of Jacobsen horizontal picking table screens at their Bald Hill Mine, Clearfield County.

Fatalities in anthracite mining during the first half of the calendar year show a slight increase over the corresponding period of last year, although non-fatal accidents have decreased. Here are the figures for Pennsylvania mining for the six-months period this year and last.

	1920	1921
Total mining fatalities.....	481	393
Total anthracite fatalities..	271	273
Total non-fatal accidents...	1364	884
Total anthracite non-fatal accidents	718	559

The above figures, as compiled by Chief Button, of the State Department of Mines, classify only the serious non-fatal accidents, incapacitating workers for sixty days or more.

VIRGINIA

Incorporated with a capitalization of $1,000,000, **the Palmer-Bess Coal Corporation** will develop coal land in Keokee district. John A. Palmer, of Reedville, has been elected president with R. W. Palmer, Alta Vista, secretary.

The executive committee of the **Clinchfield Coal Corporation** has authorized the payment of the usual quarterly dividend of ¾ of 1 per cent on the common stock, payable Aug. 15 to stock of record Aug. 10. Earnings for the first half of 1921 were well in excess of the amount necessary for the payment of the usual dividend on the common stock, after setting aside all reserves, including federal taxes, and providing for the dividend and sinking fund on the preferred stock and with the sinking fund for the recent issue of 8 per cent notes covered until August, 1922.

The Hampton Roads Port Commission, in session at Norfolk, cited the fact of Hampton Roads' preponderance in coal dumpings as one of the "selling points" to be used in the State-wide effort to secure proper development for the port. The mining regions will be visited this fall by a group of representative Hampton Roads citizens, for the purpose of encouraging the citizens of that section to aid in the port development.

WEST VIRGINIA

The McKeefrey Coal Co., of West Virginia has begun development on a tract of coal land at McMillan Station, Marshall County, five and a half miles south of Moundsville. The E. M. Wichert Co., of Pittsburgh, has been awarded the contract for two concrete-lined shafts.

Organization of the **Parsons Consolidated Coal Co.**, with a capitalization of $750,000 was for the purpose of taking over several companies in which A. F. Parsons and others of Huntington were interested, the companies so merged being the **Chilton Eagle Coal Co.**, the **Peach Creek Coal Co.**, and the **Parsons Coal Co.**, all of Logan County. Included in the merger was the **Perry County Coal Co.**, of Hazard Ky. The headquarters of the new company are at Huntington, A. F. Parsons being the president. C. W. Lloyd has been elected as secretary-treasurer.

Stoyer is to be the seat of operations of the **Potomac River Coal Co.**, where a new plant is nearing completion. Only recently the company finished putting in a siding and building an incline, in addition to installing other equipment. Within the next few weeks it will be possible to have the new plant in shape for the beginning of operations. This plant is under the superintendency of Ira Mercer.

In connection with recent mention made of the installation of a plant by the **Dean Coal Co.** on the Tygarts Valley River near Philippi, it is now learned that this company has completed work on a new tipple and is engaged in putting in a set of boilers. Rope haulage will be used as a means of getting coal across the river to the line of the B. & O.

The Atlantic and Pacific Fuel Corporation, of Bluefield, has filed a voluntary petition in bankruptcy, listing its liabilities at $113,852.87, with assets of $137,691.84. The liabilities are mostly open accounts owing to coal companies mostly in southern West Virginia fields.

The Gauley Mountain Coal Co., Robert Morris, gen. mgr., of Ansted, have contracted with Jacobsen & Schraeder, Inc., of Chicago, Ill., for tipple equipment at their No. 3 mine. Jacobsen picking tables, loading booms, weigh basket, chutes and conveyors to bins are to be installed. Steel storage bins having a capacity of 1,000 tons also are to be built.

Organization of the **Cliff Coal Mining Co.** presages the mining of coal on a fairly large scale in Sherman District of Boone County, this company having just been organized with a capitalization of $150,000. Largely interested in the new concern are L. J. Q. Dickinson, L. D. Burns, B. M. Green, Frank Webb and **U. G. Young**, all of Charleston.

The General Coal Co., of Huntington, headed by W. J. Quinn, has increased its capitalization from $50,000 to $100,000 and the **Export Coal Co.**, headed by A. O. E. Hogue, of Export, has increased its capitalization from $50,000 to $150,000. In the list of companies recently dissolved were the following: **Arcune Coal Co.**, of Williamson, of which J. Woolford was president; **Glendale Coal Co.**, of Wheeling, of which E. T. Hitchman was president; **Mondale Coal Co.**, of Charleston, of which F. S. Monahan was president; **Wyoming Coal & Coke Co.**, of Huntington, of which Thomas H. Harvey was president; **Clean Creek Coal Co.**, of which J. H. Murray, of Huntington was president; **Matewan Coal Co.**, of Williamson, of which C. M. Gates, was president; **Deegans Eagle Coal Co.**, of which W. E. Deegans, of Huntington was president; **Smith-McCue Coal Co.**, of which J. C. Smith, of Morgantown was president.

Several tracts of coal land changed hands in Grant District of Monongalia County late in June. **The Whyel Coke Co.** sold to **Thomas M. White**, of Uniontown, three tracts of coal in Grant District, this coal being in the Sewickley seam. The three tracts brought $28,642. Mr. White also purchased from the Whyel company a tract of 100 acres of Sewickley coal in Grant District for the sum of $15,127.50. The Whyel company secured from Harry Whyel and wife 88 acres plus, paying for the same the sum of $13,311.90.

Owing to present market conditions a decision has been reached by **Hall Bros. & Co.** to close their Fairmont office. No statement was made as to whether this firm would open offices again following a recovery of industry from its present slump.

Work is being completed on the steel bins and head frames of the **Davis Coal & Coke Co.'s** tipple at Pierce, this being known as the company's No. 39 operation. At the Kempton mine of the same company, the head-frame is being raised in height so as to permit installation of a weigh-pan such as has been installed at Pierce.

Traffic News

In the complaint of the **Canton Coal Co.** involving rates on bituminous coal from mines at Rawalt, near Canton, Ill., to St. Paul, the I. C. C. has authorized the Rawalt Coal Co. to intervene.

In the complaint of the **Illinois Coal Traffic Bureau**, relating to rates on coal from various mines in Illinois to Council Bluffs, Omaha and South Omaha, the **Central Illinois Coal Traffic Bureau** has been permitted to intervene.

In the complaint of the **Sligo Iron Store Co.**, the I. C. C. decides that shipments of coal from Cokton, W. Va., to Lamar, Col., in 1919 were overcharged, a rate of $9.20 a ton being imposed, which it says should not exceed $8.

The Duluth & Iron Range R.R. Co. report for the year ended Dec. 31 last shows gross income of $11,471,820; total deductions, $8,721,491; net income, $2,750,329; applied to sinking fund and other reserve funds, $1,254,448, and a surplus of $1,495,881.

On recommendation of the board of directors, stockholders have authorized an increase of $53,000,000 in the capital stock of the **Louisville & Nashville R.R. Co.** and authorized the board to apply to the Interstate Commerce Commission for permission to distribute proceeds of the new issue as a stock dividend. Steps also were taken to execute a blanket mortgage upon the company's property as security for first mortgage and refunding gold bonds to fund as much as may be deemed necessary of the debt of the road, which on December 31 last was $166,300,825.

Personals

Notice has been issued by the Lehigh Valley Coal Co. and Coxe Brothers & Co., Inc., that **H. W. Montz**, formerly division superintendent at Hazleton, has been appointed assistant general manager with headquarters at Wilkes-Barre. **R. A. Evans**, formerly mining engineer, has been appointed superintendent of the Hazleton Division.

General Thomas Coleman duPont, of Wilmington, newly appointed senator from Delaware, succeeding Senator Wolcott for the term ending March 4, 1923, has long been interested in the coal business, having engaged extensively in mining in Kentucky since 1896. He is now president of the Central Coal & Iron Co., as well as the McHenry Coal Co. and the Main Jellico Mountain Coal Co. of Kentucky.

C. M. Means, consulting mining engineer of Pittsburgh, Pa., has returned from a ten-day trip through western Kentucky. He leaves in a few days for another extended trip through the same region.

H. E. Stone, coal dealer, is one of three candidates for the Democratic party for Mayor of the City of Bowling Green, Ky., subject to action of the primary on Aug. 6.

Trade Catalogs

Ten Years' Experience in Water Works Pumps—DeLaval Steam Turbine Co., Trenton, N. J. Pp. 100; 8½ x 11 in.; illustrated. A manual for water works officials and engineers; charts and tables.—Advertiser.

Armco in Pictures and Facts—The American Rolling Mill Co., Middletown, Ohio. Pp. 246; 6 x 9 in.; illustrated charts and tables. Following the process of Armco ingot iron from the mine to the finished product.—Advertiser.

Power Plant Piping—The M. W. Kellogg Co., New York, N. Y. Pp. 30; 7 x 10 in.; illustrations and tables, describing installations of piping of all types.

Lunkenheimer "Ferrenewo" Valves—The Lunkenheimer Co., Cincinnati, Ohio. Pp. 12; 3½ x 6 in.; illustrations and tables.—Advertiser.

The Sullivan Turbine Hoist—Sullivan Machinery Co., Chicago, Ill. Bulletin 76. Pp. 4; 6 x 9 in.; illustrated. Description of small hoist for numerous uses in mines, etc.—Advertiser.

The Jeffrey Pit-Car Loader—The Jeffrey Manufacturing Co., Columbus, Ohio. Catalog 336. Pp. 8; 7 x 10 in.; illustrated. Describing the new Jeffrey 38-A Pit-Car Loader.—Advertiser.

T. R. Self-Starting Automatic Motor—The Triumph Electric Co., Cincinnati, Ohio. Pp. 1, 8 x 11 in.; illustrated.—Advertiser.

C-H Brakes—Cutler-Hammer Mfg. Co., Milwaukee, Wis. Publication 850. Pp. 16; 8½ x 11 in.; illustrated. Describing types M, R-S, and W-T brakes.—Advertiser.

Recent Patents

Miners' Electric Safety Lamp. Theodore Stretton, Cardiff, Wales, assignor to Haslam & Stretton, Ltd., Cardiff, Wales. 1,373,842. Filed May 10, 1920. Serial No. 380,254.

Mining Machine. Morris P. Holmes, Claremont, N. H., assignor to the Jeffrey Manufacturing Co., Columbus, Ohio. 1,377,132. May 3, 1921. Filed June 13, 1916; serial No. 103,507. Renewed July 17, 1920; serial No. 397,146.

Drag-Line Excavator. Arthur S. Robinson, Dayton, Ohio. 1,377,278. May 10, 1921. Filed June 29, 1918; serial No. 252,656.

Loading Machine. Frank Billings and Robert P. Greenleaf, Cleveland, Ohio. 1,377,303. May 10, 1921. Filed April 25, 1918; serial No. 230,652.

Safety Device for Drills. Henry V. Johnson, St. Paul, Minn., 1,377,487. May 10, 1921. Filed April 12, 1920; serial No. 373,317.

Drag Scraper. Wm. E. Hale, Fort Washington, Pa., assignor to R. H. Beaumont Co., Philadelphia, Pa., 1,377,830. May 10, 1921. Filed Feb. 7, 1920; serial No. 357,096.

Safety Shotfirer. C. F. Oaka, Lovettville, Alta., Canada. 1,377,915. May 10, 1921. Filed April 29, 1920; serial No. 377,632.

Mining Machine. Nils D. Levin, Columbus, Ohio, assignor to The Jeffrey Mfg. Co., Columbus, Ohio. 1,377,842. May 10, 1921. Filed March 8, 1917; serial No. 153,471. Renewed April 2, 1921; serial No. 458,088.

Flotation Process. Charles Spearman, Westmount, Quebec, Canada. 1,377,937. May 10, 1921. Filed July 22, 1918; serial No. 246,126.

Loading Machine. Wm. Whaley, Knoxville, Tenn., 1,379,427. May 24, 1921. Filed Nov. 26, 1917; serial No. 204,032.

Shoveling Machine. Wm. Whaley, Knoxville, Tenn., 1,379,428. May 24, 1921. Filed Sept. 8, 1919; serial No. 322,263.

Mine-Car Tag-Holder. K. F. Begley, Star, Ky., 1,379,514. May 24, 1921. Filed Sept. 23, 1921; serial No. 412,178.

Gravity Car Control for Mine Hoists. Daniel F. Lepley, Connellsville, Penn., 1,379,870. May 31, 1921. Filed Jan. 22, 1921; serial No. 439,204.

Mine-Car Coupling. Isaac Martin, Pittsburgh, Pa., 1,380,301. May 31, 1921. Filed Feb. 28, 1921; serial No. 448,704.

Association Activities

Michigan Retail Coal Dealers' Association

Addressing the Michigan Retail Coal Dealers' Association in Grand Rapids, Mich., July 21, James S. McCarthy, of Philadelphia, field secretary of the National Retail Coal Merchants' Association, placed blame for present coal trade conditions on the activities of federal "peeping Toms." He asserted that attempts to nationalize business and industry have proceeded for thirty years, until regulation by the government of all trade lines seems imminent. The bill presented in Congress by Representative Rhodes, providing for the acquisition of land to be used as government fuel yards in Washington, D. C., he described as a step toward attainment of the socialist aim and "an entering wedge to the establishment of federal fuel yards throughout the United States."

Obituary

Stoart Manwaring Buck, consulting engineer, died at his home in Bramwell, W. Va., July 16, 1921, at the age of 79 years. He was graduated from Williams College in 1864, after which he studied mining engineering at the Massachusetts Institute of Technology and at the School of Mines in Freiberg, Germany. Mr. Buck was one of the pioneers in the development of the coal fields of West Virginia. From 1872 to 1879 he was connected with the Kanawha & Ohio Coal Co. as engineer and as lessor; from 1877 to 1888 was general manager of the East Bank Coal & Coke Co.; from 1888 to 1900 was president and general manager, Norfolk Coal & Coke Co., and from 1900 to 1904 was general manager of the Dry Fork Coal and Co. until 1906 he engaged in consulting practice but retained a business interest in the Pocahontas Fuel Co., of which he was a director. He became a member of the American Institute of Mining and Metallurgical Engineers in 1871 and was a manager of the Institute from 1883 to 1885. In 1872 he married Grace Ross, of Bangor, Maine, by whom he is survived, as well as by three children, Clifford R. Buck, of Philadelphia, Mrs. Edward C. Sherman, of Washington, and Miss Theda Buck, of Bramwell, W. Va.

Publications Received

Saward's Annual for 1921, a statistical review of the coal trade, edited and published by Frederick W. Saward (15 Park Row, N. Y., price $2.50), is now at hand. This book is always welcome at the desk, because it brings together so much in the way of statistical information that is otherwise scattered in government reports and trade papers. The book would be just as useful, however, if much of the text dealing particularly with the trade reviews were eliminated and the volume made more of a ready-reference handbook.

Coming Meetings

The Huntington Coal and Industrial Exposition will be held in the Chamber of Commerce Building, Huntington, W. Va., Sept. 19 to 24 incl. Chairman of committee, Thomas A. Palmer, Huntington Chamber of Commerce, Huntington.

American Institute of Mining and Metallurgical Engineers will meet at Wilkes-Barre, Pa., Sept. 12 to 17. Secretary, F. F. Sharpless, 29 West 39th St., New York City.

National Association of Cost Accountants will hold its annual convention at Cleveland, Ohio, Sept. 14, 15 and 16. Secretary, S. C. McLeod, 130 West 42d St., New York.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The twenty-fourth annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers will hold its annual meeting at Huntington, W. Va., on Sept. 20 to 23. Secretary-treasurer, Herbert Smith, Huntington, W. Va.

The following first-aid meets will be held during August: Under the auspices of the Colorado Fuel & Iron Co. a local first-aid and mine-rescue meet will be held at Pueblo, Col., on the 20th. The Lehigh Coal & Navigation Co., field day and first-aid meet is on Aug. 13 at Greenwood Park, Hauto, Pa.

New York State Coal Merchants' Association, Inc., will hold its annual convention at Richfield Springs, N. Y., on Sept. 8, 9 and 10. Executive secretary, G. W. F. Woodside, 250 Arkay Bldg., Albany, N. Y.

Canadian Institute of Mining and Metallurgy will hold its annual Western meeting at Edmonton, Alberta, Canada, Sept. 14, 15 and 16. Convention secretary, T. B. Williams, 10,610 83d Ave., Edmonton, Canada.

American Manufacturers Export Association will hold its twelfth annual convention at the Waldorf-Astoria, New York City, Oct. 5 and 6. Secretary A. W. Willmann, 160 Broadway, New York City.

National Safety Council will hold its annual congress at the State House, Boston, Mass., Sept. 26 to Sept. 30 inclusive. Secretary, S. J. Williams, Chicago, Ill.

The Coal Mining Institute of America will hold its annual meeting at Pittsburgh, Pa., Dec. 7, 8 and 9. Secretary, H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

An Industrial Relations Conference for all industries in the State of Pennsylvania has been arranged for Oct. 24 to 27 at Harrisburg, Pa., by the Commissioner of Labor and Industry, C. B. Connelly.

The sixth annual convention of the **National Association of Purchasing Agents** will be held Oct. 10-13 at Indianapolis, Ind.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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Coal's Place in Current Business

PUBLICATION has been begun by Secretary Hoover of a Survey of Current Business, compiled by the bureaus of Census, Foreign and Domestic Commerce and Standards. In announcing the first issue Mr. Hoover says that the figures included represent in a large measure "those data which the Secretary and executives of the Department find necessary to have at hand for their own use" and that publication involves but little additional expense. Examination of this interesting report which in 55 pages covers every thing from banking and finance to automobile tires, shows what a variety of data on business are already available and how intelligent co-ordination of facts can assist the business executive.

Just as each operator watches the relative costs at two of his mines, just as he last year kept an eye on the relative car supply afforded his and his neighbors' mines, and as now he inspects the comparative figures of running time of his and neighboring districts and his and adjacent mines, so the coal industry, through the new service of the Secretary of Commerce, can set coal alongside other industries. To the coal industry many facts set forth in this survey of current business are of unusual interest.

Everything is reduced to index numbers which means that intelligent comparison can be made between such unrelated items as bituminous coal production and business failures. Using the average monthly production in 1913 as 100, the index figure on production of bituminous coal in June is 85, of anthracite 105.

Compare this with 79 (in March, the latest figure) for the total revenue freight carried by railroads, with 68 for exports of cotton, 72 for production of wheat flour, 58 in March for production of condensed milk, 89 for cigars, 42 for pig iron production, 40 for steel ingot production, 19 for copper, 62 for zinc, 55 for actual production of knit underwear, 76 for production of news print paper, and 81 for sole leather manufactured. Indeed, one has to look to such commodities as automobile tires, 323, and crude petroleum, 202, to find branches of business that, compared with 1913 are doing as well or better than coal.

Standardization an Aid in Merchandising

EFFORTS looking to the setting up of standards of quality and grade of coal are meeting with a gratifying response. The largest undertaking in this direction, that of classifying the coals going to Atlantic tidewater points was the product of a war necessity but it has proved the value and importance to the trade of definite standards. So great is the variety of coals, particularly in the East, that but very few consumers are qualified or prepared to wisely select the one coal that is best suited to their needs, and more specifically, to designate the particular mine that produces that coal. Arbitrary standards are necessary because Nature put the coal in the ground with no greater regard for uniformity than is found in the linaments of the human face. Certain broad generalizations are possible—the Mongolian and the Caucasian; the bituminous and the lignite—but within each general class are to be found a profusion of minor gradations.

Dr. Ashley, the veteran student of coal, is working on the problem from the standpoint of the scientist. Nearly two years ago he submitted to the American Institute of Mining Engineers a proposed general and theoretical classification of all coal as it occurs in the ground. As a result of the discussion provoked by this presentation, Dr. Ashley has revised and simplified his classification to the form shown on another page of this issue of *Coal Age*. He invites further criticism.

As contrasted with this scientific grouping of coals according to their inherent components and properties, are the classifications emanating from the trade itself; classifications that either group mines in accordance with the character of run of mine coal, as the war time tidewater pools, or that draw arbitrary lines through the gamut of possibilities and set up specific groups having definite properties and of given quality. Of the latter the new classifications of the Sewall's Point Exchange covering mines in the Smokeless field on the Virginian Railway in southern West Virginia is the best example. Breaking away from the policy of the other tidewater exchanges that still define pools as containing the coal from a given list of mines but without defining the limits of quality of coal from those mines, this new system defines and guarantees the analysis of coal in each pool without attempting to specify the mines supplying that coal. Recognition is given the fact that the consumer is first of all interested in the coal and not in its source.

Full advantage is taken of this factor by Wilbur A. Marshall of New York in the development and use of what he terms the "Shallmar" coal classification. This classification consists of the grouping under some 80 heads, the high, medium and low volatile coals tributary to the northern Atlantic seaboard with reference to use, preparation, and ash and sulphur content. The "Shallmar" coal classification is not scientific, its chief claim to interest from that standpoint is that it is probably the first published attempt to apply the Dewey Decimal system to the description of coal. But as an aid to merchandising coal it has great possibilities, and it is for that purpose that it was designed and is used. Operating in the present highly competitive market and in a territory where the only standards aside from private brands are the undefined tidewater classifications, there is a field for what may be described as "simplified spelling" in coal nomenclature. Instead of mystifying the uninformed buyer of coal with a jargon of technical terminology, Mr. Marshall, as it were, puts his wares out on the shelf in plain sight and plainly

marked. The consumer who knows what he wants can look over the stock and order accordingly and for the user who is not informed on the proper coal for his plant, the salesman has at hand a key from which to make a recommendation and selection. As a practical, easily workable system, it is obviously simpler to determine on and to specify "154" from the "Shallmar" classification, than "Hivol A ZXZ" from Dr. Ashley's layout, although the more complicated formula is the more definite.

Everyone is familiar with the standard advertisment of "Mobiloil"—an elaborate table listing every recognized make and model of automobile and truck and showing in concise and understandable form the proper grade of this oil to use in each car at each season of the year. So widespread and persistent has been the publication of this advertisement that the motorist has come to think of oil as "Mobiloil" as he thinks of gasoline as fuel. He has been taught by the unremitting publicity given this table that there are different grades of oil and that he must select the right oil for his car—and the selection of the right oil is made easy if he specifies "Mobiloil." This is making standardization an aid to merchandising. The "Shallmar" coal classification has possibilities of the same sort ahead of it; the final result will depend on how intensively and intelligently it is kept before the coal buyer.

Ineffectiveness of Timber Cribs

MOST imposing of roof supports is a crib of timber, and most inexorably does the roof dispose of its pretensions. Mathematical calculation does the same as soon as it is employed. A crib made up of 8-in. timbers 6 ft. long uses only the four corners, which measure only 8 x 8 in. Thus the timber which bears the weight is only 22.2 per cent of the whole timber employed. With a chock using timbers of the same length but only 6 in. square the efficiency falls to 16.7 per cent.

This conclusion, however, is not based on all the factors. Timber is so much more resistant to pressure along the grain than to pressure across it that when loaded on end it will bear three to five times as much stress as when loaded across the grain. The ratio with dried post oak is 3.5 and consequently the two efficiency ratios studied above will fall to 6.34 and 4.76 per cent respectively.

Of course, when the design is to make the chock permanent the holding power may be slightly increased by filling the heart and the space between the timbers with rock. This adds something to the strength and gives a permanent value to the crib, the timbering in reality serving only to keep the rock in place until the weight has pinned it so tightly that it cannot move. The rock adds but little to the strength of the chock on first squeezing, for the corners which primarily hold up the roof will be utterly crushed out of place by the time the sides of the chock get into effective operation, and both corners and sides will be in bad condition, crushed almost beyond further resistance, before the heart of the cog takes up its part in supporting the roof, unless indeed the cog sinks into the bottom as is possible where it is soft.

Timber posts, therefore, are much more efficient than cogs when used for temporary support, and there will be no true substitute for the prop as a temporary underpinning for the rock until the chock is replaced by something better. A solid wood crib would be within the bounds of reason from an economical point of view where the use was purely temporary and concentration of support desirable, but the unfortunate feature of timber so set is that when the weight comes on it it cannot be removed even if originally set on slack, for it is too deep and wide to be readily undermined and thus extracted.

For temporary supports we may come therefore to can be placed in position by water pressure and withdrawn by releasing the water, being moved from place steel posts or to some form of hydraulic device which to place by the use of a winch and a jack post.

Why Waste Dumps Burn

ONE of the mysteries of the mines is why waste dumps burn. The average roof rock looks entirely incapable of starting into flame and yet when the pile gets on fire it is almost impossible to extinguish it. It seems to subsist on nothing.

Less astonishment will be felt, however, when consideration is given to the oil in bituminous shales. In certain parts of the country these shales are extremely rich in oil. Thus Ashley and Fettke discovered a cannel shale above a cannel coal at the plant of the Wister Coal Corporation at Cannelton, in Beaver County, Pennsylvania, that gave 44.2 gallons or 1.05 barrels of oil per short ton. At two other points nearby the shale was not so rich, running only 15.6 and 33.2 barrels respectively.

It is quite usual to find figures like these last two for shales labelled bituminous cannel. Bituminous shale is not so rich or it would be given another name. On the other hand, it is, of course, more common. The same authors found a carbonaceous shale which was destitute of oil in the upper Devonian measures, but all the bituminous shales tested gave between 1.3 and 44.2 gallons per ton and not a few showed over a quarter of a barrel. The lower figure is for a bed at the mines of the Morris Run Coal Co., Morris Run, in Tioga County, Pennsylvania, a section of the state where the oil has been driven out of both coal and shale. Another low figure, 1.9 gallons, was found for a bituminous cannel shale at Sterling No. 2 Mine, the reason being the same as for the low yield of oil from Morris Run shale.

Around those parts of the coal field where the volatile content of the coal is high, greater yields of oil are obtained. A bituminous shale on Purnam Run, in Washington County, despite weathering still showed 12.4 gallons of oil per ton.

A company bringing to the dump 150 tons of rock a day will have stored at the end of the year about 30,000 tons of this waste material, which at even an eighth of a barrel of oil per ton will equal 4,000 barrels. What wonder that such a dump will burn? The thermal value of that amount of oil would be, roughly, equal to that of 1,000 tons of coal.

Of course, it would refuse to burn on a grate where it would be spread in a thin layer, but when in a big body it is able to use nearly all the heat it generates to maintain its combustion and to drive off what moisture it contains. What starts the burning is not so easily determined, but the fact that the rock in many, if not most, instances is dumped on rank vegetation may have something to do with it, though most of the conflagrations of mine dumps can be traced to fires started on the outside.

KATHLEEN MINE, OF THE UNION COLLIERY CO., ONE OF THE MOST MODERN PLANTS IN SOUTHERN ILLINOIS

Bad Fire at Kathleen Mine Is Rapidly Extinguished

Circuit Breaker, Which Does Not Break When Top Coal Falls On Piece of Unbonded Track Bringing Wire with It, Is Apparent Cause of Accident — Exceptional Fire Seal Hastens Recovery

By Eugene McAuliffe*
St. Louis, Mo.

ON FEB. 23, 1921, the Union Colliery Co., in operating its Kathleen mine, located at Dowell, Jackson County, Ill., experienced a rather disastrous mine fire. As usual, many unwarranted statements as to the origin of the fire were circulated. The explosion of a 150-kw. transformer, the presence of a supply of lubricating oil on the main entry and an accumulation of gas, each in turn was advanced as the cause of the fire.

As every transformer underground was placed in service without repairs when the mine was opened, as no oil was stored or used on the main entry, and as it was impossible for an accumulation of gas to gather in an air-swept haulageway, the hastily-concocted theories as to the cause of the fire were set aside by the mine officials and state inspectors, who were conversant with the operation and its condition. The actual history of the accident and the subsequent recovery of the mine, which may prove of value to others, is substantially as follows:

About 11:50 a.m. on Feb. 23, 1921, the mine engineer and his assistant were making some measurements in the third and fourth north headings turned off the main west haulage entries, these latter consisting of three parallel passages. Leaving the faces of the third and fourth headings where seven men were employed, they proceeded outbye against the air and noticed signs of smoke at a point about 1,900 ft. from the airshaft. Thinking that possibly the trace of smoke came from an overheated cutting-machine cable they hurried to the end of the main entry where a gang was at work cutting and loading coal.

Failing to locate the trouble at this point the engineer and his assistant started toward the airshaft on the center or main haulage entry and encountered dense smoke about 150 ft. from the point where the main entry intersected the third and fourth north and south entries. Hastily returning to the machine gang the engineer, accompanied by his helper and three miners, ran back, going with the air toward where the seven men were working, but were blocked by a dense accumulation of smoke when within about 200 ft. of the fourth north entry. The engineer and his party turned and again ran west against the air and, crossing over to the intake or left-hand entry, they started toward the mine bottom. They found the fire breaking through a wood and fiber-plaster stopping at a point about 150 ft. south of the intersection of the main haulage entry with the third south entry.

An alarm was promptly given and a fire-fighting force was quickly organized. Orders were issued to withdraw from the mine all men other than those composing the fire-fighting force. Simultaneously calls for

*President and general manager, Union Colliery Co.

help were made on the state rescue team located at Duquoin, five miles distant. Likewise the neighboring mines were urged to send assistance in the form of apparatus and skilled men.

The first relief force, consisting of the Duquoin mine-rescue team composed of six men equipped with breathing apparatus, reached the mine after about three and one-half hours. In the meantime vigorous efforts were made to extinguish the fire with the aid of chemical extinguishers, scattering assistance coming from every quarter. All the employees were accounted for except the seven men who had been working at the face of the third and fourth north entries.

After every effort to control the fire and reach the seven imprisoned men was exhausted it was decided at 12:30 a.m., Feb. 24, thirteen hours after the fire was discovered, that the only hope of gaining mastery over it lay in sealing both shafts. This work was completed at 5:30 a.m., Feb. 24.

The territory occupied by the seven men, comprising a machine gang and two track layers, consisted of two entries each about 600 ft. long, two panel entries turned from them for a distance of less than 100 ft. and a parting driven in about 70 ft. from the third north entry. With the hope that the men might be able to brattice themselves off for a period at least, a geophone was obtained and used for some days, but without result.

Carbon Monoxide Came from Rescue Borehole

In the meantime a 6-in. borehole was driven to the parting previously referred to. This hole entered the parting at 8:05 p.m., March 1. A discharge of carbon-monoxide gas under a pressure of 2 or 3 oz. per square foot ended all hope for the rescue of the imprisoned men. As showing the accuracy of both the underground and surface surveys and in support of the conclusions made as to the probable whereabouts of the seven men it should be here mentioned that the borehole entered the parting exactly as anticipated and when the mine was explored the bodies of the men were found about 20 ft. inbye from its point of entry.

Immediately after the shafts were sealed a standard "U" type of water gage was installed in the seal above both shafts. On March 1, which was six days after the shaft had been sealed, the outside temperature stood at 65 deg. F. A self-recording thermometer located at a point about 4 ft. below the top of the airshaft seal registered 62 deg. F. A comparison of temperatures and the variation in water-gage pressures shown in the accompanying table evidences the general trend of fire exhaustion.

The Kathleen mine is a new property, located on the east slope of what is known as the Duquoin anticlinal. The coal bed rises at a grade approximating an average of 5.5 per cent from the shafts toward the west property line. No marked variation in elevation between the north and south developments has so far been experienced. East of the shaft local disturbances which temporarily give off an appreciable amount of methane (CH_4) have been encountered and gas is exhaled from the working places, as is usual in this coal area. Nothing, however, of an extraordinary character has been met with in the development of the property. Top coal is left up for roof, as is customary in the southern Illinois coal field. This is a condition that lends itself readily to the rapid spread of entry fires.

Enter Mine Three Weeks After Fire Starts

Desiring to recover as quickly as possible the bodies of the men still underground, early consideration was given to the opening of the mine. Although rather extraordinary statements were made as to the rapid spread of the fire, the high temperature encountered in fighting it, and the like, it was decided, after careful study, that the mine could be successfully entered by March 18, or twenty-two days after the shafts were sealed.

Preparatory to this opening five state mine-rescue teams, equipped with oxygen breathing apparatus, each team consisting of six trained men, were furnished through their respective captains with a map showing the underground development, the location of the fire and the probable location of the bodies of the seven victims. An airtight lock was constructed over the airshaft, its general dimensions being as follows: Chamber over shaft, 9 ft. 4 in. wide, 9 ft. 4 in. long, 30 ft. high.

Immediately north of this chamber and separated from it by an airtight door an air lock 21 ft. 5 in. long, 6 ft. 3 in. wide and 6 ft. 9 in. high was constructed. This was provided with an exterior airtight door, affording ingress and egress. The inner door was located 5 ft. 2 in. from the shaft curb, the distance between the inner and outer doors being 15 ft. 3 in., which was sufficient to accommodate a timber car loaded with the 12-ft. lumber used for temporary stoppings.

The framework of this temporary construction was of 3 x 4-in. material, the sheeting consisting of 1 x 8-in. shiplap laid double with one thickness of building paper between. The top was covered with one thickness of byrkett lath made airtight with a thick coating of wood-fiber plaster. Two ordinary house windows were inserted in the wall for lighting purposes. An accom-

TABLE I. COMPARISON OF INSIDE AND OUTSIDE TEMPERATURES WITH VARIATIONS IN WATER GAGE

1921	Weather	Outside Temp. Hour	Outside Temp. Deg. F.	Inside Temp. Hour	Inside Temp. Deg. F.	Max. Range Hour	Max. Range Plus Inches	Water Gage Hour	Water Gage Minus Inches
Feb. 26	Fair, clear					3 p.m.	0.1	10 a.m.	0.0
Feb. 27	Fair, clear					2 p.m.	0.0	3 p.m.	0.1
Feb. 28	Fair, clear						0.0		0.0
Mar. 1	Fair, clear	3 p.m.	65	3 p.m.	62		0.0		0.0
Mar. 2	Cloudy								0.1
Mar. 3	Fair, cool					10 a.m.	0.0	1 a.m.	0.1
Mar. 4	Fair, cool	2 p.m.	69	2 p.m.	60	10 a.m.	0.0	1 a.m.	0.1
Mar. 5	Fair, windy	1 p.m.	70	1 p.m.	66	5 p.m.	0.2	10 p.m.	0.1
Mar. 6	Rain	12 noon	68	11 a.m.	64	10 a.m.	0.2	8 a.m.	0.1
Mar. 7	Rain and fog	2 p.m.	64	2 p.m.	58	4 p.m.	0.1	8 a.m.	0.1
Mar. 8	Rain	3 p.m.	68	3 p.m.	65			8 a.m.	0.1
Mar. 9	Clear and fair	2 p.m.	54	2 p.m.	56	4 p.m.	0.1	10 a.m.	0.1
Mar. 10	Bright and warm	3 p.m.	64	3 p.m.	59		0.0		0.0
Mar. 11	Bright and warm	12 noon	64	12 noon	60	4 p.m.	0.1	8 p.m.	0.1
Mar. 12	Rain a.m., sunny p.m.	1 p.m.	70	1 p.m.	68	2 a.m.	0.1	8 a.m.	0.1
Mar. 13	Warm and sunny	4 p.m.	74	4 p.m.	72		0.0	8 a.m.	0.1
Mar. 14	Rain a.m., sunny p.m.	4 p.m.	76	4 p.m.	72	2 a.m.	0.1		0.0
Mar. 15	Bright and warm	3 p.m.	82	3 p.m.	70	4 p.m.	0.1	6 p.m.	0.1
Mar. 16	Cool and clear	3 p.m.	66	3 p.m.	60	12 noon	0.0	1 a.m.	0.1
Mar. 17	Bright and warm	11 a.m.	70	11 a.m.	58	10 a.m.	0.0	2 p.m.	0.1
Mar. 18	Clear and windy	11 a.m.	76	1 p.m.	59	12 noon	0.0	10 a.m.	0.1

TABLE II.—ANALYSIS OF AIR IN KATHLEEN MINE, DOWELL, ILLINOIS, SUBSEQUENT TO FIRE OF FEB. 23, 1921

Shafts sealed at 5 a.m., Feb. 24, 1921, air-shaft opened March. 16, 1921

Date Sampled	From	Analysis Made At	Carbon Dioxide (CO_2)	Oxygen (O_2)	Methane (CH_4)	Carbon Monoxide (CO)	Nitrogen (N_2)	Total
Mar. 1*	Air-shaft seal	Urbana	4 6	8 3	4 3	0 5	82 3	100 0
Mar. 1†	Drill hole	Urbana	7 4	3 1	4 4	0 3	84 8	100 0
Mar. 1†	Airshaft seal	Urbana	4 4	3 9	6 8	0 3	84 6	100 0
Mar. 1†	Drill hole	Urbana	5 0	2 1	7 9	0 3	84 7	100 0
Mar. 17	Airshaft seal	Urbana	4 4	2 4	8 8	0 5	83 9	100 0
Mar. 17	Airshaft seal	Urbana	4 2	2 5	8 3	0 5	84 5	100 0
Mar. 17	Airshaft bottom	Urbana	4 0	3 2	8 8	0 2	83 8	100 0
Mar. 17	Airshaft bottom	Car No. 6	4 0	3 2	8 1		Not taken	
Mar. 17†	Drill hole	Urbana	4 5	1 8	10 4	0 5	82 6	100 0
Mar. 18	Airshaft bottom	Car No. 6	3 6	4 8	12 0		Not taken	
Mar. 19	Airshaft bottom	Car No. 6	3 6	6 0	12 6		Not taken	
Mar. 19	Airshaft bottom	Urbana	3 4	4 4	8 0	0 2	84 0	100 0
Mar. 19†	Drill hole	Car No. 6	4 4	3 2	12 8		Not taken	
Mar. 20	450 ft. North of shaft	Car No. 6	3 8	3 6	13 5		Not taken	
Mar. 22	1,000 ft. Northwest of shaft	Car No. 6	4 0	3 6	13 5		Not taken	
Mar. 23	1,000 ft. Northwest of shaft	Car No. 6	3 8	4 6	12 9		Not taken	
Mar. 24	Northwest entry near fir t south	Car No. 6	4 3	2 2	15 6		Not taken	
Mar. 24	First south off main west	Car No. 6	4 0	1 8	15 0		Not taken	
Mar. 24	Northwest aircourse near third south	Car No. 6	3 6	4 0	10 2		Not taken	
Mar. 24	Northwest haulage near third south	Urbana	3 6	4 0	10 2	0 1	83 1	100 0

* Taken from pipe extending about four ft. below seal.

† Taken from top of pipe in borehole driven to parting at end of fourth north entry about 600 ft. from where fire started.

Analyses shown as made at Urbana were made by the laboratory of the U. S. Bureau of Mines at Urbana, Ill.; those shown a made by Car No. 6 were made by the engineer in charge of the U. S. Bureau of Mines, Car No. 6, using portable apparatus.

panying illustration shows the general external appearance of the lock.

To forestall any possible failure to raise the cage in the event that a disarrangement of the power line supplying the electric hoist should cut off the supply of energy while the helmet men were below, a steam hoist, a steel line and sinking tub were fitted up, thus making quick emergency egress possible. In this connection it should be stated that the concrete shaft lining and the solid concrete and paving-brick construction employed in the fan house and in the air ducts made it readily possible to provide a thoroughly airtight seal. Beyond doubt this was an important factor in the early reopening of the mine.

After the lock was completed and the restoration forces were thoroughly organized, the airshaft seal was lifted on March 17. An oxygen breathing-apparatus team entered the mine on the following day, March 18, using the cage to descend to the mine bottom 231 ft. from the surface. The mine was found to be clear of smoke and the temperature to be 60 deg. F. The work of establishing a fresh-air base at the shaft bottom was then begun.

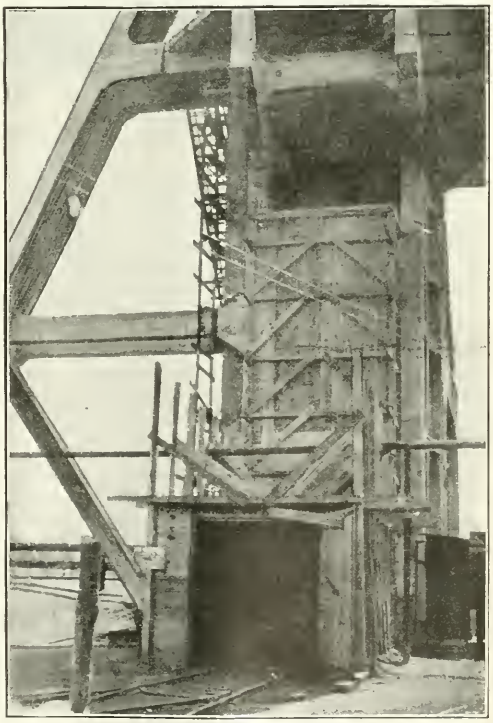
Fan, Steam-Driven, Made to E haust Slowly

To this end five seals were quickly constructed of byrkett lath and wood-fiber plaster, and after a brick stopping had been removed the fan was started exhausting and driven as slowly as possible by means of its auxiliary steam drive. Thus pure air soon displaced the gaseous mixture at the bottom of the shaft. The analysis of air samples taken at various points is set forth in Table II.

Steady shrinkage in oxygen content from 8.3 per cent on March 1 to 2.5 per cent on March 17 proved the effectiveness of the two shaft seals as well as that of those applied to the fan chamber. To consume the oxygen within the mine would require the burning of about 50 tons of coal, for the total volume of the void within the mine resulting from the extraction of coal and top material approximated 700,000 cu.yd. The increase in methane (CH_4) content from 4.3 per cent on March 1 to 16 per cent on March 24 was noticeable, suggesting an appreciable explosive hazard deserving the closest attention during the recovery period.

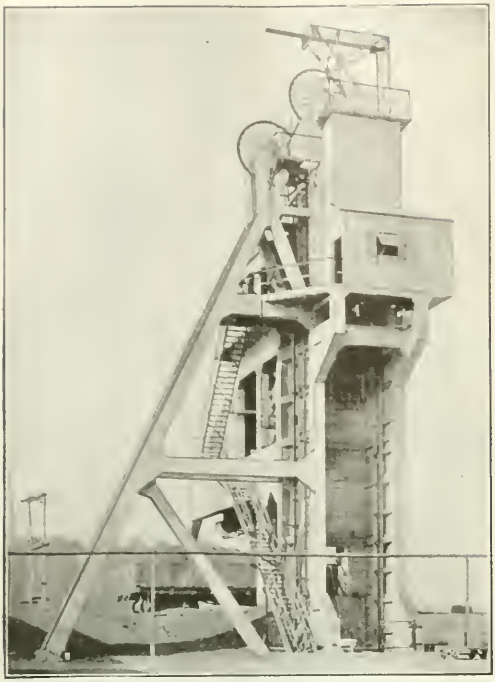
At 9:30 p.m., March 20, a second advance of 500 ft. was completed and at 2 p.m., March 22, five additional seals brought the air into the bottom of the main west entry about 700 ft. from the airshaft. At 2 p.m., March 24, with the completion of ten additional seals, fresh air was brought within 500 ft. of the fire zone. Examination beyond this point showed that all three entries were heavily caved and that, immediately below the falls, the temperature was about 79 deg. F. Three additional stoppings immediately below the fire zone were completed at 4 p.m., March 25.

As no further advance could be made by way of the main west entry, the men were withdrawn from the



AIR LOCK ENABLING CARS TO BE LOWERED WITHOUT ADMITTING AIR TO SHAFT

Built of 1 x 8-in. shiplap laid double with one thickness of building paper between. Top was covered with one thickness of byrkett lath made airtight with a thick coating of wood-fiber plaster.



HOISTING SHAFT AT KATHLEEN MINE

The careful concreting of the shaft and the solid concrete and paving-brick construction in the fan house and air ducts made it possible to shut the air off completely. This was an important factor in the mine recovery.

mine and, after removing the seal above the main shaft, the fan was started on pressure—that is, blowing—at normal speed. On March 28 the gas men entered the mine and made a complete examination. It was found to be free from explosive gas and the bodies of the seven victims were located in the parting off the third north entry, as before mentioned.

After the removal of the bodies on the morning of March 29 an exploration of the west end of the fire zone was made. The fire area was found to be restricted to the three main west entries, not reaching into the third and fourth cross entries. Although no smoke or visible evidence of active combustion was found at the west end of the fire zone the temperature at this point stood at 85 deg. F. With the construction of three stoppings above the fire line the burned area, about 250 ft. in length, was completely isolated. On April 6, with six concrete seals in place and surrounding the fire zone, the production of coal was resumed.

Ascertain Main Haulageway Had Caved Most

On May 28 the two outside concrete seals at the lower or eastern end of the fire zone were removed after two doors had been constructed below them. Then, with all except two gas men withdrawn from the mine, about 20,000 cu.ft. of air per minute was driven through the fire area. The temperature at the time of unsealing was 80 deg. F.

On May 29 a partial exploration of the caved entries was made. This showed that the left-hand or intake entry was heavily caved for 130 ft. of its length. The right-hand or return entry was similarly caved for a distance of 90 ft., and the center or main haulageway was found to be heavily caved for a distance of 200 ft. This entry showed evidence of having been subjected to the most intense action of the fire, the two outside entries being less severely damaged.

With gas men in constant attendance the air movement through the fire area was continued throughout the night of May 29, the temperature of the return air current rising gradually until it reached 170 deg. F. at 10 a.m., May 30. At this point the doors were closed and the concrete seals restored. It was evident that a hot coked or semi-coked mass at some point within the fire area had retained ignition heat. With the resealing of the place the temperature of the gas sampled through a valve in the lower central seal quickly dropped to 70 deg. F. The fire area will be kept sealed for a period sufficiently long to insure the complete exhaustion of all inclosed air and the extinction of the fire. A new roadway, developed to reach the territory beyond the sealed area, is now being used.

Barometric Pressure Rises One-Half Inch

Only one alarming situation developed in connection with the work of recovery. Until the seal was taken off the airshaft an extremely uniform barometric pressure was experienced. At 6 p.m. on March 20, however, the barometer stood at 29 in., thereafter rising gradually, until it reached 29.50 in. after twenty-four hours, this pressure being maintained for sixteen hours. At 10 a.m. on March 22 the barometer stood at 29.51 in. and thereafter gradually dropped for fifty hours, reaching its lowest point, 28.64 in., at noon of March 24. The fall thus occurring in fifty hours amounted to 0.87 in., equal to 11.82 in. of water, or an air pressure of 61.5 lb. per square foot. In the twenty-four hours preceding 2 a.m., March 24, the barometer fell 0.52 in., equal to a water gage of approximately 7 in. or an air pressure of 36.4 lb. per square foot, causing gas to leak past the temporary stoppings, thus forcing the men working without helmets outbye to withdraw from the mine. This experience demonstrated the value of careful barometric studies in the conduct of recovery work.

Top Coal Fell, Bringing Down Trolley Wire

Any study of this accident would be incomplete without some conclusion being drawn as to the cause of the fire. An empty trip had passed through the main haulage entry about twenty minutes before the fire was discovered. The entry was clean of all combustible material other than coal, no oil or explosives were in the vicinity, and no explosion of any kind occurred at this point.

The conclusion may be reached, therefore, that the trolley wire supported from the top coal, which throughout the entire southern Illinois field is left up to protect the shale roof, became loosened and fell, bringing the wire down onto a new section of track, laid with 40-lb. rail and put in a place only a few hours before, after a derailment. Failure to replace immediately the bonds, which it is the practice to arc-weld into position on the return, made an arc of serious proportions possible, the insufficient return preventing the circuit breaker from operating to cut off the current. Under such circumstances as these the fallen top coal would offer a splendid vehicle for the quick spread of a fire.

The brief period intervening between the sealing of the shaft and the reopening of the mine was made pos-

sible to a large extent by the character of the shaft and top construction employed, the fan, fan house and air duct making airtight sealing a reality. While it is not customary to anticipate the sealing of shafts in advance, the engineer designing the top works can without expense readily give consideration to such a contingency.

The Illinois State Director of Mines and his staff conducted the work of recovery throughout and were ably assisted by the representatives of the U. S. Bureau of Mines, which, as before stated made the necessary analyses of gas shown in the accompanying table. This work was thorough and painstaking. Extraordinary precautions were taken to insure that all helmet men were in perfect physical condition and a competent physician and surgeon was in attendance at all times.

Gas Being Plentiful, Unusual Care Taken

In addition, a man with extensive experience in the use and maintenance of helmet equipment scrutinized every man and the condition of his breathing apparatus as he stepped into the lock chamber. Where it was necessary to take down brick and tile stoppings these were removed by digging the fireclay from beneath them. No sledges were used in the explosive-gas area, and the temporary stoppings constructed of timber were put up with small nails driven with copper hammers.

Outstanding details in connection with the work were: (a) The careful analysis of gas samples taken at frequent intervals, which showed a loss of oxygen content in the mine atmosphere indicating the rapid exhaustion of the fire. (b) The painstaking study and planning of recovery operations done in advance, giving every man connected with the work a full opportunity to acquaint himself, through the medium of the mine map, with the exact situation. No suggestion from whatever source was considered unworthy of careful consideration. (c) Though the helmet crews worked in continuous shifts to accelerate recovery, no undue haste was permitted, and no one was allowed to go an undue distance ahead of fresh air. This made it possible to carry out a man who might from sickness or accident to his apparatus need a quick removal to fresh air.

Well Equipped with Fire Extinguishers

The foot of the airshaft of the Kathleen mine is equipped with a water line and portable chemical extinguishers are placed at every door and parting. A telephone service is maintained underground. A fire-foam engine is kept on the surface and a duplex carbon-dioxide extinguisher holding eighty gallons of chemical, quickly refillable from a water car, stands at the bottom ready for movement anywhere within the mine. In addition to these precautions a pressure tank mounted on wheels which will hold about 350 gallons of water under air pressure is being constructed for use in the mine workings. These two underground extinguishers are each equipped with 100 ft. of hose and fire nozzles. Permissible explosives are used for shooting the coal, which is undercut by chain mining machines. No other fire trouble than the one just related has ever been experienced in this mine.

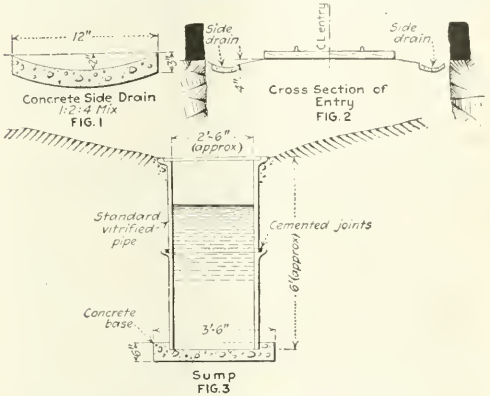
Experience gained in subduing this mine fire is here set forth in detail with the thought that it may be of value to mine managers and superintendents generally and that as a result the occurrence of similar disasters may be prevented.

Concrete Drain and Vitrified-Pipe or Precast-Cement Sumps for Mines

By O. H. Hampsch
Nashville, Tenn.

A simple and inexpensive side drain for underground roads may be built of concrete, as shown in Fig. 1. I have used such a drain along main entries where considerable wash has occurred on the roadway. This design is a modification of that used in highway construction by the Department of Public Roads and where conditions are favorable serves its purpose well. If properly constructed, these gutters will drain with a grade of 2½ to 3 in. per 100 ft. They may be placed upon either or both sides of the roadway, as necessity may require. A cross-section of an entry provided with these drains is shown in Fig. 2.

A simple and convenient sump for a gathering pump may be used in connection with the drains above mentioned. A neat construction of this kind, as shown



DRAIN AND SUMP FOR HAULAGE ROAD
Sump has capacity of 228 gallons. A tile 3-ft. in diameter will give a sumpage of 318 gallons.

in Fig. 3, may be built of two vitrified sewer pipes set on a concrete base with the joint between them carefully cemented to make it watertight. If constructed with the dimensions shown, such a sump has a capacity of 228 gallons, while a tile 3 ft. in diameter and of the same height gives a capacity of 318 gallons. Such a sump is much to be preferred if a larger capacity than that afforded by the 2-ft. sewer tile is desired.

This sump affords a much neater and cleaner appearance than one made by merely digging a hole in the mine bottom. Standard vitrified sewer pipe usually may be procured locally and is easily placed in position. I should judge that precast cement pipe would answer the purpose equally as well as the vitrified tile, although I have never used this material. The dimensions shown on the accompanying drawings are those that have been successfully used in mines with which I am familiar. They might be altered or changed to suit other conditions as to volume and capacity and are here presented merely as a guide and a suggestion.

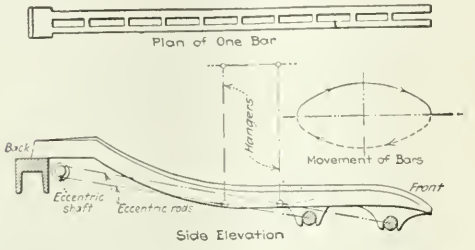
COAL AGE INDEX

The indexes to "Coal Age" are furnished free to all who ask for them. The index for the first half of 1921 is ready for distribution, and a copy can be had by addressing a post-card to the subscription department of "Coal Age."

Device to Prevent Slack from Riding Over Screen Holes on Lump Coal

By John S. Watts
New Glasgow N. S.

WHERE run-of-mine coal containing a fair percentage of lump size is discharged into a shaking screen from the weighpan in batches of a ton or more at a time much of the small material rides across the screen upon the larger pieces. In order to overcome this difficulty and compel the small coal to pass through and the lumps to go over, the bar screen shown in the accompanying illustration was devised.



SCREEN BAR WITH ECCENTRIC MOTION TO ROLL COAL OVER

The advantage of a shaker screen over a gravity screen is that the fine coal cannot use the large as a sled over the holes in the screen. The revolving screen is the best size segregator of all if it were not for breakage. The shaker illustrated gives a motion which make it almost impossible for the fines to ride the lumps and does it without breaking the coal.

Referring to the side elevation it may be seen that the bars are supported movably at the rear end and the forward ends of alternate bars move under the action of eccentrics set 180 deg. apart. The eccentric rods, one pair if which is longer than the other pair, are hung at points about two-thirds of their length from the eccentric. The lower ends of alternate bars thus receive a similar but opposite elliptical motion, one being depressed and drawn backward while the other is elevated and thrust forward.

As a result coal resting upon the screen is first raised are carried forward by one half the bars, then by the other half. Lumps thus agitated of necessity spill off any material that may be resting upon them. This goes through the screen bars, the larger pieces passing on over the end. Furthermore, the vertical movement of the bars prevents any possibility of their becoming choked or clogged.

Ammonia Formed by Oxidation of Coal

TESTIFYING before the Committee on Spontaneous Combustion of the British Mines Department, Frank S. Sinnatt, head of the experiment station of the Lancashire & Cheshire Coal Association, said that experiments had shown that when coal is exposed to the air, ammonia is one of the earliest oxidation products. The quantity of ammonia obtainable from coal with mild oxidation will reduce the nitrogen content in the coal 8 to 10 per cent. In other words, the nitrogen compounds may be the most liable of all to oxidation, and the way in which the air acts on them may predispose the coal to spontaneous combustion.

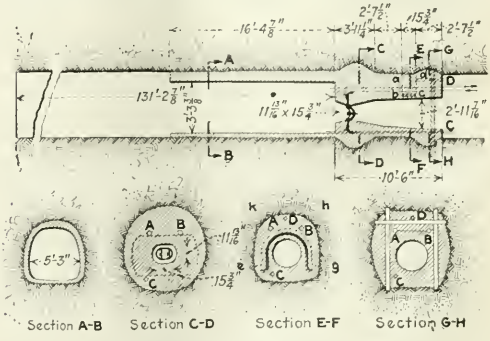
Dr. J. S. Haldane declared that not only marcasite but the cubical pyrite would oxidize freely when broken up. He had taken a lot of bright cubes of pyrite with edges still undulled from the slates of an old roof in a Scotch house which had been in place possibly one hundred years. Tested under ordinary conditions nothing happened, but broken up they oxidized rapidly. Dr. Haldane declared that pressure and breakage are what cause certain coals to catch fire underground. The coal that oxidized first was not the coal that first became hot. Given a crevice in the coal through which the air can pass, the coal will heat near the surface and pass through the crevice, steadily heating and oxidizing the coal that lies beyond and nearer the heart of the pillar. It is this coal which first creates a "gob-stink."

Storing Compressed Air in Rock Reservoir

A CHAMBER for the storage of compressed air has been constructed at the Hasard-Fléron colliery, in the Liége coal field of Belgium. It is described by M. Delbrouck in the *Annales des Mines de Belgique*. A blind heading close to the hoisting shaft at a depth of 702 ft. was closed at the open end by a reinforced-concrete wall. The reservoir thus made is 131 ft. 2⅜ in. long and has a capacity of 4,767 cu.ft., the air being admitted at a pressure of 71.11 lb. per square inch, but this is to be increased to 99.56 lb. per square inch.

To strengthen the walls rails were embedded in it. An opening was left in the center to give access to the reservoir. This is normally closed by a manhole cover taken from a disused boiler, the surrounding plate being embedded in the concrete (see Section *C — D*). Two 6-in. pipes were carried through the wall, one serving for the admission and the other for the discharge of compressed air. A 1-in. pipe (*C*) furnished with a valve serves as a means of letting out the air into the mine.

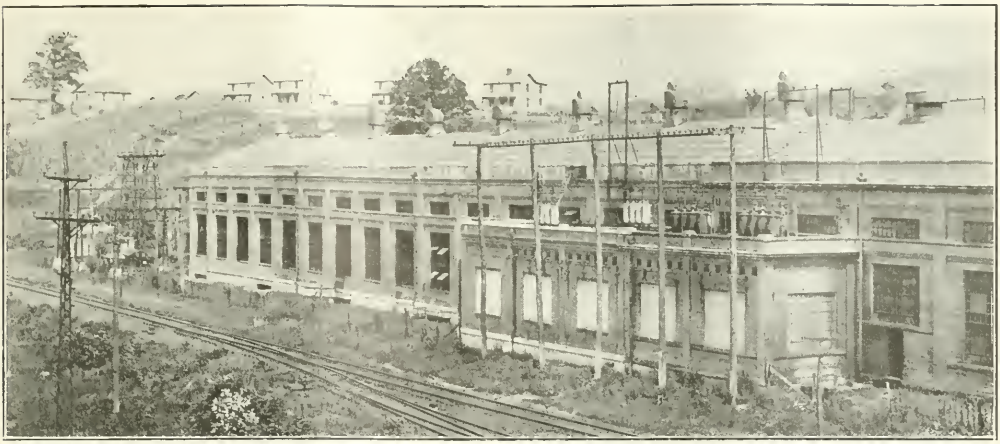
In constructing the dam an open space was left, represented by *a b c d* in the longitudinal section and by *e g h k* in the section on *EF*, a pipe (*D*) 2 in. in diameter giving admittance to this chamber. Though *D* a slow-setting liquid cement was injected under a pressure of 198½ lb. per square inch so as to fill all the fissures in the surrounding rock and the interstices left between



AIR RESERVOIR IN THE SOLID ROCK

Pressure will be about 100 lb. per sq. in. The chamber will hold 5,000 cu.ft. measuring as it does roughly 6 ft. x 6 ft. where unlined. Pressure falls in chamber about 1½ lb. in five hours.

it and the retaining wall. The proportion of cement in the mixture was gradually increased to 50 per cent. The results have been most satisfactory. Air was admitted to this natural tank at a pressure of 99.56 lb. per square inch, and five hours later the pressure had fallen only 1.42 lb.



HUTCHINSON CENTRAL POWER PLANT OF CONSOLIDATION COAL CO., WITH WESTINGHOUSE AND GENERAL ELECTRIC LIGHTNING ARRESTERS OF ELECTROLYTIC TYPE

How to Guard Electrical Equipment by Fuses, Starting Devices, Independent and Tie Circuit Breakers*

Overload Relays Tested by Opening One Phase at a Time—Substitutes for Starting Devices—Power Failure Causes Fuse to Blow—Starters Should Not Be Determined by Capacity of Motor—Many Advantages of Circuit Breakers

By B. F. Grimm†
Fairmont, W. Va.

AS IT is apparently impossible to procure electrical devices that will maintain their accuracy, equipment of this kind should be given frequent inspections and careful tests. In many instances the apparatus already installed may be caused to prove its own condition and no additional testing instruments will be needed. In large operations it is not always practicable for inspectors to make proper tests at all the mines. It is always possible, however, to instruct the men at the various operations how they can try out and adjust the protective devices. Weekly reports should be required showing that proper tests and adjustments have been made.

A simple method of testing overload relays on three-phase alternating-current induction motors is to open one phase at a time. The machine should then draw a heavy single-phase current, on which the relays should operate and trip the motor-starting device. It has been found safe to open single-pole knife switches on 2,200-volt circuits feeding three-phase motors of capacities up to 150 hp. By opening all three switches, one at a time, but reclosing each before the next is pulled out, a complete test will be made of all relays as well as of the low-voltage release that is usually installed.

I have heard the statement made that three-phase motors are safer without fuses than they are when provided with them. Such impressions doubtless were gained from installations where fuses were installed in the main incoming line of sufficient capacity to carry the starting currents. With this arrangement, when mishap would befall one of the fuses, the motor would continue to operate on current drawn through the other two.

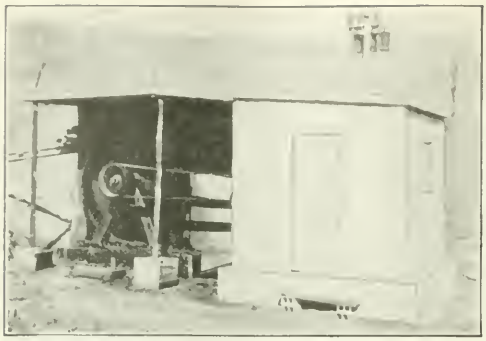
These might be of a capacity three times the current rating of the motor. If sufficient load were on the machine it might then carry three times its rated current, and as the heat generated in the windings varies as the square of the current, it would then generate nine times its normal heat. This would be sure to roast the windings in an extremely short period.

Three motor-driven fan installations have recently been damaged or destroyed. In two of these cases alternating-current motors were completely roasted because the protective devices did not function properly, and in the other instance proper overload protection had not been provided. One of the three fan motors was rated at 86 amp. and the current actually consumed by this machine was 85 amp. This motor was installed with an old type of starting compensator not furnished with overload current coils. No fuses were provided. The transformers serving this motor were fitted with fuses, but it was necessary to select them with a capacity suited to a starting current approximately three times as great as that required in running. This motor was belt-connected to its fan.

One night a bearing burned out, and as a result the motor and the three transformers were completely roasted. While another motor and new transformers

*First installment of an article read before the West Virginia Coal Mining Institute at its Fairmont meeting, June 7, 1921, and entitled "Protection of Electric Equipment in Coal-Mining Service." The second installment, entitled "Guarding Transformers and Rotaries from Overload and Entire Installation from Lightning and Surges," will appear next week.

†Superintendent, Power and Mechanical Department, West Virginia Division, The Consolidation Coal Co.



FAN INSTALLATION THAT WAS ROASTED

Motor had an old type of starting compensator not furnished with overload current coils. The motor was not supplied with fuses, reliance being placed on the fuses installed on the transformers, but they had to be of a capacity three times the running current of 85 amp. As a result of a hot bearing the motor and three transformers were completely roasted.

were being installed the mine lost a day's tonnage. When the second machine was put into position, three fuses of proper rating were placed on the running side of the starting compensator. It will be impossible for burn-outs such as those just mentioned to occur again so long as these fuses are in the circuit.

As has been stated, this motor normaliy takes 85 amp. Tests show that it will consume 181 amp. when running single-phase. Sometimes one wire fails on the transmission line to which this motor is connected and the motor going on single phase takes 181 instead of 85 amp. As the present fuses are rated at 90 amp. the fuse will blow and the motor stop as soon as this wire is out.

In order to be able to use fuses of proper size, suitable starting devices should be provided either to limit the starting current or to relieve the fuses from carrying it. If the installation does not warrant the purchase of a suitable starting device, a good makeshift can be provided by installing a single-, double-, or triple-pole switch, preferably one provided with a spring suited to the conditions. This will bridge the fuses during the starting period. The attendant should be carefully impressed with the importance of opening this switch as soon as the start has been made.

Much Trouble with Small Pump Motors

Large numbers of 2-hp. direct-current pump motors in service in the mines have been completely burned out because of insufficient protection. Some of these machines were equipped with hand-starting rheostats and 10-amp. fuses. As the current rating of these motors varies from 8 to 10 amp., this protection should be ample. It was found, however, that the pumpers would tie the rheostats in the running position and bridge the fuses, so that when anything happened to cause an overload on the motor no protection would be afforded and the motor accordingly would be burned out.

After testing various automatic starters, it was finally decided to install such devices on all 2-hp. pump motors in the mines. These starters are of the current-limit type. They consist of two contactors mounted on a slate base under which suitable starting resistance is installed and the entire contrivance placed within a steel cabinet box. A single-pole knife switch and a 10-amp. fuse is connected between the positive line and the motor. The starter is connected between the motor and the negative line.

When the knife switch is closed the starting current traverses all of the starting resistance and No. 1 contactor coil. The motor begins to revolve, and as it gains speed the current flowing through the armature becomes smaller. When the current is reduced to a certain quantity, contactor No. 1 closes and short-circuits part of the starting resistance. The motor continues to gain speed and the starting current continues to decrease until finally No. 2 contactor closes and short-circuits all the starting resistance, also No. 1 and No. 2 contactor coils. This allows No. 1 contactor to open, but No. 2 is held closed by a shunt coil as long as there is as much as 35 per cent of normal line voltage. Good results have been obtained with these starters and the mine superintendents and foremen are well pleased with them.

Power Failure Causes Blowing of Fuse

A few of these devices have been found, however, that will not work with a 10-amp. fuse in the circuit. This is because the second contactor remains closed when the mine circuit fails. When power is restored the motor starts with full line voltage, and sufficient current is taken to blow a 10-amp. fuse. At first it was thought that with some starters the reason why the fuse failed to hold was because the shunt coil held the second contactor closed, even when the mine voltage was pulled very low by a heavily-loaded locomotive. This permitted the motor, when the potential returned to normal, to draw such an excessive instantaneous current that the fuse would be blown out.

Recent tests made on a 2-hp. 220-volt shunt-wound pump motor with a 4½-amp. load at 250 volts showed that if the line pressure dropped to 30 volts with No. 2 contactor remaining closed and then suddenly went up to 250 volts the fuse would hold. By decreasing the voltage still further to 25 and then suddenly restoring it to 250 the fuse would blow.

As a mine voltage below 100 on a 250-volt circuit is rare, I do not believe that a fuse is likely to blow because of any sudden fluctuations of potential even if the last contactor remains closed.

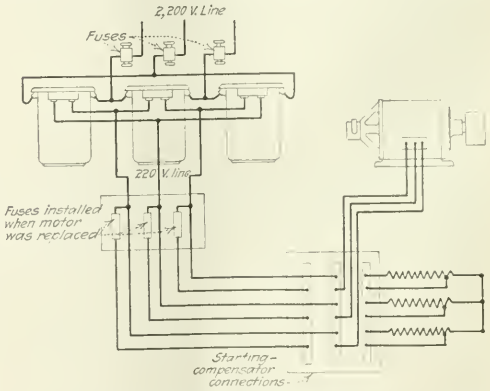


DIAGRAM OF WIRING FOR INSTALLATION IN UPPER LEFT CORNER OF PAGE

Fuses have been provided for the motor as well as the transformers and these fuses are on the conductors through which the current passes in normal running and not in starting. These give satisfactory service when of a capacity only 5 amp. above running load.

Two other types of starters are on the market. One of these cuts out the starting resistance in definite periods of time; the other cuts out this resistance as the voltage across the armature increases. As the result desired is a limitation of the current, it seems most logical to design the starter so that it will operate as a direct result of variation in the value of the starting current.

Furnish Starter to Suit Current Input

It should be kept in mind when using automatic starters of the current-limit type that the current and voltage rating of the starters should correspond with the actual operating conditions and not necessarily with the name-plate rating of the motor. Experiments were conducted for some time with a 30-hp. automatic starter on a 30-hp. mine-fan motor. The starting resistance would burn out in a few days after being installed, and it was impossible to adjust the contacts to prevent this result. Finally a 15-hp. automatic starter was substituted. This gave perfect satisfaction. The current input to the motor corresponded to a 12- to 13-hp. load. The trouble with the 30-hp. starter evidently arose from lack of sufficient current to close the contactors. This allowed the motor current to pass through the starting resistance.

Mine Fires Lessened by Circuit Breakers

Protection of line circuits from overloads and shorts should receive careful consideration, especially in large mines. Such protection is necessary in order to prevent the mine fires as well as avert the shutdowns which short circuits may cause. In the past many serious mine fires have started from the short-circuiting of current. When by reason of falls of slate trolley wires drop down or sag they are liable to come in contact with mine cars thus starting fires.

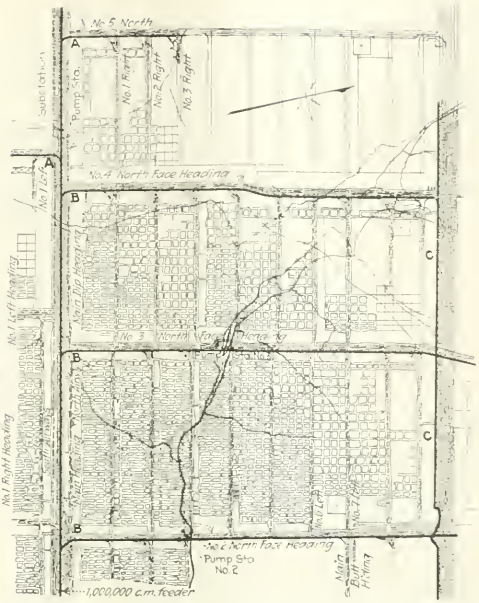
It has been found that these troubles can be prevented by the use of automatic reclosing circuit breakers. These instruments open instantly when the current flow exceeds their setting. If the excessive current is due to a short circuit, the breaker will remain open as long as the conditions causing the short circuit are sustained.

The use of these breakers on branch headings often saves many shutdowns to the entire mine. With a circuit breaker installed on the various branch headings short circuits on one of them put out of service only the feeder and trolley wires on this particular heading, mining operations on the other headings continuing without interference.

There are two general types of automatic reclosing circuit breakers. The first is known as the independent feeder and the second as the tie feeder, or the sectionalizing type. An independent feeder supplies all the power to the load to which it is connected. It is the only feeder to that load, and the breaker in such a line controls the entire current input to the load circuit. When a load circuit is supplied with power from more than one source a tie feeder is used. Such a feeder is in multiple with one or more similar connections from the same or other sources of power, and is tied in with or joined to such other feeders through the load circuit.

Open at Any Predetermined Current Value

Both these types of breakers can be adjusted to open at any predetermined current value. They also can be set to stay open as long as a dead short or an excessive



SECTION OF MAP OF A CONSOLIDATION COAL CO. MINE
At A and B are independent feeders. When the cables at C can be connected the automatic reclosing circuit breakers at B will be converted to tie breakers so that current may pass through them in either direction as need may arise.

demand remains connected to the load side of the breaker. They also may be so set as to remain open through a definite time interval varying between one second and one minute or more. With this adjustment the breaker will remain open until the time setting has expired, even if the overload or short is removed before that period has elapsed. An independent feeder breaker should not be installed in place of the sectionalizing breaker, as under such circumstances its control coil would be burned out.

The Consolidation Coal Co. has had an independent feeder breaker in service for several years at one of its substations in Pennsylvania. This substation is several hundred yards from a tipple, which is the closest point where men are on duty. The instrument gives better service than can be expected from a manually-operated circuit breaker with a substation attendant always at hand. No time is lost in reclosing the circuit after the overload or short circuit has been removed. With a substation attendant appreciable time may be wasted in this manner each day, especially if overloads or short circuits are of frequent occurrence. This would result in tonnage losses correspondingly large.

Hope to Cut Out Short-Circuits and Fires

Another independent feeder breaker has been in service about one year in a substation in the West Virginia division. This has given the company perfect satisfaction. At the end of each day's shift the setting of the breaker is made low, so that though only the mine pump is being operated through the night, protection from light short-circuits or overloads is afforded to the mine feeder.

Five automatic reclosing circuit breakers have been installed and in service for several months. Nineteen

additional breakers have been purchased for three other operations, and they are being put in place on branch circuits. It is hoped to eliminate the shutting down of entire mines because of "shorts" and also to forestall fire hazards arising from this cause.

With ineffective track bonding a line wire might conceivably fall down on a mine car or on the rails without drawing sufficient current to trip the circuit breaker. Frequent tests should be conducted to see that the breaker is ready to function whenever its action is needed. Dead short-circuits should be made purposely between the feeders or trolley wires and the rails at places remote from the breakers. If the bonding is insufficient, this test will reveal the fact.

Fighting a Dump Fire with Gunite and Carbon Dioxide

Dump Fire Under New Building is Quenched by Sodium Bicarbonate and Foundation Solidified by Cement Gun—Heat of Fire Changes Bicarbonate to Carbonate, Releasing a Dampening Cloud of Carbon Dioxide

By Alphonse F. Brosky
Pittsburgh, Pa

DUMP fires are among the most difficult conflagrations to fight, and little improvement has been made in the methods of coping with them, though they are by no means rare and nearly every coal town has one or more to contend with. In fighting dump fires, as in extinguishing flames in coal-storage piles, the main difficulty is in reaching the source.

Usually the fire does not manifest itself until it has spread over a large area—especially is this true where an impervious blanket of clay or soil covers the dump. The surest means of combating it is to remove the ignited material and then provide means to prevent future outbreaks. In many cases the future security of the dump from ignition cannot be provided for. Many dumps contain wood and oil-bearing shales which provide excellent opportunities for spontaneous combustion and for the support of the fire once it is started.

An interesting fire recently took place in a dump at Wheeling, W. Va., which, while it was not a mine dump and its burning did not jeopardize a mine building, gives valuable suggestions as to methods of combating such conflagrations. This fire threatened at one time the destruction of an addition to the Central Glass Works, which addition was constructed only three years ago. The older part of the plant rests on a white sandstone formation, but it was necessary to extend the addition over the dump, which consisted of cinder, slag, brickbats, soil, clay and many kinds of material which, like those in the ordinary mine dump, seemed little likely to permit or support combustion.

The dump at its maximum depth, as determined by boreholes, is about 30 ft. deep, and it extends for several acres. Until it caught fire it showed no sign of settlement or lateral movement. Without a doubt the high compressive strength of the bulk of the material of which it was composed, together with its good binding qualities and the filling of the interstices with small particles, formed a compact mass fully equal to the task of supporting the building placed on it. Therefore at the time the annex was built the dump was considered safe. That this belief was justified has been proven by the true alignment maintained by the annex during the three years of its existence.

In the spring the company built a large steel-ribbed smokestack on the fill, placing it between the annex and the creek. The stack was connected to the furnaces, located in the older building, by means of a subterranean firebrick flue which penetrated the dump. In June, last, the company began to notice an increase in the temperature about the plant. The temperature gradually climbed until in spots the surface became so warm that the bare hand could not be held on it. It was then that actual damage to the building began. The concrete floors commenced to buckle and heave, settlement of the building was noticed, and cracks appeared in the walls. At the time of my visit the building had settled fully 1½ ft. at one place, the once rectangular window openings had taken a pronounced rhomboidal form, and many large cracks were visible.

Gunite Injected Into the Smoldering Mass

In order to check this settling, and at the same time attempt to stop the fire, a cement gun was used to inject a 1-to-5 gunite at a pressure of 50 lb. The hottest spots were first determined by driving down solid metal rods at various places and noting the comparative temperatures over the region. The men in charge approximated the affected area at one acre. Steel pipes with a diameter of 1¼ in. were driven down into the selected points, and gunite was discharged into the dump.

The nozzle of the gun was fastened to the pipe by means of an ordinary union. The holes in the water ring of the nozzle body were drilled out to twice the standard diameter to allow a larger amount of water to be used than in ordinary gunite work with the purpose of providing a more permeable mix. Where regions under the annex were affected the concrete floor was removed. In this manner 200 barrels of cement and 1,000 barrels of sand were used.

The gunite was found to have traveled many feet from the point of entrance. Wherever the gunite penetrated, satisfactory results were obtained. At such places a gradual decrease in the temperature was noticed, and the injection of the gunite possibly prevented dangerous cavings of the burned out cavities.

It was not possible, however, to place the material as fast as the fire spread. Evidently it was making rapid headway. The company then decided to abandon temporarily the cement gun as a fire extinguisher, intending to use it later to solidify the dump after the fire had been quenched by quicker means. This decision led to the trial of chemical fire-fighting apparatus.

The method adopted is known as the Thomas system, which depends on the smothering effect of carbon dioxide. A sodium-bicarbonate (baking-soda) solution made up of 20 lb. of the soda to 150 gallons of water is used, which breaks up, on the application of enough heat, into sodium carbonate and carbon dioxide. The latter,

being heavier than air, sinks to the bottom of the fill, and accumulates as a huge cloud, thus choking the fire.

The solution is pumped at 50 lb. pressure through ¾-in. pipes 10 ft. long, at the rate of 150 gallons per minute, the pump used being manufactured by the American Steam Pump Co., of Battle Creek, Mich. It is an internally-packed type, 10 x 16 in., the steam end being compounded. The solution is made up in a Thomas fire-control mixer, which is easily attached.

This device automatically proportions the correct amounts of soda and water used. The claims made for the Thomas system are: (1) It provides the quenching effects which water when used alone will afford, with the smothering effects due to the carbon dioxide liberated at the surface of the burning material. (2) A sealing and fireproofing effect is furnished by the carbon dioxide. (3) A chilling effect is caused by the heat absorption necessary to break up the bicarbonate of soda. (4) With a limited supply of water the efficiency of the water is increased many times by the addition of the soda. (5) The bicarbonate solution is inexpensive.

How Rank of Eastern Coal Changes with Location*

Generally Speaking the Volatile Matter and Moisture Decrease as the East Is Approached, but the Decline in Volatile Matter Starts Not Far From the Pennsylvania-Ohio Line

By R. Dawson Hall†
New York City

THOUGH coming with some authority the expression "coal rank" or "rank of coal" has not become properly established in the coal industry which still likes to speak in broad terms of "coal quality," using that word to cover four entirely different considerations: (1) The freedom of the coal from ash and sulphur, (2) the low percentage of volatile matter, (3) the absence of weathering, and (4) the freedom from clinkering.

Coal rank is an expression which has reference to the degree of mineralization of the coal as expressed by the ratio between the fixed carbon and the volatile constituents in the moisture-free coal, the moisture which comes off below the boiling point not being considered as a true part of the coal. As it has often been expressed, coal rank is based on the ratio of fixed carbon to volatile matter "in the true coal substance," though it cannot be said that the fixed carbon and the material driven off in coking above the boiling point constitute all the material that is truly coal. Much of the ash and also of the sulphur is intrinsic and really part of the coal. No plant life can exist without ash-forming substances and the combustion of present-day wood or plants does not give an ashless product. Nevertheless in its brevity and popular appeal the expression "true coal substance" is not without advantages.

To illustrate the relation between the rank of coal and its location in the northern half of the eastern fields of the United States, a map, three tables and three graphs have been prepared. Fig. 1 shows a map of the region referred to with three lines radiating from Gettysburg, Pa. Fig. 2 shows the percentages of volatile matter in the "true coal substance" (as commonly but erroneously defined), as they occur along the long due-east line.

It will be noted how the percentage increases rapidly at first as progress is made toward the West, which in the graph is to the right. After Bellaire, Ohio, is reached, however, the change is small and before Bellaire some reduction in the vertical uplift of the curve is to be noted. When Missouri is reached the percentages of volatile matter are found to be extremely irregular.

The small spots near the bottom of the diagram show how the moisture percentage changes. In general that percentage increases markedly toward the West. Note the jump when Illinois is reached and the similarity of its moisture percentage to that of the Missouri coal. The moisture percentage though lower in Pennsylvania is somewhat irregular, but too much stress must not be put on this fact when the moisture is low as all chemists know this figure is quite erratic, some of the moisture being mechanically combined and not a real part of the coal.

A few of the points on the graphs are of coal found at places somewhat off the lines drawn in Fig. 1, it

*Part of an address delivered before New Haven Section, American Chemical Society.

†Editor, *Coal Age*.

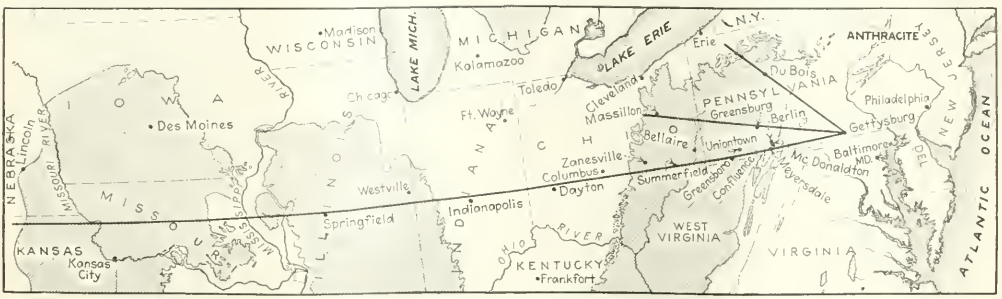


FIG. 1. NORTHERN HALF OF COAL FIELDS IN EASTERN HALF OF UNITED STATES
Three lines radiating from Gettysburg are drawn. Along these lines on a reduced or increased scale as the case may be, the three graphs in Figs. 2, 3 and 4 are plotted.

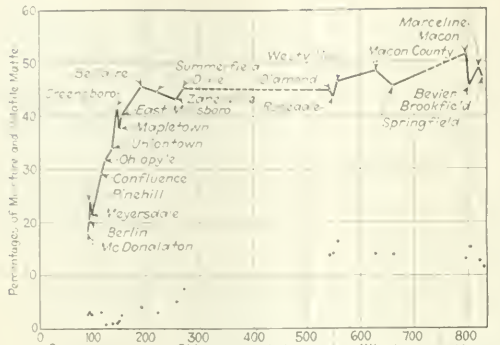


FIG. 2. VOLATILE MATTER AND MOISTURE ON GETTYSBURG-SPRINGFIELD LINE

Percentages of volatile matter increase rapidly westward till Bellaire is reached, after which the figure is always high, but varies somewhat irregularly.

being difficult to get enough analyses along any given line. The distances are figured radially from Gettysburg and therefore practically as a projection on the basal line between Gettysburg and Springfield, Ill.

Fig. 2 shows a line between Gettysburg and Massillon, Ohio. This line barely cuts the Broad Top field in which Hopewell is found. The coal at that town has, however, been introduced into the graph and it will be noted that instead of being more mineralized than that at Winber it is less far advanced toward anthracitization. It will be noted that from Hopewell to Winber is about seventy-five miles and for the most part between these two points there is no coal, the Broad Top area being a carbon-insula well removed from the main Appalachian field. It will be observed here as in Fig. 2 that the coal in the East is in general more completely mineralized than that to the west of it, and that the moisture content increases as the coal is traced westward. As the scale of distance in the three graphs is not the same the steepness of the slopes in the three cannot be compared.

In Fig. 4 is shown the line passing from Gettysburg to Brockwayville, Pa. It runs into and out of the coal area. A slight irregularity occurs near Houtzdale and

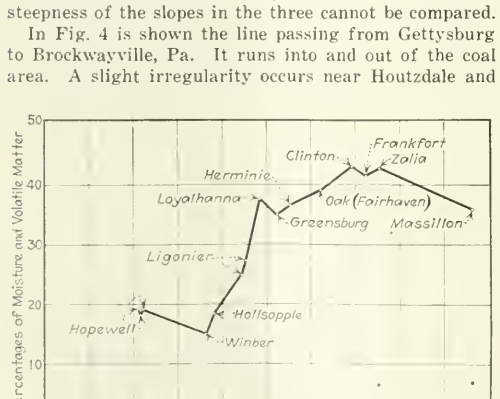


FIG. 3. SAME DATA ON GETTYSBURG-MASSILLON LINE

Hopewell which is a trifle north of this line has a somewhat high percentage of volatile matter for a point so far east. The rise is steady, from Winber westward, till after the Pennsylvania-West Virginia Line is reached, when apparently a slight decrease takes place.

Smoke Run, Pa., which may possibly be accounted for by the mineralizing effect of the fault in the first basin, which occurs in that neighborhood.

TABLE I. VOLATILE MATTER AND MOISTURE OF COAL ALONG A LINE TEN MILES SOUTH OF FORTIETH PARALLEL

Locality	Distance	Volatile Matter	Moisture	Bed
Pennsylvania, Adams County				
Gettysburg				
Somerset County				
Macdonaldtown	92	18 2	2 6	Lower Kittanning
Berlin	94	20 4	3 0	Upper Freeport
Pinehill	95	24 1		Little Pittsburgh
Meyersdale	96	21 3	2 7	Pittsburgh
Confluence	116	29 2	2 8	
Fayette County				
*Ohiopyle	122½	31 8	0 7	Lower Freeport
*Uniontown	136	34 0	1 0	Pittsburgh
Greene County				
*Greensboro	145	41 6	1 0	Pittsburgh
*Mapletown	148	37 6	1 3	Sewickley
*East Millsboro (Fayette County)	150	40 0	2 5	Pittsburgh
Ohio State Line	178			
Ohio Belmont County,				
Bellaire and State Line	190	45 4	4 1	Pittsburgh
Noble County				
*Summerfield	220	44 5	3 1	Meigs Creek
Muskingum County				
*Zanesville	255	43 1	5 1	Upper Freeport
Perry County				
Dixie	268	45 2	7 6	Middle Kittanning
State Line	406			
Indiana, Parke County				
Diamond	543	44 7	13 7	Brazil Block
Rosedale	548	43 4	13 9	Brazil Block
Vermilion County				
State Line	550			
Illinois, Vermilion County				
2 m. S. of Westville	556	46 5	16 2	No. 6
Macon County				
Unspecified		47 1	15 6	No. 6
Unspecified	628	48 3	13 6	No. 5
Unspecified	628	48 2	14 8	No. 5
Sangamon County				
Springfield	660	45 4	13 9	No 5
State line	743			
Missouri, Macon County				
Macon	797	51 4	13 0	Mulky
1 m. S. of Bevier	801	48 8	13 8	Bevier
1½ m. S. of Bevier	801	44 90	16 5	Bevier
2 m. S. of Bevier	801	44 74	15 3	Bevier
2½ m. S. of Bevier	801	45 4	13 8	Bevier
Linn County				
Marceline	821	49 1	12 5	Tebo
Brookfield	828	47 0	11 4	Tebo

* Where analyses are marked with a star they are from State Geological Reports which, being made before methods of analysis were fully standardized, are subject to correction.

TABLE II. VOLATILE MATTER AND MOISTURE OF COAL ALONG GETTYSBURG-FOSTORIA LINE

Locality	Distance	Volatile Matter	Moisture	Bed
Pennsylvania, Adams County				
Gettysburg				
Bedford County				
3½ m. S.E. of Hopewell	52½	19 3	1 3	Barnett
3 m. S.E. of Hopewell	53	18 0	1 7	Barnett
2 m. S.E. of Hopewell	54	18 8	1 2	Upper Freeport or Kelley
2 m. E. of Hopewell	54½	18 9	1 6	Upper Freeport or Kelley
Somerset County				
Winber	90	14 5	2 4	Lower Kittanning
Winber	90	15 5	2 5	Lower Kittanning
Winber	90	14 0	3 3	Lower Kittanning
Winber	90	13 5	2 5	Lower Kittanning
Winber	90	13 5	3 0	Upper Kittanning
Hollsopple	95	18 4	2 5	Lower Kittanning
Westmoreland County				
3 m. S.E. of Ligonier	110	25 0	2 6	Upper Freeport
3 m. N. of Ligonier	112½	26 9 / 27 1	3 3 / 2 8	Pittsburgh / Pittsburgh
*Loyalhanna	120	37 8	0 9	Upper Freeport
4 m. No. of Greensburg	130	34 4 / 34 7	2 7 / 2 8	Pittsburgh / Pittsburgh
Herminie	137	35 4 / 36 6	2 8 / 2 0	Pittsburgh / Pittsburgh
Allegheny County				
Oak (Fairhaven)	154	38 8	3 5	Pittsburgh
Clinton	172	42 8	3 4	Pittsburgh
Beaver County				
Frankfort	180	41 4	2 5	Pittsburgh
West Virginia State Line	184½			
West Virginia, Hancock County				
Zalia	187	40 52	6 5	Rogers
Zalia	187	42 4	4 2	Mahoning
Ohio State Line, Virginia	192½			
Ohio Stark County				
Massillon	239½	36 0	6 95	Sharon

Line passes through Franklin, Fulton, Bedford, Somerset, Westmoreland, Allegheny and Beaver Counties in Pennsylvania, Hancock County in the Pan Handle of West Virginia, Columbiana, Carroll and Stark Counties in Ohio. It runs almost through Chambersburg, Latrobe, Pittsburgh and Tiffin. Its course is about N. 73°, 24' W. For meaning of asterisk, see Table I.

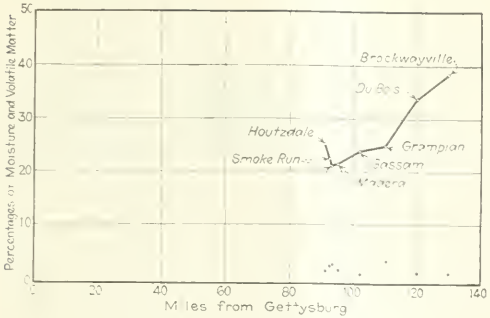


FIG. 4. SAME DATA ON GETTYSBURG-BROCKWAYVILLE LINE

The Houtzdale coal appears to have a larger percentage of volatile matter than Smoke Run or Madera or even Gassam, which are further to the West. But with this exception the general rule of the eastern half of the United States is observed—"More west, more volatile matter."

TABLE III. VOLATILE MATTER AND MOISTURE OF COAL ALONG GETTYSBURG-DUBOIS LINE.

Locality	Distance	Volatile Matter	Moisture		Bed
Adams County					
Gettysburg					
Clearfield County					
Houtzdale	91	26	3	2 3	Brookville
1½ m. W. of Smoke Run	92½	23	5	3 2	Miller or B
3½ m. S. E. of Smoke Run	93	22	2	3 4	Miller or B
Madera	95	22	5	2 4	Brookville or A
Gassam	102	25	0	1 9	Lower Freeport
¼ m. W. of Grampian	110	26	0	4 1	Lower Freeport
3½ m. S. of Du Bois	120	34	8	2 0	Lower Freeport
Jefferson County					
1 m. W. of Brockwayville	130	39	4	1 9	Lower Freeport
1 m. W. of Brockwayville	130	37	0	3 10	Upper Freeport
1 m. W. of Brockwayville	130	39	3	1 9	Lower Kittanning
About end of coal	134				

Line goes through Huntingdon, Tyrone, DuBois and Brockwayville, crossing Cumberland, Huntingdon, Blair, Clearfield, Jefferson and Forest Counties. Its direction is N. 42°, 37' W.

Returns to Mine for Tools and Is Killed: Should Company Pay Compensation?

THE Pennsylvania Workmen's Compensation Board in the appeal by the Hudson Coal Co., of Scranton, from the award of compensation by Referee Lewis, District No. 9, to Apolonia Osika and others, has set aside the award of the referee and has disallowed compensation. The opinion was written by Chairman Harry A. Mackey.

When the case first came before the referee he found that Louis Osika, the deceased husband of the claimant, had been an employee of the Hudson company and that on Feb. 14, 1920, the deceased had actually worked for the last time for the defendant. He also found that because Osika had received burns at his own home he could not return to the premises of the defendant until March 10, 1920.

On that day he went to the Delaware mine of the company and asked permission of the assistant mine foreman to go into the mine for his tools. This request was granted and he arranged with a car runner to take his tools out of the mine. Following the route customary for men to take who leave that part of the mine, Osika was struck by a trip of mine cars and his death followed the same day. The referee found that the right to go into the mines to get his tools was part of his contract of hiring and that the company reserved the right to inspect the tools before they were removed.

The referee also found that the deceased had never been discharged and that his absence from work was due to his injury at home. He held that Osika before he had actually quit the premises was in the course of his employment and that "having met with an accident upon the employer's premises, due to the operation of the employer's business, his widow would be entitled to recover compensation."

The case then came before the board upon appeal and the board returned it to the referee with the observation that the deceased might have visited the mine merely for the purpose of taking his tools away in order to work for some other employer. The referee reassembled the facts, as he understood the testimony without further hearing, repeating his original findings.

The board merely affirmed the findings of fact and conclusions of law and then there was an appeal to the Court of Common Pleas of Luzerne County. The decision in the case said in part:

"We do not believe that the compensation law was intended to cover, or should be construed to cover, such a case. It seems to us the relationship between the defendant and the deceased, as employee and employer, had been clearly severed, notwithstanding his right to bring out tools. His act in so doing inured to his exclusive benefit, not being in furtherance of his employer's business or in the course of his employment. If this be so, the referee's finding of fact is not supported by competent evidence, and we have the power, under the amended Act of 1919, to reverse him and remit the record for further hearing on that ground."

No further testimony was produced at the subsequent hearing, and the record, the board says, is now exactly the same as it was when before the Luzerne court upon appeal.

"In deference to the learned opinion of this able and distinguished court," writes Chairman Mackey, "we feel that we have no other course than to reverse the referee's conclusions of law, and find that under the facts as stated, as found by him, the relationship of employee and employer did not exist between Louis Osika and the Hudson Coal Co. upon the day of the accident, as described in the testimony; that when he sought and gained permission to remove his tools from the premises he was not furthering the interests of his employer, that he was not in the course of his employment, and that when he was injured he was only, as far as the compensation law is concerned, a stranger to the employer and not entitled to protection under the act."

Gets Wet and Dies: Compensation Awarded

IN AN opinion on an appeal by the defendant from an award of compensation by Referee Seidel, district No. 2, in the case of Mrs. Katie O'Shute, against the Lehigh Valley Coal Co., Wilkes-Barre, Pa., the Pennsylvania Workmen's Compensation Board makes an award of $6,895.17 to the claimant for herself and for four minor children, payments covering varying periods up to 300 weeks.

The claimant's deceased husband, Thomas O'Shute, was in the employ of the defendant company at its Packer No. 4 Colliery on Feb. 26, 1920, as a contract miner. With another employee he was in a manway preparing to discharge a shot of dynamite when water broke through from another part of the mine and he was carried down the chute into the gangway and his clothes were wet through. He walked to his home, a mile distant, and while on the way his clothes became frozen. The next day he worked until noon, when he complained of being ill and returned home. The next day a physician diagnosed his case as that of influenza pneumonia, of which he died March 5, 1920.

The opinion, written by Commissioner Benjamin Jarrett, finds that death was due to the wet clothes, which reduced the miner's vital resistance, and that the decedent met with the accident while actually engaged in the furtherance of the business of the defendant. The widow is awarded a total of $3,600 for the 300-week period and the remainder of the award is for the children, with the exception of $100 allowed for funeral expenses.

COMPENSATION FOR LOSS OF USE OF ARM DOES NOT PREVENT RECOVERY FOR SUBSEQUENT INJURY TO ARM.—Commissioner Jarrett decides that Carlo Demuzio is entited to compensation for injury to an arm, though he had previously been awarded compensation when he lost the use of it in another accident. The opinion of the commissioner quotes the decision of Justice Trexler of the State Supreme Court rendered July 14, 1921, which said:

"To illustrate, a man may have lost the permanent use of his arm and nevertheless, if still able to work, be entitled to receive compensation for the time lost due to an injury subsequently occurring to the useless member."

Problems of Operating Men

Edited by James T. Beard

Cutting Pillars With Machines

The Advancing System of Working Coal Makes It Possible to Widen the Rooms on the Inby Side and Still Cut The Pillars on the Straight Rib Protected by the Solid Coal

AFTER reading the inquiry of J. D. Rogers, *Coal Age*, April 28, p. 757, and the discussion that followed later in regard to cutting the pillars with machines, allow me to describe briefly the method employed by the Lena Rue Coal Co., in their mines at Lena Rue, Kentucky.

The coal is mined on the advancing system of working, which makes it possible to widen the rooms inby. When drawing the pillars the machines start to cut on the rib side, which affords the men the protection of the solid coal yet to be worked. In other words, the cut is advanced in the direction toward the gob.

General Plan of Working

As shown in the accompanying figure, the main headings are driven four abreast, the two center headings being made the haulage road and intake airway, respectively. The cross-entries are driven on the butts and the rooms turned on one side only and driven up on the face of the coal.

A principal feature of this method of working consists in three pairs of cross-entries forming a panel. The first rooms in this panel are turned off the third entry, which is furthest inby. Robbing is started as soon as each room reaches its limit.

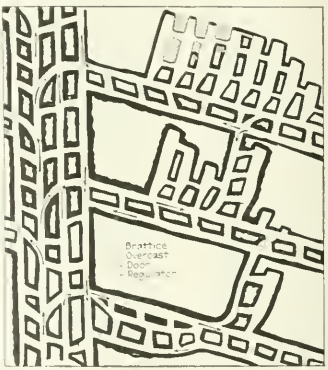
As the work advances, a haulway or cutoff is driven across from the second pair of entries to the third, for the purpose of cutting out the third entry and allowing the entry pillars and stumps to be drawn at the same time when the room pillars are drawn back.

Robbing Back the Pillars

As soon as the haulway cutting off a portion of the third entry is completed, the line of robbing is extended across these rooms and entries and they are closed, as indicated by the hatching in the figure. The coal from the remaining rooms is then hauled out through the cutoff to the second pair of entries. This will require some of the coal coming from the rooms outby being backswitched to the cutoff.

Later, a similar cutoff is driven from the first pair of entries in the panel to the second pair; and, as the work progresses still further, the line of robbing is extended across the second pair of entries and these are closed. All the coal is now taken out through the cutoff to the first pair of entries in the panel.

In this manner the work is advanced, until all the coal in that panel is recovered, when the entry pillars and stumps on the first pair of entries are drawn back. As far as possible, each room is started so that it will be driven up when the line of robbing crosses



THREE PAIRS OF BUTTS FORM PANEL

the room. This allows the pillars to be drawn back on the same steel by which the rooms are driven.

As previously stated, this arrangement permits the rooms to be widened on the inby side and affords every advantage to start the machine on the straight rib and work toward the gob. This seems to give the workmen a greater feeling of security than when cutting from the gob side of the pillar.

It is up to the foreman to use sufficient timber to properly control the breakline and insure the complete extraction of the pillars. It is customary in our mines for the engineering corps to make frequent visits to the section, and place a mark in each room as a guide for the foreman to keep the line of robbing straight.

In closing, let me say that the entire mine is ventilated on the same plan as that outlined in *Coal Age*, June 9, p. 1043, where the main entries are shown as driven four abreast. Each panel, consisting of three pairs of cross-entries, in our mine, is ventilated by a single split of air. Overcasts are built at the mouth of the first and second pair of cross-entries to conduct the return air over the haulage road, in each case. There is no overcast built at the mouth of the third pair of entries, because of these entries being closed in so short a time by the cutoff connecting them with the second pair of entries.

FRED ROSS,
Harlan, Ky. Mining Engineer.

Pushing vs. Pulling Mine Car Trips

Cost of haulage increased when locomotive is pushing a trip of cars. Wheels hug the rails, spreading them apart, causing derailments and wrecks. More power is required than when pulling the trip.

REFERRING to the interesting question asked by Mine Foreman S. A. Bowes, *Coal Age*, June 30, p. 1165, my experience in mine haulage convinces me that the problem presented here should receive the careful consideration of all practical readers of *Coal Age*. It is one that involves either success or failure in the operation of the mine.

In general, let me say it is a decided disadvantage and never practicable to push a trip of loaded cars with a mine locomotive. I would advise this mine foreman not to undertake to follow such a practice.

In pushing a loaded trip of cars in a mine with a locomotive, the car wheels and flanges hug the rails more closely and bind, producing a much greater friction and rail resistance than when the locomotive is pulling the trip. The result is that more power will be required in the former case than in the latter; and more coal will be burned at the powerhouse for the same service in the mine.

Cost of Upkeep and Repairs Increased

In addition to these facts, it can be said that when a locomotive is pushing the cars the service is much harder on the machine, which means an increase in the cost of upkeep and repairs. Pushing a loaded trip has a tendency also to spread the rails when rounding a curve in the track. The strain opens the joints and tends to cause more frequent derailment of cars, by reason of broken rails and ties. It can also be assumed that the upkeep of the track will be greater, for the same reason.

Again, it will generally be found that there will be more coal wasted by falling from the cars along the track when the locomotive is pushing the trip than when the trip is hauled out of the mine.

Attention has already been called to the fact that when a locomotive is pushing a trip of cars the triprider is riding the front car and his signals cannot be seen by the motorman when the trip is rounding a curve. It may happen that slate has fallen on the track, or a car may be derailed, or the trolley wire may be down. In any case, the triprider is lucky if he escapes alive.

All mining men will agree that a wreck occurring when hauling a trip is a very costly proposition in respect to the loss of time, the expense of clearing the track and making the necessary repairs to the cars and perhaps retimbering the entry. The delay will cause the loss of several trips and, in the meantime, the men at the shaft bottom and on the tipple will be standing idle, which means a decrease in tonnage and increased cost of operation.

Estimating Weight of Locomotive Required To Handle Output

Making a few figures on this proposition, I find that, in order to handle an output of 2,400 tons of coal, in a shift of eight hours, with a single locomotive, assuming it is possible to make four trips an hour, it will be necessary to haul $2,400 \div (4 \times 8) = 75$ tons. This will require, say thirty-eight 2-ton cars and make the weight of the entire loaded trip, including the weight of the cars, say 120 tons.

Now, allowing for a drawbar pull of 30 lb. per ton, makes this pull $120 \times 30 = 3,600$ lb. or 1.8 tons. Then, estimating the weight of the locomotive resting on the drivers as 5 times the drawbar pull, the weight of locomotive required for this haulage would be 5×1.8 equals 9 tons.

In regard to the difficulty experienced in attempting to shunt the cars into the rotary dump when the locomotive is pulling the trip, let me suggest there should be provided a run-a-round track that would permit the locomotive to get behind the trip and push the cars into the dump. Or, perhaps the track can be raised so as to give a grade that would enable the cars to be run into the dump by gravity. Oscar H. Jones.

Crawford, Tenn.

Working Under Surface Reserve

Where the operator owns the coal rights only, careful study must be made of the nature of the overlying strata and a method of working employed that will avoid damage to the surface.

WORKING coal under a surface reserve demands the taking of every precaution to prevent the roof breaking to the surface. The possibility of such an occurrence increases with a shallow cover and a comparatively thick seam of coal to be extracted. Like precautions must be taken in the mining of two seams of coal separated by a moderate thickness of intervening strata.

My attention has been drawn to this matter by the question discussed in *Coal Age*, May 5, p. 825, relative to a case where the operator owned the coal rights only. It has always been my practice, in such cases, to make a particular study of the nature of the overlying strata, before attempting mining operations.

In one instance, the seam of coal worked was overlaid with a good thickness of strong sandrock. My experience told me that to break this rock and avoid damage to the surface, would require the complete extraction of the coal over a very large area, unless effective measures were adopted to create a fall of roof as the face advanced.

Conditions That Control Mining in the Lower Seam of Coal

In the mining of a lower seam of coal that is separated from an overlying seam by but a few feet of strata, there is a limit to the extent to which operations can be pushed in the lower seam if the mining of the coal in the upper seam is considered from an economic standpoint

Every mining man knows that there must be no excessive costs for timber and deadwork, in the storing of refuse or building of walls to prevent the undue settlement of the overlying strata when the coal in a lower seam is being taken out. In all such cases, the conditions must be carefully studied if the cost of production is to be kept low.

Where the roof of the coal is of such a nature that it will not fall beyond a possible loose pothole the seam can be mined to the limit if care is taken to leave pillars of sufficient width to support the overburden in the first working. Care must also be taken in the later robbing of the pillars, in order to preserve a uniform breakline and insure a gradual settlement of the roof on the waste.

Study Conditions in the Strata

In any case, the method adopted must be worked out by a careful study of the conditions in the overlying strata, the depth of cover, thickness and character of the coal and nature of the roof and floor enclosing the seam. This is essential if the coal is to be worked on an economical basis.

In the issue of *Coal Age*, Mar. 10, p. 455, a proposition was presented regarding the working of two seams of coal separated by 40 ft. of a hard sandy shale. The discussion that followed recalled a somewhat similar circumstance, in the working of a coal seam lying five fathoms (30 ft.) below a seam that had been opened a few years previously.

In that case, a slope was driven from the upper seam to reach the lower coal. While the coal in the upper seam was 8 ft. thick, that in the lower seam was only 3 ft. in thickness. The intervening strata I would describe as being a strong blue-metal slate, after the nature of a soapstone. The room-and-pillar method was used to work the lower seam and bottom was taken up on the roads for headroom and gobbed.

Chocks, or cribs, set 4 ft. apart each way, in three rows, were used to support the roof. As the face advanced the back row of cribs was taken out and reset near the face of the coal. The only trouble observed was that the coal in the lower seam did not work as freely as it should; the obstruction in the upper seam appeared to rob the coal of its life.

Owing to the thinness of the lower seam, the working face advanced more rapidly and was soon abreast of that in the seam above. It was then decided to change the plan and drive the developing entries in the lower seam on the butts and work the rooms on the face of the coal, which was the reverse of the conditions in the seam above.

At given distances, new slopes were put down, from the upper seam to the lower one, for ventilation and haulage. The entire plan was very successful and few accidents occurred, practically all of which were due to negligence or carelessness on the part of some workman.

Gans, Pa. R. W. Lightburn.

Guardrails in Room Switches

Guardrails should be avoided in laying a room switch, by using a No.-2 instead of a No.-1 frog.

REFERRING to the letter of an Indiana trackman, *Coal Age*, June 30, p. 1163, allow me to say that his suggestion of using guardrails in laying a room switch is wrong, in my opinion. The use of a No.-1 frog gives a very short turn. For a track gage of 3½ ft. the length of the leadrail is only 7 ft. when using a No.-1 frog.

Let me say that wherever it is possible, a No.-2 frog should be used in laying a room switch. This will give a 14-ft. leadrail and the turn will not be so short. When a guardrail is spiked to the ties at the latch, as shown in the sketch (p. 1163) there is every danger of its being torn out by the motor and cars passing over the switch.

My practice, which is quite common in this field, is to raise the outer rail of the track a few inches higher, at the point of switch. By doing this, there is seldom any trouble with cars leaving the rails. In no case would I use a frog number less than No. 1½. I much prefer using a No.-2 frog and setting the switch point 12 ft. back from the center of the room. Trackman,

Bicknell, Ind. American No. 1 Mine.

Choosing a Rope-Haulage System

Choice of system will depend on grade of slope, length of haul and other conditions. Examples of successful installations now in operation.

THERE is not sufficient data given, in the inquiry of a general manager of a mine in Missouri, *Coal Age*, June 23, p. 1126, regarding the best system of rope haulage to be adopted, in a certain slope opening, to enable a reliable answer to be given to that question.

As stated in the reply to the inquiry, the choice of a haulage system must be guided by a careful consideration of all conditions. The adoption of an engine-

plane haulage is dependent on the grade being sufficient to enable the descending empty cars to drag the rope back into the mine. If the slope is too long and the grade too light such a system will not work correctly.

My opinion is that either an endless-rope or an engine-plane system will generally give better results than a tailrope haulage. An endless-rope system can always be used on a moderate grade, where another system could not be operated to advantage. As has been explained, an endless-rope haulage is well adapted to the handling of a large and uniform output.

LARGE QUANTITIES HAULED BY ROPE

In this connection, allow me to mention three mines that are hoisting from four to five thousand tons of coal daily with rope haulage. The Eleanora mine, in Jefferson County, Pa., operating a slope having a grade of 3 per cent, employs an endless-rope haulage, the cars being attached to the rope by a simple grip device that is easily adjusted.

The coal is brought to the slope bottom in trips carrying from 60 to 80 tons each. The cars, being attached to the rope at intervals, are drawn up the slope and over 1,000 ft. of outside tramway. Owing to the light grade, it is necessary in this mine to operate a small tailrope system in handling the empty cars.

The Adrian and Florence mines of the same company have similar conditions, but are able to use an engine-plane haulage for hoisting cars. It should be stated, here, that when the slope is so long that the empties fail to drag the length of rope back to the bottom where the trips are made up the trouble can be overcome by having a small locomotive meet the trip at a point a short distance up the incline and haul it back to the bottom.

Pikeville, Ky. GEORGE EDWARDS.

[In a brief letter, Oscar H. Jones, Crawford, Tenn., expresses a decided preference for the endless-rope system of haulage, where the conditions are favorable, but gives nothing new regarding the choice of a rope system other than the points already mentioned.—EDITOR.]

Accident Bulletins

Printed bulletins describing and illustrating accidents, stating the cause and explaining how the same might have been avoided, are urged as a means of preventing such happening again.

VARIOUS references to safety and means of preventing mine accidents, which have appeared recently in *Coal Age*, prompt me to offer a suggestion that I firmly believe will help mine foremen and other officials in their efforts to reduce the number of accidents in their mines.

It is generally agreed that, in order to decrease the number of accidents that occur almost daily, we must educate the worker in respect to the dangers surrounding him in his work and show him the safest way to perform his task. This must be done, however, without increasing the burdens already resting on the mine foreman and his assistants, which is often given little thought.

My suggeston is that each coal company appoint a safety committee charged with the duty of investigating all accidents, as soon after their occurrence as possible, with a view to placing the blame on the person to whom it rightfully belongs. This committee must report its findings to the superintendent, who should be authorized to have it printed in the form of a bulletin for distribution among the miners.

The bulletin should be written in a clear and simple way, giving the name of the unfortunate victim and explaining how, with proper care and caution, he could have avoided the accident and saved his life. If possible, the way in which the accident occurred should be illustrated in a manner that will bring it clearly before the eye of the reader.

Such bulletins would cost a few dollars it is true, but one accident prevented would pay for all the bulletins printed in a year. To be effective, a copy of each bulletin should be given to every mine worker and, if necessary, explained to him in a way that will set him to thinking.

Indirectly, the bulletin will bring to the mind of each man, accidents that have happened to others and which might have come to themselves. The idea is not new, it having been tried with various modifications, from time to time, by different companies and often, possibly, discontinued after a short time.

My experience is that, no matter how hard I tried to explain an accident to my men, there were always some who failed to understand its meaning to them. A bulletin would have been a great help to me in that respect and would have saved considerable time and effort and been better understood by most of the men.

All mine workers are prone to take chances, at one time or another. It is my belief that publicity and education will cause many a man to be more careful to avoid danger, both for his own sake and that of his fellow workers and for the sake of his family. If this is the case, the company will profit and lives will be saved.

Firmly believing that this idea if carried out conscientiously will produce good results, I hope to see it thrashed out in *Coal Age* and learn the views of others in reference to the practicability of such a publicity scheme.

Johnstown, Pa. SUPER.

Inquiries Of General Interest

Rock Slope Fills with Water

A 45-Degree Slope, 700 Feet Long, Filled with Water When Within 100 Feet of Workings Below. Plan to Drive Up From Bottom Is Proposed

KINDLY permit me to ask the advice of *Coal Age* and its practical readers in regard to the advisability of adopting a plan that we have had under consideration for a considerable time, but have hesitated putting into execution because of the difference of opinion expressed regarding its absolute safety.

The situation is this: For the purpose of handling the output of the mine to better advantage in respect to shipping facilities, a rock slope was sunk from the surface and had been driven down 700 ft., on an inclination of 45 deg. when the work had to be temporarily abandoned owing to labor troubles. In the meantime, the slope filled to the surface with water.

When work was again to be resumed, the company faced the problem of unwatering the slope. The place had been driven 14 ft. wide and 7 ft. high, and was estimated to hold, approximately, 513,000 gal. of water. There being ample pumps in the mine, it was thought practicable to tap this body of water from below and let the mine pumps handle it in the regular channel through a lower opening.

It was proposed to start below and drive up, on the line of the slope, as far as would be safe. The rock is a hard, solid slate. But the question that has been argued is what pressure does this weight of water exert at the foot of the present slope and how close we could approach with safety.

———, Ky. SUPERINTENDENT.

Our reply to this question is that the only safe plan to adopt, in this case, is to bale or pump out the water from the surface. The pressure exerted by the water on the face of the slope excavation is $(0.707 \times 700 \times 7 \times 14 \times 62.5) \div 2{,}000 =$ say 1,515 tons, or 215 lb. per sq.in., nearly, which is very unsafe to work under.

Assuming the slope track is in good condition, a large sheet-iron skip, say 10 ft. long and 3 x 4 ft. in section, should be constructed, having a clapvalve at its lower end, and mounted on a truck. Making an average of, say 10 trips an hour, this skip would empty

the slope in less than eight 8-hr. shifts. An 8- or 10-hp. engine would be ample for this service, hauling at the rate of 6 mi. per hour.

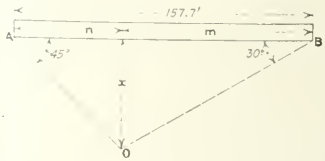
Truss Problem

REFERRING to the accompanying diagram, kindly show me how to calculate the distances m, n and x when the total length of the beam is 155.7 ft. and the two tierods BO and AO make an angle with the chord AB of 30 deg. and 45 deg., respectively.

Hazleton, Pa. STUDENT.

There are several methods of solving this problem, but probably the simplest is the following:

The tierod AO, making an angle of 45 deg. with the chord AB, the distance x is equal to the distance n. Again, the tierod BO, making an angle of 30 deg. with the chord AB, its length BO is twice the distance x, or $2x$; and, since the cosine of 30 deg. is 0.866 the distance m, measured on the chord, is $2x \times 0.866 = 1.732x$.



Then, since the sum of m and n is 157.7 ft., we write

$$x + 1.732x = x(1 + 1.732) = 157.7$$
$$2.732x = 157.7$$
$$x = 157.7 \div 2.732 = 57.7 \text{ ft.}$$

Therefore, $n = x = 57.7$ ft., and $m = 157.7 - 57.7 = 100$ ft.

Examination Questions Answered

Bituminous Mine Inspectors' Examination Pittsburgh, Pa., March, 1921

(Selected Questions)

QUESTION—*In what seasons of the year and why are dangers from coal dust to be expected, and to what extent would you allow coal dust to accumulate or be deposited before considering it dangerous?*

ANSWER—The danger from the accumulation of dust in a mine is greater in the winter season when the outside air has a lower temperature than that of the mine. The result is that cooler air entering the mine has its capacity for absorbing moisture increased when its temperature is raised in the mine workings. This has the effect to absorb large quantities of moisture in the workings and dry out the mine, making it dusty and dangerous to a greater extent than in the summer season when these conditions are reversed.

An inspector or other mine official should never permit an avoidable accumulation of dust at the working faces or on the timbers, sides, roof and floor of the roads and airways throughout the mine. Every means should be adopted to avoid the dust being carried in suspension in the air current passing through the mine.

QUESTION—*(a) Give the most essential features of a good safety lamp; (b) When and where would you consider their use necessary? (c) Which do you prefer and why?*

ANSWER—(a) The essential features of a good safety lamp, for working, are the following: The lamp must give a good light, diffused at a broad angle upward on the roof and downward on the floor. The lamp must be simple in construction, of few parts and strong to withstand rough usage. It should be light and portable. The gauze chimney should be protected by a steel bonnet to exclude the dust and protect the flame from any sudden rush of air. The combustion chamber should be surrounded by a strong glass cylinder. Air should enter the lamp at a point below the flame to reduce the tendency to smoke to a minimum. A good pricker should be inserted in the lamp, or other means provided to raise and lower the wick and remove any crust that may form on the wick and impair the light. A good working lamp must not be too sensitive to gas.

(b) Safety lamps should be required whenever the condition of the mine air in any working place becomes explosive or inflammable, either from the presence of dust or gas. Where safety lamps are required to be used in any section or portion of a mine no open lights should be permitted elsewhere, except by the drivers on the main intake haulage road. Otherwise, the mine should be worked exclusively with safety lamps or equipped with electric cap lamps.

(c) Several types of working lamps have been approved by the Federal Bureau of Mines and a preference for one or the other will depend largely on the user of the lamp.

QUESTION—*How would you render first-aid to a victim of (a) asphyxiation from afterdamp; (b) asphyxiation from blackdamp; (c) suffering from powder burns; (d) suffering from electrick shock?*

ANSWER—(a) Remove the person promptly to fresh air if that can be quickly done. Loosen the clothing about the neck and chest. Place the man on his back on the ground with a coat or other bundle under his shoulders to elevate the chest. Turn the head to one side and see that the tongue is drawn forward so as not to obstruct the air passages in the throat. Proceed at once to give artificial respiration and continue this until there are signs of returning life or the person is pronounced dead by a physician. Keep the person warm with a dry coat or blanket to cover him. At the first signs of returning life, assist the circulation by rubbing the limbs toward the heart. When breathing has been restored put the patient to bed, giving no food other than hot beef tea or a drink of hot coffee.

(b) The same treatment applies also to asphyxiation by blackdamp.

(c) Burns from powder, flaming gas or electricity must be promptly treated by applying a thin paste of bicarbonate of soda (baking soda), starch or flour to exclude the air. Vaseline, lard, cream, olive or castor oil are all good. Deep burns require the prompt attention of a physician.

(d) For electric shock, if the person is unconscious when removed from contact with the wire proceed to give artificial respiration and treat in the same manner as for asphyxiation by gas.

QUESTION—*A circular airway is 9,026 ft. in diameter and 1,000 ft. long; what is the rubbing surface and sectional area?*

ANSWER—The perimeter of this airway is $9.026 \times 3.1416 = 28.356$ ft.; and the rubbing surface is therefore $28.356 \times 1{,}000 = 28{,}356$ sq.ft.

The sectional area of the airway is $0.7854 \times 9.026^2 = 63.985$, say 64 sq.ft.

QUESTION—*Would it be an advantage or a disadvantage to connect the underground workings of two or more mines generating explosive gases? What dangers are most likely to occur?*

ANSWER—The chief advantage of connecting adjoining workings is that it provides another avenue of escape in case of accident blocking other roads and traveling ways. The opening between the workings of mines operated by different companies affords an easy way to connect the surveys and prevent any error in establishing the boundary between the properties and avoid dispute.

The disadvantages of such a plan are many. The ventilation is not under as good control. One of the mines may be drawing on the circulation in the other. Each mine is subject to accident by flooding in the other workings. The opening between the two mines, unless carefully guarded, permits access to either, making it possible for the men to visit and affords opportunity for pilfering tools and other supplies, causing discord and trouble and interfering with the discipline in each mine. Either mine may suffer by reason of the gas generated in the other workings.

Edwin Ludlow Defends Centralized Purchase of Railway Fuel

IN THE *Coal Age* of July 14 there appears an editorial under the caption of "Stabilization at a High Price," in which the proposition for better co-operation between the railroads and the coal miners was brushed aside on the sole ground that centralization of railroad coal purchases would be too high a price to pay for the stabilization.

In its opening sentence it says "Let the railroads stabilize the bituminous coal industry, is the scheme proposed by Edwin Ludlow before the Committee on Interstate Commerce of the Senate, in the hearing on the railroad situation." It would have been much fairer if this had read "Let the railroads do their fair share towards stabilizing the coal industry and reduce at the same time their own fuel costs."

The proposition that was brought before the Senate Committee on Interstate Commerce was made at the request of the Board of Engineering and Economics appointed by Mr. S. Davies Warfield, president of the National Association of Owners of Railroad Securities, and the object was to show to the Senate Committee the advantages and economies that could accrue through the grouping of various railroad systems that are now more or less competitive. These advantages are not imaginary but are based upon the railroads as a whole attaining the same economic results that certain railroads now have, due to their scientific method of purchasing.

To approach the situation properly a broad conception of the national fuel problem should be called into existence and it must be considered that until 1917 fuel was so cheap and apparently so plentiful that a scientific study of necessities of economies in its use was not considered as imperative as it is now, when the cost of fuel is from two to three times the pre-war price and with very little possibility of it ever selling at the low price prevailing before 1917. It is recognized that we no longer have fuel reserves of cheap coal and for the future must face a higher cost and, to do so, a scientific study should be made of the proper purchase of the coal for the most economical results. Some railroads have fuel agents that are carefully studying the subject but in the majority of cases, the fuel purchases are handled through the purchasing agent, who buys the coal as he buys other supplies—either taking what appears to him to be the cheapest, or else buying some special quality of coal that his operating men consider essential for use on their divisions.

It is necessary for the protection of the owners of railroad securities that every possible economy should be put into effect to avoid the taking over of the railroads by the Government, as will undoubtedly occur if interest on their bonds and stocks cannot be earned. The point emphasized in the statement was the possibilities for increased earnings to the railroads, and reduced fuel costs, by purchasing and storing during the summer at least 50 per cent of their consumption during the winter months, when transportation costs are the highest and when there is a demand for domestic fuel that would keep all their equipment thus released actively engaged in revenue producing freight. Secretary Hoover and Chairman Clark of the Interstate Commerce Commission have both urged the railroads to stock coal in summer and it was hoped that the railroad executives who were present at the hearing would see the importance of co-operation with the coal miners in their fuel purchasing.

The editorial gives the advantages enumerated, but states that the plan contemplates "no advantage to the railroads that are not already within their reach." This is perfectly true, but the fact is that with the exception of a very few railroads, those advantages, as enumerated, have never been reached by the railroads of the country. This the editorial also accepts when it states that "many now do it without the overseeing eye of a super purchasing agent." This is also perfectly true, and the object of presenting it before the Senate Committee was to show that the advantages now accruing to a few railroads and to the few coal mines with which they deal, could be extended all over the country if the methods of purchasing the fuel were placed on the same scientific and co-operative basis that is now being employed by these few railroads that are taken as an example of what can be done when the knowledge of how to do it is possessed by the parties in control of the purchasing of fuel.

It would appear that a paper such as *Coal Age*, supposed to be dedicated to the best interests of the coal business, would at least offer constructive criticism of a plan that confessedly goes towards stabilization of the industry, and against which the only objection advanced is the possibility of too much power being placed in the hands of one man in the purchasing of fuel for a group of roads rather than for one line only. It eliminates the psychological fact that large responsibilities bring almost automatically a wider vision; and the very necessity of dealing in such large tonnages as would be required in the purchasing of fuel for a large group of roads would in itself eliminate the methods that have been only too often adopted by some of the purchasing agents who felt that their only responsibility was in purchasing coal at a lower cost than anyone else, irrespective of the fuel cost of this coal when figured on the basis of the number of B.T.Us. in the dollar delivered on the locomotives.

During the year 1920 the fuel consumption by the railroads of bituminous coal amounted to 155,343,635 tons at a cost of $641,224,469. This amounts to over 25 per cent of the entire output of our bituminous mines. The railroads are further interested in the coal industry from the fact that they hauled 488,730,051 tons of coal and coke during the same year, amounting to 39.57 per cent of their entire freight business. The railroads as an industry are directly concerned with the prosperity of the coal business, and it is certainly the duty of the railroads, as well as to their financial advantage, to do everything in their power to stimulate the industry which produces the largest percentage of freight traffic, and not consider only the cost of the coal to themselves as fuel.

All that is required to solve the problem is a broader conception of the magnitude of the problem on the part of the men who own and operate the railroads. With this, and a desire to apply constructive remedies, much can be accomplished.

EDWIN LUDLOW,
New York, Aug. 9, 1921. Consulting Mining Engineer.

British Columbia Coal Production 9,234 Tons Less in June Than in May

PRODUCTION of coal in British Columbia in June was 182,827 tons, compared with 192,061 tons in May, a decrease of 9,234 tons. The Crow's Nest Pass Coal Co. recorded increases both at Coal Creek and at Michel, but a decrease at Corbin. On Vancouver Island there was a drop in the production of every colliery. In the Nicola-Princeton section there is little difference except in the case of the Coalmont Coal Co., which has not been producing, having been engaged in completing the installation of a plant. Coal now is being taken out on this property, however, and the mine may be expected to figure as a shipper during the present month.

Seven mines on Vancouver Island reported the production of 119,193 net tons, two mines in the Nicola-Princeton district, 9,957 tons, and three mines in the Crow's Nest Pass field, 53,677 tons.

The Provincial Government reserve on the coal lands has been removed, an order in council being passed to this effect in the course of the past few weeks. The withdrawal of restrictions in respect to the staking of coal applies to all parts of British Columbia, with the exception of the east coast of Vancouver Island and the Groundhog and Peace River districts. The action of the government is not expected to have much effect on the coal situation. The east coast of the island already is well staked, the Groundhog district in northwestern British Columbia is without transportation, and the Peace River is similarly placed. The reserve was criticised on the ground that it discouraged prospecting. If its removal to the extent indicated has the effect of stimulating the search for new fields it will, in the opinion of mining men, prove a good thing.

THE RAILROADS CAN'T OBTAIN their objective merely by charging.—*Norfolk Virginian-Pilot*

How the British Department of Overseas Trade Functions*

EVERY nation having overseas trade interests inevitably is brought face to face with three questions of policy:

(1) Shall the collection of trade information and the work of trade promotion be handled by the Foreign Office (diplomatic) so that the *foreign policy* shall be entirely in the hands of one department? Or

(2) Shall trade information and trade promotion be considered solely a matter of *commercial policy* to be placed in the charge of the Board of Trade (government commercial department) so that *commercial policy* abroad as well as at home shall be unified and dictated by one department? Or

(3) Shall some compromise be effected whereby both diplomatic and commercial interests are effectively served?

The British Government has adopted a plan along the lines of this last suggestion, and a coalition has been effected between the diplomatic and commercial departments resulting in the Department of Overseas Trade (Development and Intelligence). The new department is like the electric wire which carries several telegraph and several telephone messages at the same time. It is a channel for the simultaneous flow of information on all commercial, diplomatic and other foreign matters. A child of two parent organizations, the Board of Trade (commercial) and the Foreign Office (diplomatic), it is equally responsible to both, drawing its commercial policy from one and foreign policy from the other, that is, the government.

Those who have been following with interest the efforts of Secretary Hoover to vitalize the Department of Commerce and to make it an aid to industry will be interested in this description of how the business men in England have come together with their government for the common purpose of promoting the trade that is the life of industrial activity and the first essential of prosperity.

A joint memorandum by the Board of Trade and the Foreign Office, on Jan. 24, 1917, described the control of the department and its relations to the two parent organizations in the following language providing, it will be noted, for a unification of interests that have at times in the past worked at cross purposes.

"Parliamentary control over the department will be exercised through a new Parliamentary Secretary at the Board of Trade, who is also additional Parliamentary Under-Secretary for Foreign Affairs. This Parliamentary Secretary will be responsible to the President of the Board of Trade for all matters within the competence of that department, and responsible to the Secretary of State for Foreign Affairs for all matters concerning the Foreign Office.

"It is believed that these proposals afford a satisfactory solution of a problem which for some years past has been urged on the attention of His Majesty's Government by the commercial and industrial community. Their criticisms have been especially directed against the duality of the existing system, under which, while the direction of the commercial attaché and consular services rests with the Foreign Office, the utilization of the fruits of their commercial work lies with the Board of Trade. Under the new scheme the direction of the commercial work of the foreign services and the distribution of the intelligence collected by them will be dealt with by a single department, and as the same department will also direct the Trade Commissioner service within the Empire, uniformity of policy will be secured in respect of overseas trade as a whole."

This unique departure in foreign trade promotion has now been operating for four years. The surest evidence that it is popular with the government and business men is the increasing amounts which the government has been willing to pay for its continuance and expansion, as shown by the following table:

Year ending		Year ending	
March 31, 1919	£124,688	March 31, 1921	£394,899
March 31, 1920	£290,010	March 31, 1922	£188,946

Approximately 50 per cent of the increase between 1919 and 1922 is due to the transference of funds when personnel and functions were taken over from other government departments, thus concentrating all overseas trade activities in this new department. This year's appropriation provides for a personnel of 766 including secretaries.

The British mind has a particular fancy for specialization in matters of government and business, with the result that this vigorous young department has two bodies of specialists—those concentrating on a study of the peculiarities of trade of individual countries and those promoting the overseas interests of each trade and industry in this country. This effective form of organization is comparable to a strong textile—the geographic specialists constituting the warp and the trade specialists the woof. When well woven (as it is in this case) it should form a very substantial scheme and be proof against leaks or breaks.

Effective contact with the business man has been especially stressed, and the trades specialists of the department have been brought together specifically for this purpose. This group is composed of thirty-five technical experts and tradesmen, each of whom has been selected on account of his knowledge of some particular industry. For example, this division has a building materials expert, several textile experts, a trades specialist on glass and pottery, another on electrical machinery, etc., thus including all the principal industries. Periodic trips are made by these men to the principal trade centers of each industry, so that they are able to represent the views and wishes of their clients in the councils of the department and in giving more accurate direction to overseas activities.

Another division, called the foreign division, is divided along geographical lines, each section making a special study of the markets of one or more countries of similar characteristics. There is a diplomatic division of the Foreign Office concentrating on diplomatic questions in exactly the same countries as the commercial divisions of the Department of Overseas Trade, thereby providing the basis for a most excellently organized liaison between the commercial and diplomatic corps.

Thus there are three co-operating groups, the foreign commercial, the foreign diplomatic, and that of the domestic trades, the foreign departments concentrating on the overseas markets and the trades section keeping thoroughly posted as to the foreign trade requirements of each home industry.

An inquiry comes in having to do with the boot and shoe trade in Argentina. The Latin American division will handle it in case it is a matter of regular trade work, but should there be any question of a special or technical nature the boot and shoe trade specialist is called in. He may either simply advise or he may take over the matter and handle it. Should there be any question of a diplomatic nature in connection with it the Latin American division will send a man over informally to discuss the situation with the Foreign Office. Frequent contracts of this kind would naturally be essential in any satisfactory scheme of

*From *Anglo-American Trade*, July, 1921.

co-operation between diplomatic and commercial departments, or any other government departments for that matter.

With the exception of the diplomatic corps, all foreign representatives of the British Government are under the direction of the Department of Overseas Trade. These include commercial secretaries, consular officers, trade commissioners and trade correspondents. The commercial secretaries are accredited to all the principal foreign countries, and are attached to the embassy or legation similarly as are the diplomatic secretaries. In order better to coordinate the commercial work abroad, the consular officers have been placed under the supervision of the commercial secretary in all matters of a commercial character. On other questions the consuls report direct to the Department of Overseas Trade in London. This arrangement makes the commercial secretary the government officer directly responsible for commercial work in that country, subject, of course, to the direction of the ambassador or minister.

The trade commissioners are engaged in the work of trade intelligence and promotion within the confines of the Empire. They are assisted in this work by trade correspondents who are business men located in large commercial centers, and who devote a part of their time to official commercial correspondence.

Distribution of Commercial Information

Apart from answering trade inquiries on specific subjects, the department devotes special attention to the dissemination, as rapidly as received, of all commercial information coming into its possession. Information of a general and non-confidential character is conveyed to the commercial community through the medium of the *Board of Trade Journal*, which records the activities not only of the department but also those of the Board of Trade. Advance or special trade reports are sometimes, however, of such a nature that general publicity is undesirable, and for the distribution of such information two channels have been established, one known as the "Special Register" and the other as "Form K."

Information too confidential in its nature for general publicity is communicated directly to manufacturers and exporters subscribing to the Special Register. This information includes specific openings for the sale of goods in overseas markets, foreign competition, industrial developments and notes on general commercial conditions existing in particular markets.

"Form K" covers the supply of the main preliminary particulars which firms engaging in export business with buyers abroad wish to know, communicated to the department by its overseas officers. It is intended that this scheme shall cover all possible importers of goods of British manufacture in foreign countries whose financial standing appears to be sound. Particulars are given of the goods which the firm reported on imports, the general nature of its business, and the name of its agent in the United Kingdom. This class of information is made available to the trading community through the medium of the Association of British Chambers of Commerce, the Federation of British Industries and certain other trade associations.

Another division is concerned with the administration of the Overseas Trade (Credits and Insurances) Act, 1920. This act sanctions the allocation of a sum of £26,000,000 sterling to finance British trade with various European countries. The act has now been extended to include certain other countries within the British Empire.

The Exhibitions and Fairs Branch of the department is well organized, and makes a specialty of the British Industries Fair, which is held annually. This branch also assists in the promotion of the numerous fairs which are held at home and abroad. The chiefs of the fairs section devote their entire time to a study of this subject, and make it a point to attend important exhibitions so as to be fully posted on all new developments.

The Foreign Samples Exhibition, which is housed in London, was developed during the war so as to post British manufacturers on enemy products which they might undertake to manufacture. This exhibition has been extended so as to make it possible for the government to send samples or catalogs of the products of merchants and manufacturers of various competing countries to the commercial centers in the United Kingdom particularly interested, so that manufacturers and merchants may better understand the competition abroad. As an example, there was recently shown at Leicester a complete exhibit of boots and shoes that are being sold in Scandinavian countries today.

Interest in the Department of Overseas Trade (development and intelligence) is redoubled at this time owing to the commercial mission of the department, which has left for Russia. This trade group is to be permanently located in Moscow, and will seek to promote trade between the two countries.

Instead of the usual procedure whereby the Foreign Office carries on negotiations through diplomatic channels, the Board of Trade handled the re-opening of relations with Russia, thereby indicating the growing recognition of the exceptional importance of economic relations between nations.

With an eye to further building up contact with its business clients, the department has now formed an advisory committee of twenty business men representing geographical and trades sections of the community, which meets every month to advise the department in its work.

During the four years of its life the Department of Overseas Trade has thrived in most extraordinary times. The war made 1918 an abnormal year for business, and the succeeding years have been occupied with a sudden boom and quick reaction, so that this new department has not as yet had an opportunity to operate in a normal period of business activity.

In a recently issued handbook the department briefly describes its policy and aims as follows: "To give British firms, free of charge, the live information and the help which they need in export trade. Its daily routine is moulded and stimulated by continuous contact with commercial men of every rank and class." In short, the Department of Overseas Trade exemplifies *new* British business; the new spirit in business; *better* business and *more* business.

Twelve Mingo Mine Workers' Leaders Are Arrested for Unlawful Assemble

HAVING disregarded the warning of Major T. B. Davis, acting adjutant general of West Virginia, in charge of the enforcement of the first and supplemental martial law proclamations of Governor E. F. Morgan in Mingo County, Davis S. Robb, international financial agent of United Mine Workers of America, who has had the attempted strike in the Mingo region under his direction for a year or more, together with eleven other leaders of the United Mine Workers of America were arrested on July 8 while in session at union headquarters in a hotel at Williamson, W. Va., and were placed in the Williamson city jail but were later removed to the county court house.

The charge against them was that of unlawful assembly, as forbidden in the Governor's proclmation of martial law. Those taken into custody at the sa metime as Davis S. Robb were: John W. Brown, Jasper Metzer, Herbert Halls, Robert Gilmore, international organizers of the United Mine Workers; Edward Dobbins, international board member; Henly Koop, Whitsell Hackney, J. B. Williams, Claude Mahoun, Charles Lee and J. H. Reed.

Up until July 9 no special effort had been made so far as could be learned to obtain the release of the union men, but there was a rumor in circulation that an attempt would be made to obtain writs of habeas corpus just as had been done in the case of A. D. Lavinder who had been arrested under the provisions of the Governor's first proclamation of martial law.

The Executive Committee of the American Wholesale Coal Association will meet in Chicago Aug. 24. Among other things a decision will be reached as to the details of the conduct of the traffic department which the association has decided to establish.

Proposed Classification of Coals Consists of 35 Types Divided Into 9 Grades

ATTEMPTS to pool coals during hte war revealed the lack of a satisfactory detailed classification. To meet this need, George H. Ashley, then chief of the Section of Eastern Coal Fields of the U. S. Geological Survey, now State Geologist of Pennsylvania, began a comprehensive study of the subject and presented a first draft of a plan at Chicago in September, 1919, before the American Institute of Mining and Metallurgical Engineers. Constructive criticisms of the first paper and continued study have led to a revised scheme, here presented in skeleton form.

The scheme seeks to divide all known coals into classes and types, so that coal of any given type and grade from anywhere may be substituted in use for any other coal of the same type and grade, and guaranteed to render essentially the same duty or service.

This involves, first, dividing all coals into kinds or types, and second, dividing each type into as many grades as the market demands. The scheme, which avoids the use of ultimate analyses, divides all solid fuels into thirty-five types, and each type into nine possible grades—315 in all. In dividing all coals into classes and types seven characters are considered which affect the behavior of coal in handling and burning: (1) Texture or structure; (2) fuel ratio (fixed carbon divided by volatile matter); (3) fixed carbon-moisture ratio (fixed carbon divided by moisture as received);* (4) caking or non-caking character; (5) xyloid (woody) or canneloid character; (6) weather resisting or non-weather resisting character; (7) certain coals are distinguished because highly oxidized, as revealed in their low heat value in the ash-, sulphur- and nitrogen-free condition. No previous classification has attempted to consider all of these characteristics.

But the actual service of coal depends also in its grade—that is, on the mount of dead matter or ash it carries, or (for certain uses) the amount of sulphur and on the fusing point of the ash (which materially affects the practical heat value). To express these differences it is proposed to use X, Y, Z to designate best, medium and poorest grades, as follows:

TABLE TO EXPRESS GRADES OF COAL

Ash	Sulphur	Fusing Point of Ash
X—Less than 8 per cent	Less than 1 per cent	Over 2,700° F.
Y—8 per cent—16 per cent	1 per cent—2 per cent	2,700°–2,400° F.
Z—Over 16 per cent	Over 2 per cent	Under 2,400° F.

It is proposed that the three letters be used in order to express the grade, e.g.: XXX means less than 8 per cent ash, less than 1 per cent sulphur, fusing point over 2,700° F., the first letter always standing for ash, the second for sulphur, and so on.

For example, an open-hearth steel furnace may call for Hivol A ZXZ coal, meaning a coal having a fuel ratio

*Recent work by the U. S. Bureau of Mines—Technical Paper No. 113—shows that hygroscopic differences of different kinds of coal are fundamental.

Key to Texture	CLASSES	Key to GROUPS		Key to TYPES: Fix.Carb./Vol.mat.	Key to TYPES: Fix.Carb./Moisture	Key to TYPES	Typical areas from which coals come	Code Numbers	Analyses, as recieved, but recalculated to 6% ash: Moisture Range	Moisture Aver.	Volatile Matter	Fixed Carbon	Ash	B t u.
Foliated	GRAPHITE					Graphite	*Rhode Island*							
Cellular	CARBONITE					Carbonite	*Midlothian, Va.*							
Compact	*Fuel ratio >7* ANTHRACITES			*10+*	*10+*	Anthracite A	*Wyoming Valley, Pa.*	1	<4	3	5	86	6	13,700
				7-10	"	" B	*Bernice, Lykens, Pa*	2	<4	3	9	82	6	13,850
	Fuel ratio<7	*B.t.u. Ash S & N Free >14,300*	*Caking types*	*Fuel ratio 7-25* LOVOLITES ("low volatile coal")	*5-7*	"	Lovol A	*Merthyr, S Wales*	3	<4	3	13	78	6	14,500
					3.5-5.	"	" B	*Windber, Pa., Poca Wva*	4	<4	3	17	74	6	14,650
					2.5-3.5	"	" C	*New River Wva & Old Pa*	5	<4	3	22	69	6	14,250
			"BITUMINOUS COALS" (Typical)	*Fuel ratio 2.5-1.85* MIDVOLITES	*1.85-2.5*	"	Midvol	*Connelsville, Pa.*	6	<4	3	27	64	6	14,000
				Fuel ratio 1.85	*1.4-1.85*	"	Hivol A	*Pittsburg, Pa*	7	<4	3	33	58	6	14,000
					1.4-1.85	*6-10*	" B	*Henryetta, Okla*	8	4-8	6	35	53	6	13,000
					Under 1.4	*10+*	" C	*Belmont Co. Okla*	9	<4	3	40	51	6	13,400
				HIVOLITES ("High volatile coals")	" "	*6-10*	" D	*Hocking Co. Ohio*	10	4-8	6	39	49	6	12,750
					" "	*4-6*	" E	*St Clair Co., Ill*	11	8-12	10	38	46	6	12,000
					" "	*2-4*	" F	*Sangamon Co., Ill*	12	>12	14	37	43	6	11,250
	BITUMITES (Bituminous coals)		*Non-caking types* SPLINTS AND CANNELS	*Xyloid (woody)* SPLINTITES ("Splint" and "Block" coals)	*1.4-2.0*	*10+*	Splint A	*Coalburg, W Va.*	13	1-3	3	35	56	6	13,750
					Under 1.4	*6-10*	" B	*Kenilworth, Utah*	14	3-6	5	40	49	6	12,500
					" "	*4-6*	" C	*Brazil, Ind.*	15	10-15	13	34	47	6	11,750
					" "	*2-4*	" D	*Mendota, Mo.*	16	15-20	17	35	42	6	11,000
				Canneloid SEMICANNELITES ("Lean cannels")	*2.5-5*	*10+*	Semicannel A	*Clearfield Co. Pa.*	17	<10	3	21	70	6	14,250
					1.4-2.5	"	" B	*Armstrong Co., Pa.*	18	<10	3	36	55	6	14,000
					1.0-1.4	"	" C	*Canfield, Ohio*	19	<10	3	42	49	6	13,400
				Fuel ratio <1 CANNELITES (Cannel coals)	*0.5-1.0*	"	Cannel	*E. Kentucky*	20	<10	3	53	38	6	13,500
					Under 0.5	"	Boghead	*Boghead, Ky.*	21	<10	3	64	27	6	
		B.t.u. Ash S & N Free <14,300	*Weather resisting* MONTANITES			*10-6*	Montanite A	*Sand Coulee, Mont.*	22	4-8	7	31	56	6	12,000
						6-4	" B	*Bridger, Mont.*	23	8-12	10	35	49	6	11,500
						4-2	" C	*Maxeymine, Mont.*	24	12-18	16	35	43	6	10,500
			Non-weather resisting SUBBITUMITES (*Subbituminous coals*)			*5-3*	Subbituminous A	*Gallup, N. Mex.*	25	9-15	12	39	43	6	11,600
						5-3	" B	*Hanna, Wyo.*	26	9-15	13	39	42	6	11,000
						3-2	" C	*Kirby, Wyo.*	27	15-20	17	37	40	6	10,250
						2-1.5	" D	*Sheridan, Wyo.*	28	20-25	22	34	38	6	9,400
						1.5-1.0	" E	*Inez, Wyo.*	29	25-30	27	32	35	6	8,750
Fibrous woody or earthy	*Non-surficial* LIGNITES	*Xyloid*				*1.0-*	Lignite A	*Wilton, N.D.*	30	30-45	37	29	28	6	7,000
		Xyloid & canneloid mixed				*1.0-*	" B	*Hoyt, Tex.*	31	30-40	35	29	30	6	7,500
		Canneloid				*1.0-*	" C	*Camden, Ark.*	32	30-40	35	41	18	6	
	Surficial PEAT	Air dried						*Orlando, Fla.*	33	10-80	20	52	22	6	8,000
		Fresh						*New Haven, Conn.*	34	80-94	90	7	2.5	5	800
	WOOD	Dry							35			74	25.	1	8,600
		Seasoned								15-30	25	55.5	18.75	.75	

Type characters in italics, <-Less than, >-More than

PROPOSED CLASSIFICATION OF COALS

of between 1.4 and 1.85, a fixed carbon-moisture ratio of 10 or more, a sulphur content of less than 1 per cent, but with indifference as to ash and fusing point of ash. Criticisms and constructive suggestions are invited.

Anthracite Shipments Decrease in July

THE shipments of anthracite for July as reported to the Anthracite Bureau of Information in Philadelphia, amounted to 5,462,760 gross tons as compared with 6,031,937 tons in the preceding month, and with 6,389,100 tons in July, 1920. The falling off in shipments last month is attributed principally to the continued slack demand for pea and steam sizes which has caused the closing down of a number of individual operations, and to a not inconsiderable idleness from petty strikes affecting chiefly the Lehigh and Wyoming regions.

Shipments in gross tons by originating carriers were as follows:

	July, 1921	June, 1921
P. & R R W	1,039,078	1,157,738
L. V R R	946,387	1,069,521
C R R of N. J	507,942	571,213
D. L. & W. R.R	926,850	1,009,119
D. & H. Co	691,132	763,893
Penna. R R	384,780	441,693
Erie R.R	619,365	555,882
N. Y. O. & W. R. W	110,605	163,742
L. & N. E. R R	236,621	299,136
	5,462,760	6,031,937

Shallmar Coal Classification

A CLASSIFICATION of coal, prepared and issued in June by Wilbur A. Marshall of W. A. Marshall & Co., of New York, and copyrighted under the name of the Shallmar Coal Classification, is reproduced below. In the literature accompanying the outline it is noted that the value of this method is in the descriptive features which enable consumers to readily select coals best adapted to their particular requirements. A uniform method of sampling is described and consumers urged to test the coal they receive and to submit the analyses to the coal company for checking up mine performance. It is understood this classification was developed to replace, so far as possible, the indefinite Tidewater Exchange classifications.

Lit Cigarette: Lost Arm: Is Compensated

AN APPEAL of the Newton Coal Co., of Philadelphia, from an award of compensation to Antonio Masulewick, also of Philadelphia, was dismissed by the Workmen's Compensation Board, the findings of fact and conclusions of law of Referee Graham, District No. 1, being affirmed.

The claimant in this case was employed as a laborer and was engaged in loading coal into wagons. One wagon had just been loaded and while the claimant was waiting for another wagon he took a cigarette from his pocket and lighted it and threw away the match. In some unexplained way, either the cigarette or something in the coal pile exploded, injuring the claimant's left hand. The referee awarded compensation, and the defendant appealed, alleging two errors of law: (1) That the injuries were not received by accident in the course of employment; (2) that the injuries complained of were caused by a third person because of reasons personal to him.

The opinion of the board, written by Commissioner Paul W. Houck, states: "There is absolutely no evidence that the explosion was caused by the act of a third person, the only intimation to this effect being that the cigarettes were given to the claimant by his brother-in-law, who worked in a glycerine factory. Nor is there any doubt that the accident happened while the claimant was in the course of his employment. There is no error in the referee's award."

Commissioner Houck also dismissed a similar appeal in the case of Rocko Nany, of Forestville, near Minersville, Pa., against the Buck Run Coal Co. The defendant appealed from an award of compensation by Referee Seidel, District No. 2, but the board affirmed the findings of fact and conclusions of law of the referee.

THE BUREAU OF MINES is in urgent need of two new mine-rescue cars. One of these cars is needed to replace the car which was burned. It would be assigned to the Vincennes (Ind.) district. There is urgent need for the replacing of one of the old wooden rescue cars now in service. This car is an old Waggoner car, which was made over for the purpose. It has been in service thirty-five years. Railroads are objecting to its movement on fast trains. In case of mine accident, it is essential that the car be moved on the fastest train available.

LOW VOLATILE Run of Mine		MEDIUM LOW VOLATILE Run of Mine		MEDIUM HIGH VOLATILE Soft Structure Run of Mine		HIGH VOLATILE STEAM Lumpy Hard Structure Coals			ILLUMINATING GAS, BI-PRODUCT, AND METALLURGICAL COAL Hard Structure						CONNELLSVILLE COKING COAL Run of Mine	
						Over 32% Volatile			Westmoreland & Youghiogheny			Fairmont				
									Over 34% Volatile			Over 36% Volatile			Over 32% Volatile	
Under 20%		20% to 27%		Over 27%		Run of Mine	3/4" Screen		Run of Mine	3/4" Screen		Run of Mine	3/4" Screen			
Class No.		Class No.		Class No.		Class No.	Class No.		Class No.	Class No.		Class No.	Class No.		Class No.	
100	Ash under 7.50% Sulphur under 1.25%	110	Ash under 7.50% Sulphur under 1.25%	120	Ash under 7.50% Sulphur under 1.25%	130	140	Ash under 7.50% Sulphur under 1.25%	150	160	Ash under 7.50% Sulphur under 1.25%	170	180	Ash under 7.50% Sulphur under 1.25%	190	Ash under 7.50% Sulphur under 1.25%
101	Ash 7.50% to 9.50% Sulphur under 1.25%	111	Ash 7.50% to 9.50% Sulphur under 1.25%	121	Ash 7.50% to 9.50% Sulphur under 1.25%	131	141	Ash 7.50% to 9.50% Sulphur under 1.25%	151	161	Ash 7.50% to 9.50% Sulphur under 1.25%	171	181	Ash 7.50% to 9.50% Sulphur under 1.25%	191	Ash 7.50% to 9.50% Sulphur under 1.25%
102	Ash 9.50% to 12% Sulphur under 1.25%	112	Ash 9.50% to 12% Sulphur under 1.25%	122	Ash 9.50% to 12% Sulphur under 1.25%	132	142	Ash 9.50% to 12% Sulphur under 1.25%	152	162		172	182			
103	Ash under 7.50% Sulphur 1.25% to 2%	113	Ash under 7.50% Sulphur 1.25% to 2%	123	Ash under 7.50% Sulphur 1.25% to 2%	133	143	Ash under 7.50% Sulphur 1.25% to 2%	153	163	Ash under 7.50% Sulphur 1.25% to 2%	173	183	Ash under 7.50% Sulphur 1.25% to 2%	193	Ash under 7.50% Sulphur 1.25% to 2%
104	Ash 7.50% to 9.50% Sulphur 1.25% to 2%	114	Ash 7.50% to 9.50% Sulphur 1.25% to 2%	124	Ash 7.50% to 9.50% Sulphur 1.25% to 2%	134	144	Ash 7.50% to 9.50% Sulphur 1.25% to 2%	154	164	Ash 7.50% to 9.50% Sulphur 1.25% to 2%	174	184	Ash 7.50% to 9.50% Sulphur 1.25% to 2%	194	Ash 7.50% to 9.50% Sulphur 1.25% to 2%
105	Ash 9.50% to 12% Sulphur 1.25% to 2%	115	Ash 9.50% to 12% Sulphur 1.25% to 2%	125	Ash 9.50% to 12% Sulphur 1.25% to 2%	135	145	Ash 9.50% to 12% Sulphur 1.25% to 2%	155	165		175	185			
106	Ash under 7.50% Sulphur over 2%	116	Ash under 7.50% Sulphur over 2%	126	Ash under 7.50% Sulphur over 2%	136	146	Ash under 7.50% Sulphur over 2%	156	166		176	186			
107	Ash 7.50% to 9.50% Sulphur over 2%	117	Ash 7.50% to 9.50% Sulphur over 2%	127	Ash 7.50% to 9.50% Sulphur over 2%	137	147	Ash 7.50% to 9.50% Sulphur over 2%	157	167		177	187			
108	Ash 9.50% to 12% Sulphur over 2%	118	Ash 9.50% to 12% Sulphur over 2%	128	Ash 9.50% to 12% Sulphur over 2%	138	148	Ash 9.50% to 12% Sulphur over 2%	158	168		178	188			
109	Ash over 12%	119	Ash over 12%	129	Ash over 12%	139	149	Ash over 12%	159	169		179	189			
250	Best Stained under 30% Volatile	300	Poorer Stained under 30% Volatile				200	Slack		200	Slack		200	Slack		
350	Best Stained over 30% Volatile	400	Poorer Stained over 30% Volatile													

Non-Union Mines Paying 30 Per Cent Lower Wages Strip Central Pennsylvania

Union Operators in Other Fields Hard Pressed by Non-Union Competition—Miners Meet on September 20 to Formulate Demands for Next Wage Conference

IT WAS STATED from the office of the Central Pennsylvania Coal Producers' Association that the business conditions affecting the mining industry in central Pennsylvania were growing worse daily and would continue to grow worse until a readjustment was made which would place the central Pennsylvania mines upon a proper competitive basis with the great coal fields surrounding where the miners are working at greatly reduced wage rates.

In analyzing the situation, the officers of the association stated that the loss of business from the union mines to the non-union mines in central Pennsylvania, comparing the month of December, 1920, with the month of July, 1921, discloses a large loss of business in the mines operating under the union scale. In a tabulation, the association shows that if the mines operating under the union scale had maintained their ratio of production in the district they would have produced in the month of July 40,279 carloads instead of the 34,153 carloads they actually produced, and the non-union mines would have produced 16,237 carloads instead of the 22,363 they actually produced. In other words, the mines that have made the adjustment in central Pennsylvania have taken 6,126 carloads of business from the mines that have not made the adjustment.

In addition, the field lost tonnage, from the average, 10.5 per cent, that has been maintained by central Pennsylvania against the United States for the past five years. If that average had been maintained during July, the district would have produced 6,300 more carloads. The union mines have stood the loss in their own district of 6,126 carloads and have suffered another loss from the district of 6,300 carloads, or for the month of July have lost a total of 12,426 carloads, or 621,300 tons as compared with a loss of 500,000 tons during June. You will note that the loss for July was 121,300 tons greater than the loss for the month of June. The association predicts a still greater loss for the month of August.

The reason for the loss of business, which business this district has seen go to mines that have made the wage adjustments, is shown by the following tabulation of basic wage rates in the different fields that compete with this district in the eastern market:

	Central Pa. Union	Central Pa. Non-union	West-moreland	Greens-burg	Connellsville H C Frick Co	Connellsville Independent	Somerset Co.
Pick mining, net ton	1 1431	0 9031	0 55	0 57	0 626	0 542	0 9031
Machine loading, net ton	0 7729	0 625	0 397	0 46	0 395	0 395	0 6479
Cutting and scraping, net ton	*0 16	0 127	0 116	.	0 10	0 10	0 13
Skilled inside labor, hour	0 9375	0 625	0 50	0 55	0 625	0 56	0 625
Other inside labor, hour	0 909	0 60	0 40	0 495	0. 518	0 469	.. ...
Dumpers, weighmen, trimmers, hour	0 8875	0 49	0 35	0 3625	0 333	0.333	0 5625
Other outside labor, hour	0 825	0 45	0 30	0 3625	0 222	0 222	0 52

* Approximate

The fields shown in the above tabulation working on the lower rates produce annually 85,000,000 tons. This vast production of coal will have to be absorbed before central Pennsylvania can expect to secure any business on contracts or compete in the spot market for current business. It is the belief of those conversant with the situation that this condition will continue to work a hardship on the union miners and union operators until the United Mine Workers of America see the mistake in their present policy, or the miners in the individual towns take action on their own initiative to work for lower wage rates.

The president of the association, G. Webb Shillingford, has written a letter to John Brophy, president of District No. 2, saying that, as the mine workers' union refuses to discuss wages, there is no advantage in holding any conference whatever. The letter was drafted at a session of the executive committee of the association which assembled in Altoona, Aug. 9.

Miners Demand Governor Remove Guards

DEMAND that the Governor remove mine guards from southern West Virginia was voiced at a mass meeting of miners held at Charleston on Sunday, Aug. 7. The resolution also embodied the terms of settlement of the mine strike in Mingo county suggested some time ago by C. F. Keeney of District 17. The resolutions adopted also call upon the Governor to convene the legislature in extra session in case he has not the power to remove mine guards.

The basis of settlement suggested by Keeney some time ago was that (1) the coal operators agree that all employees return to work without discrimination against any employee belonging to a labor union; (2) the establishment of an eight hour day as applied to all classes; (3) the semi-monthly pay day; (4) the right of employees to trade where they please; (5) the right of employees to elect check-weighmen; (6) weights to be stamped on mine cars; (7) appointment of a joint committee of three persons from each side for the purpose of adjusting wages.

Northern West Virginia Seeks Lower Wages

A NUMBER of mines in the outlying sections of northern West Virginia have broken their contracts with the United Mine Workers and are operating open shop at the rate of wages paid in 1917. Some of the mines thus working are on the Charleston division of the Baltimore & Ohio Ry. There are said to be several between Weston and Tygarts Junction and in the Scott's Run section as well as in Preston County.

The operators have held two meetings at Deer Park, Md., one on July 22 and one on July 29. The operators are afraid that when April 1 comes they will find that all the contracts have gone to the non-union fields and that no matter what wage reductions are then made, as the business will have been placed, there will be no business for them. This view was set forth by T. W. Guthrie, president of the Hillman Coal & Coke Co. at the Deer Park meeting.

Union men, who will not work at less than union wages in union fields, migrate from such regions in periods of slackness and enter non-union mines, accepting the wages that are offered, thus building up these sections at the expense of those that are unionized.

Miners Will Meet at Indianapolis, Sept. 20, to Formulate Demands

STILL expectant of the six-hour day and five-day week and with a few delegates hopeful of the nationalization of mines the United Mine Workers of America will meet at Indianapolis, Ind., Sept. 20, for its biennial session. It will make demands on behalf of both anthracite and bituminous mining sections as to the wage scale to be paid and the mining conditions to be observed after March 31, 1922. About 1,500 delegates will be present, some frugal unions combining with others to send but one delegate to represent them. Two years ago there were 2,044 delegates. This year there will be less. In other years the Indianapolis convention has formulated the wage demands and the tri-district convention in the anthracite region has met and approved them. This year the anthracite delegates at the

convention will submit their demands to the national body, and these demands as approved or modified will be submitted to the tridistrict convention.

Valley Strike, a Fight Within the Union

ON WEDNESDAY, Aug. 10, the Lehigh Valley Coal Co. strikers who had closed eight of the company's collieries, went back to work. There was no real grievance with the company. The fight was really one between the union and the general grievance committee of the locals that are composed of Lehigh Valley men. When Dempsey was president of No. 1 District he let the insurgents get out of hand and arrange for general grievance committees for each company in the northern district. As was expected, the heads of these great grievance committees proved stronger than the union president and vice president.

John Collins, who succeeded Dempsey as president, could control the locals no better than he did. Collins gave way to William J. Brennan of Scranton, Aug. 1, and a test to see who was really in control immediately was made. Strikes were called for every imaginary reason. Finally, when the men were out on strike they agreed to declare that they had been promised that the miners should in no case make less than $7 per day and their helpers should be guaranteed $6, though no such promise had been made. Still the story that such a guarantee was given had caused trouble for two months, and only the threat that the charters of the striking locals would be annulled kept the insurgents in line.

The Lehigh Valley refused to treat with any other than the duly recognized officials of the union, and these officials could but acknowledge that the strike was a direct violation of the contract. After a few days' suspension, Aug. 4 to Aug. 10, the union won out and the men returned to work. Westmoreland went out Aug. 1 and Maltby, Exeter, Seneca, William A., Heidelberg, Broadwell, and Henry went out Aug. 4.

No Wage Reduction in Texas—and No Work

REPRESENTATIVES of the Texas coal operators and of the United Mine Workers in Texas have met in conference at Fort Worth and have concluded their meeting without any reduction in wages being arranged between them. The mine workers were headed by John Wilkinson, president of District 21, and other representatives were: R. G. Sparling, Lawrence Santi and Ed Patterson of Thurber; W. M. Mumford of Strawn, Monroe Catchcart of Lyra, Pete Harrison and Carlos Morino of Bridgeport and Gomer Jones of Newcastle. The mine operators in the conference were: W. K. Gordon and E. S. Britton, representing the Thurber mines; Judge E. B. Ritchie, those at Strawn, and W. H. Ashton and W. H. John, the Bridgeport mines.

The coal operators proposed a reduction from $7.50 to $5 a day for underground labor as a basis from which all other classes of mine labor could be figured. The operators agreed to reopen the mines at once if the wage cut were accepted. It was declared during the conference that the mines at Bridgeport are the only ones now in operation. Those at Thurber, Strawn, Lyra and Newcastle have been closed several months.

Mine Workers Willing to Urge Coal Buying But Not to Take Wage Cut

AFTER conferring with the Secretary of Labor on behalf of the Mine Workers of America, Walker J. James stated that bituminous coal miners are averaging only two days work a week and for that reason could not consider a wage reduction. Mr. James stated that he had conferred with Secretary Davis on general conditions in the industry. He stated that the mine workers are more than willing to join with the government and the operators in an effort to start coal buying.

Lack of Funds Prevents Many Railroads from Buying Storage Coal

RECENTLY the Interstate Commerce Commission called on the railroads to use every effort to speed up the lagging soft coal production by taking in storage coal against next winter's needs. Some of the railroads have replied to the commission, explaining their policy whether it be to store, or not to store. Sufficient information has not been obtained, or released, to show in a conclusive way whether the effort of the commission will be productive, but such letters from the railroads as have been made public indicate clearly the desire on the part of many railroad companies to store coal and their inability to do so because of lack of money. Some apparently are plain "broke," while others not only have a good stock pile of coal but are going to buy more and pile it up.

The Pennsylvania Railroad System reports that it has an 8-day supply, but does not intend to increase it because of lack of funds and also because there is a sufficient car supply which will probably be able to serve its needs later. The New York Central has 779,000 tons which will last it for 30 days and in addition expects 155,000 this month. The Great Northern is also well provided for, having 340,000 tons on hand with orders placed for 28,000 tons a week and 400,000 to be delivered before November 1. The Erie Railroad has more than a month's supply and does not contemplate additional reserve. The Atchison, Topeka and Santa Fe Railroad does not intend to increase its storage, requiring funds for other purposes. With 25,000 tons on hand the Bangor and Aroostock Railroad plans to increase its supply to over 40,000 tons before winter, giving it a 3 or 4 months' supply. The Central of Georgia Railway reports that it does not plan to increase its supply.

The Chicago, Burlington and Quincy is well stocked, having on hand 300,000 tons which it will add to at the rate of 20,000 tons a week this month. Another road well supplied is the Chicago and Northwestern which had 146,000 tons on hand with contracts for 354,000 tons before Dec. 1. The St. Louis and Southwestern Railroad says it has been unable to store coal because of lack of funds but that if the road secures money it will lay in supplies. The Union Pacific has 88,000 tons which will last 15 days, and will increase its reserve with 155,000 tons. The Illinois Central Railroad which serves a coal region will make few purchases for reserve.

No Announcement of Policy on Trade Associations Expected Until October

AN official statement having to do with the activities of trade associations will be issued in the latter part of August. A promise to this effect was made by Commerce Secretary Hoover after a conference on the subject between Mr. Hoover and members of his staff, with the Attorney General and members of the Department of Justice staff. Pending the issuance of this statement, Mr. Hoover declines to comment. The Attorney General stated that there are a great number of trade associations which are of much benefit to business and that the activities of the great majority of these organizations are not being questioned. He said the Department of Justice simply is trying to find if there are not some cases in which illegal activities are being carried forward under the guise of trade associations.

The probabilities are that the official statement which is to be issued will not go very far toward illuminating the twilight zone which covers a part of the field of some of the existing associations. Since the Supreme Court of the United States is expected to hand down during the October term, an opinion in the hardwood lumber case, which may define some of the limits of the fields of the trade associations, it is not probable that any executive department is going to declare any very definite policy before the rendition of that opinion.

The Department of Commerce has ascertained that there are more than 5,800 trade and industrial organizations in the country.

New Rules and Contracts for Tidewater Coal Exchange, Inc.

REVISED rules of the Tidewater Coal Exchange, Inc., which the members received on Aug. 12 contain many important changes, the most important of which has to do with Rule 18 otherwise known as the Demurrage Rule. The revised rule provides for billing members for the detention accrued only on the tonnage released in the particular month, instead of for the detention accrued in all credits held during the month. The new rule will, it is thought, do away with considerable criticism.

This rule as revised and which, as with the other rules, with the exception of Paragraph "E" of Rule 1, which does not become effective until Sept. 1, have been in force as of Aug. 1, reads as follows:

Each carrier will submit a bill to the Exchange at the close of each calendar month for each port or pier, as required by its tariffs, with statement itemized to show the date of arrival and release of each car, covering total demurrage billed against the Exchange during the preceding month.

The exchange will compile daily demurrage accounts of each member at each separate pier on a tonnage basis, without a separation of pools, and charge against each member the tonnage days detention accrued on tonnage as disposed of in the particular month, whether such disposition is by actual dumping of physical coal or the transfer of tonnage to another member; the tonnage so disposed of to release from demurrage the earliest detained credit held by the member without regard to pools. At least five days free time per ton will be allowed at the time of disposition of the coal, and such tonnage free time will be used as a credit to the member's demurrage account in the month. All credits will operate to reduce the total detention in the particular month in which they accrue and no credits will be carried over to a succeeding month.

On tonnage transferred, each member involved will be charged with the detention accruing during the time such member holds the credit. Free time will be allowed the transferor at the time of the transfer, but will not be allowed the transferee at the time he dumps the tonnage or transfers it to a third party.

In the case of a dry pool all members holding credits in that pool will be automatically released from demurrage on their credits in that pool, and all debit members in that pool will automatically have their total net credit in all pools increased by the amount of the debit in the dry pool. This will be accomplished by means of credit and debit entries in an "adjustment column." A pool is not considered dry unless absolutely void of coal.

The Exchange will render statements to the members on this basis immediately after the close of each month for checking and verification, after which the total net tonnage detention of all members will be used on a pro rata basis for apportioning the railroad bill for the particular month.

Rule No. 1 has been entirely revised to cover many new features. It now provides for annual dues of $300 payable quarterly in advance, the first day of May, August, November and February; to provide for the payment of an initiation fee of $300 by all members elected on and after Sept. 1, 1921; a new form of application giving more complete information regarding prospective members' financial standing, and it also provides that all applications for membership are to be passed upon by the Executive Committee before the applicant will be allowed the privileges of the Exchange.

Rule 8, which has to do with rejections, has been augmented by the addition of a clause providing for the rejection of coal on the request of members.

Rule No. 24, having to do with the extension of credits, has been revised to restrict the extension of credit by the Commissioner.

In addition to calling attention to the changes in the rules, Commissioner Magruder directs special attention to the new form of Members' Contract which gives the Exchange the necessary authority to enforce members to liquidate debits promptly and to release credits promptly; and which it is believed when signed by each member will thoroughly protect the interest of all members. The contract provides that the member is to pay all bills rendered by the Exchange within ten days, that if such payment is not made within the specified time the Exchange may notify the member that if the bill rendered is not paid within five days from date of such demand, the Exchange may sell, after notice in writing to all members, at public sale at the New York office of the Exchange, any or all credits due the member as shown on the books of the Exchange, the proceeds of such sale to be credited by the Exchange on any obligation due by the member to it, the balance, if any, to be turned over to the member.

The contract also provides that the member is to replace all coal borrowed from each and all pools within ten days from the date of demand of the Commissioner of the Exchange to replace such coal in the pool and at the pier from which the coal was borrowed, and in case of failure or refusal to replace borrowed coal within such time the Commissioner is authorized and directed, irrevocably, to purchase sufficient coal of the necessary grade or quality to replace the borrowed coal at the market price thereof and charge the cost of the same and the expense of acquiring and handling it to the member's account.

Pittsburgh Conference Decides to Change Car Service Rules

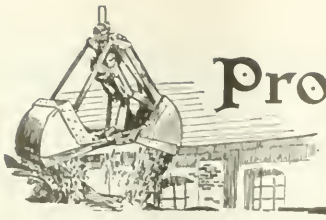
RULES A, B, C, D and I of the mine rating rules (C. S. 31 Revised) probably will be changed as a result of a conference in Pittsburgh, Aug. 11, 12 and 13, between the railroad relations committee of the National Coal Association and a special committee of railroad officials. A tentative agreement also was reached as to changes in the preamble of the car distribution rules. Rule six also is to be changed in several particulars. A sub-committee was appointed to work out the details after which the proposed changes will be submitted to the Interstate Commerce Commission for informal approval. The representatives of the coal operators in attendance at the conference were:

W. L. Andrews, vice-president Consolidation Coal Co., Baltimore; C. D. Boyd, traffic manager Hazard, Harlan and Southern Appalachian Coal Operators' Association, Louisville; W. P. Buffington, traffic manager Pittsburgh Coal Co., Pittsburgh; John Callahan, traffic manager National Coal Association; J. D. Battle, assistant traffic manager National Coal Association; D. F. Hurd, secretary Pittsburgh Vein Operators' Association of Ohio, Cleveland; C. H. Jenkins, secretary-treasurer Hutchinson Coal Co., Farimont, W. Va.; Jonas Waffle, secretary Indiana Coal Trade Bureau, Terre Haute, Ind.; W. D. McKinney, secretary Southern Ohio Coal Exchange, Columbus; W. J. Manley, traffic manager Logan County Coal Operators' Association, Logan, W. Va.; W. B. Troxell, secretary Panhandle Coal Operators' Association, Pittsburgh; S. C. Higgins, traffic manager New River Coal Operators' Association, Charleston, W. Va.; C. J. Goodyear, traffic manager, Pittsburgh Coal Producers' Association, Pittsburgh; J. O. Caldwell, Northern West Virginia Coal Operators' Association, Fairmont, W. Va.; W. E. E. Koepler, secretary Pocahontas Operators' Association, Bluefield, W. Va.; W. Duggan, traffic manager, and C. J. McCumisky, Peabody Coal Co., Chicago.

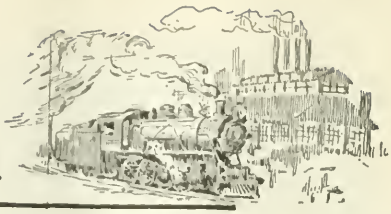
S. L. Yerkes acted as chairman of the coal section and A. G. Gutheim acted as spokesman for the railroad officials, of whom the following were in attendance: D. E. Spangler, general superintendent transportation N. & W. Ry.; H. J. Gorman, vice-president Montour R.R.; J. B. Fisher, general superintendent of transportation Pa. R.R.; J. F. Porterfield, general superintendent transportation, I. C. C. R.R.; W. L. Barnes, general superintendent C., B. & Q. R.R.; A. E. Fillmore, superintendent transportation L. & N. R.R.; W. G. Curren, general superintendent transportation B. & O. R.R.; John Neesner, B. & O. R.R.; and R. R. Harris, superintendent freight transportation Big Four.

BASED ON PARTIAL RETURNS FROM A RECENT QUESTIONNAIRE sent out by the American Wholesale Coal Association, George H. Cushing, its mananging director states that 8 85 per cent of all cars shipped are reconsigned. Of the cars which are reconsigned, 94.5 per cent are reconsigned before reaching the destination to which they are first billed. The figures cover six months during which coal was abundant. Mr. Cushing believes that this indicates that reconsignment cannot be regarded as the badge of speculation.

THE WINDING GULF OPERATORS will hold a meeting at the Greenbriar, White Sulphur Springs, Thursday night, Aug. 25. At 10 o'clock on Friday they will join with the operators of the New River field in a morning session with W. J. Harahan, president of the C. & O. Ry., and discuss traffic matters pertaining to their fields. On Thursday night Mr. Harahan will be the guest of the coal operators at a banquet at the Greenbriar.



Production and the Market



Weekly Review

THAT time is fast approaching when consumers of bituminous coal must decide whether to put in storage now or take chances on car shortage this winter. No one can foresee what the winter holds forth in the way of increased demand for coal from industries and railroads and bad weather such as ties traffic in knots at critical times.

Users and buyers of steam and gas coal should squarely face a few basic facts bearing on the soft coal situation, take observations of their own individual circumstances and act, if the results of putting two and two together show that to be the course.

Considering the country as a whole the situation is quickly appraised. Production this year to Aug. 6, has been a little short of 234,000,000 tons. At the average rate for the year, production by Dec. 31, will have been around 380,000,000 tons. Out of this production is coming exports which were 3,700,000 net tons in June alone. The lowest point to which consumption—not production—has gone in the past nine years was 408,000,000 tons in 1914, a well remembered year of business depression. Consumption in 1920 was 499,000,000 tons, out of a production of 556,000,000 tons, an output better by 175,000,000 tons than is promised for this year.

Now, the significance of these figures is that, although anything is possible it does not seem reasonable that the country has turned its back on prosperity so far that industry will burn less coal than in such a year as 1914.

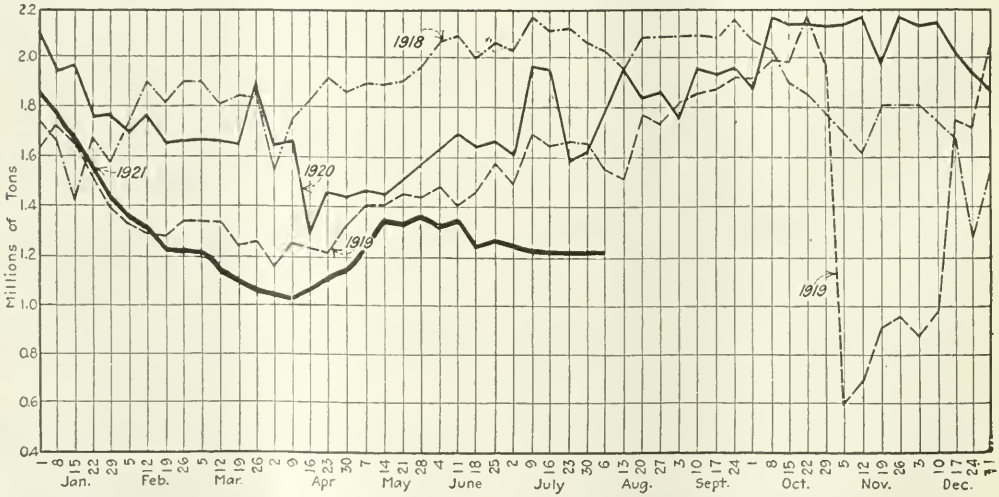
By the end of Labor Day week, that is by Sept. 10, production may be expected to have reached about 280,000,000 tons. In the remaining sixteen weeks of 1921 an average output of 10,000,000 tons would then put the year's total at 430,000,000 tons, or midway between 1914 and 1915.

Transportation Difficulties Foreseen

But production is not going to go to 10,000,000 tons from around 7,000,000 until a lot of people want coal. And if these people are going to want coal and wait, not until early in September, but until late in October or until November, no figures are necessary to indicate the difficulty that will be encountered. The railroads cannot comfortably carry more than 11,000,000 tons a week, at least until they get back in training again.

With these observations in mind the consumer who needs, or is expecting to need this winter any quantity of coal and who has not—as very many have—one, two, three or more months' supply on hand, the quantity depending on distance from source of supply, would do well to analyze his situation, cast up the chances

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

pro and con and decide now to invest in some coal or take a chance. Coal can be had now at extremely reasonable prices, it is possible to pick the very best quality and to get deliveries from coal companies and railroads anxious for the business.

For six weeks production of bituminous coal has been uniformly just above 7,200,000 tons—in the week of Aug. 6, it was 7,296,000 tons—and prices have shown little change. *Coal Age* Index of spot prices of bituminous coal rose 2 points as of Aug. 15, to 92, from 90 on Aug. 8. The gain was the result of increases in the prices of domestic sizes of soft coal in the central and Middle West following a perceptible strengthening of what for weeks has been a very sluggish demand. At the moment the trade is hopeful, even expectant, that the better feeling of the past week is a forerunner of a real demand and better prices.

BITUMINOUS

The opening days of August saw a continuation of the gradual decline in soft coal production. During the week ended Aug. 6, the output was 7,296,000 net tons, according to the Geological Survey. This represents a decrease of 56,000 tons from the figure of the preceding week. Production is now 76 per cent of the August, 1913, rate; 84 per cent of the 1914 rate, and 83 per cent of the 1915 rate. In spite of the fact, therefore, that the country's requirements normally increase from 15 to 20 million tons yearly, the present rate of output is far below that during the business depression of 1914-15.

Inquiries for Fall Tonnage Increase

That the low point of the present decline in production may have been touched is indicated by early reports of loadings for the second week of August, during the first two days of which 51,438 cars were loaded, as compared with 49,240 the week before. Consumers of both steam and domestic coals are now beginning to think of their fall requirements, and inquiries for tonnage to be delivered in September are increasing, while more actual sales are also being reported.

While the mid-summer trading has been subnormal in the East, there has been a slight pick-up in demand, as measured by the fact that although the Lake and export tonnage has slumped materially, production as a whole is only about 100,000 tons under that of four weeks ago. In certain lines of industry further improvement is recorded, and as conditions pick up, buyers appear more ready to discuss fall business. In some markets there is already a tendency to close contracts for high-grade coals and it is now plain that the inability of the consumer to gage his

Current Quotations—Spot Prices. Bituminous Coal—Net Tons. F. O. B. Mines

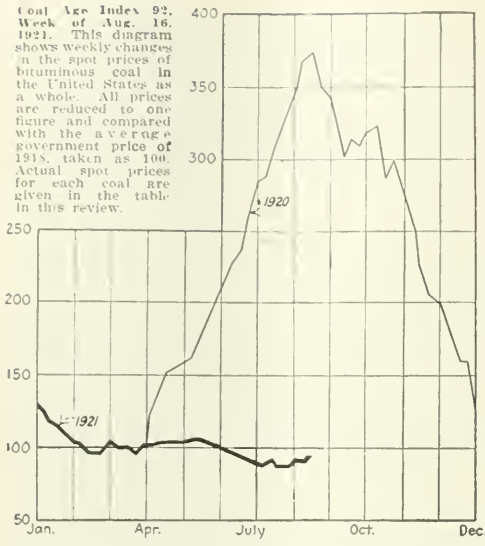
Low-Volatile, Eastern	Market Quoted	July 12, 1921	Aug 2, 1921	Aug 9, 1921	Aug 16, 1921†
Pocahontas lump	Columbus	$5 75	$5 25	$5 15	**$5 00@$5 35**
Pocahontas mine run	Columbus	3 25	3 15	2 90	**2 75@ 3 25**
Pocahootas screenings	Columbus	2 15	2 40	2 15	**2 25@ 2 50**
Pocahontas lump	Chicago	5 00	5 40	5 00	**5 00@ 5 50**
Pocahontas mine run	Chicago	2 65	3 00	2 75	**2 75@ 3 25**
*Smokeless mine run	Boston	5 90	5 60	5 60	5 50@ 5 65
Clearfield mine run	Boston	2 05	1 90	1 90	1 65@ 2 15
Cambria mine run	Boston	2 70	2 70	2 55	2 25@ 2 85
Somerset mine run	Boston	1 90	1 75	1 70	1 50@ 1 90
Pool 1 (Navy Standard)	New York	3 10	3 15	3 15	3 00@ 3 25
Pool 1 (Navy Standard)	Philadelphia	2 80	2 80	2 95	2 85@ 3 00
Pool 1 (Navy Standard)	Baltimore	2 60	2 40	2 45	**2 50**
Pool 9 (Super. Low Vol.)	New York	2 55	2 60	2 55	2 35@ 2 75
Pool 9 (Super. Low Vol.)	Philadelphia	2 40	2 40	2 55	2 25@ 2 40
Pool 9 (Super. Low Vol.)	Baltimore	2 40	2 20	2 20	**2 25**
Pool 10 (H. Gr. Low Vol.)	New York	2 25	2 35	2 35	*2 00@ 2 50*
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2 20	2.20	2 05	1 90@ 2 15
Pool 10 (H. Gr. Low Vol.)	Baltimore	2 15	2 00	2 00	**2 10**
Pool 11 (Low Vol.)	New York	1 95	1 95	1 95	1 85@ 2 00
Pool 11 (Low Vol.)	Philadelphia	1 90	1 90	1 75	1 65@ 1 85
Pool 11 (Low Vol.)	Baltimore	1 85	1 75	1 70	**1 75**
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1 95	1 75	1 85	1 70@ 2 00
Pool 54-64 (Gas and St.)	Philadelphia	1.75	1 75	1 65	1 50@ 1 75
Pool 54-64 (Gas and St.)	Baltimore	1 65	1 50	1 50	**1 60**
Pittsburgh sz'd gas	Pittsburgh	2 95	2 70	2 70	2 60@ 2 80
Pittsburgh mine run (St.)	Pittsburgh	2 10	2 10	2 10	2 00@ 2 15
Pittsburgh slack (gas)	Pittsburgh	1 45	1.70	1 70	1 65@ 1 75
Kanawha lump	Columbus	3 25	2 90	3 25	**3 25@ 3 60**
Kanawha mine run	Columbus	2 15	2 00	2 15	*2 00@ 2 20*
Kanawha screenings	Columbus	1 15	1 35	1 50	1 40@ 1 60
Hocking lump	Columbus	3 25	3 15	3 15	**3 00@ 3 35**
Hocking mine run	Columbus	2 15	2 15	2 15	2 00@ 2 25
Hocking screenings	Columbus	1 20	1 30	1 50	1 40@ 1.60
Pitts. No. 8 lump	Cleveland	3 25	3 25	3 25	3 00@ 3 50
Pitts. No. 8 mine run	Cleveland	$2 25	$2 30	$2 30	$2 25@$2 35
Pitts. No. 8 screenings	Cleveland	1 25	1 45	1 80	1 70@ 1 85
Midwest					
Franklin, Ill. lump	Chicago	3 55	3 55	3 55	**3 50@ 4 05**
Franklin, Ill. mine run	Chicago	3 15	3.15	3 15	**3 00@ 3 55**
Franklin, Ill. screenings	Chicago	1 90	1 90	1 85	*1 50@ 2 00*
Central, Ill. lump	Chicago	2 65	2 50	2 75	**2 75@ 3 00**
Central, Ill. mine run	Chicago	2 40	2 25	2 20	*1 90@ 2.35*
Central, Ill. screenings	Chicago	1 65	1 60	1 60	*1 50@ 1 75*
Ind. 4th Vein lump	Chicago	2 90	3 60	3 60	3 50@ 3 65
Ind. 4th Vein mine run	Chicago	2.50	3 10	3 10	2 90@ 3 25
Ind. 4th Vein screenings	Chicago	1 70	2 15	2 15	2 00@ 2 25
Ind. 5th Vein lump	Chicago	2 75	2 90	2 90	2 75@ 3 00
Ind. 5th Vein mine run	Chicago	2 40	2 45	2 45	2 25@ 2 65
Ind. 5th Vein screenings	Chicago	1 70	1 65	1 65	1 50@ 1 75
Standard lump	St. Louis	2 25	2 25	2 20	**2 50@ 2 75**
Standard mine run	St. Louis	1 75	1 70	1 75	1 75
Standard screenings	St. Louis	0 85	1 00	1 15	*1 00@ 1 20*
West. Ky. lump	Louisville	2 70	2 95	3 00	2 50@ 3 50
West Ky. mine run	Louisville	2 10	2 35	2 25	**2 00@ 2 85**
West Ky. screenings	Louisville	1 40	1 65	1 70	1 35@ 2 00
South and Southwest					
Big Seam lump	Birmingham	3 40	3 55	3 75	3 25@ 4 20
Big Seam mine run	Birmingham	2 15	2 15	2 15	2 00@ 2 25
Big Seam (washed)	Birmingham	2 35	2 40	2 40	2 25@ 2 50
S. E. Ky. lump	Louisville	3 50	3 50	3 60	**3 50@ 3 75**
S. E. Ky. mine run	Louisville	2 25	2 35	2 30	**2 25@ 2 40**
S. E. Ky. screenings	Louisville	1 40	1 50	1 65	**1 60@ 1 75**
Kanas lump	Kansas City	5 40	5 50	5 50	**5 65**
Kansas mine run	Kansas City	4 25	4 40	4 40	4 40
Kansas screenings	Kansas City	3.25	3 25	3 25	3 25

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advance over previous week shown in **heavy type**, declines in italics.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	Aug. 2, 1921 Independent	Aug. 2, 1921 Company	Aug. 9, 1921 Independent	Aug. 9, 1921 Company	Aug. 16, 1921† Independent	Aug. 16, 1921† Company
Broken	New York	$2 61	$8 00@$8 15	$7 50@$7 75		$7 50@$7 75		$7 50@$7 75
Broken	Philadelphia	2 66	8 00@ 8 20	7 65@ 7 85	$7 50@$8 20	7 65@ 7 85	$7 50@$8 20	7 65@ 7 85
*Broken	Chicago	5 62	12 40	12 45	12 40	12 45	12 40	**12 55**
Egg	New York	2 61	7 55@ 7 85	7 50@ 7 75	7 40@ 7 75	7 50@ 7 75	*7 30@ 7 75*	7 50@ 7 75
Egg	Philadelphia	2 66	8 00@ 8 20	7 65@ 7 85	7 60@ 8 20	7 65@ 7 85	7 60@ 8 20	7 65@ 7 85
*Egg	Chicago	5 62	12 40	12 45	12 40	12 45	12 40	**12 55**
Stove	New York	2 61	7 70@ 8 00	7 80@ 8 10	7 80@ 8 00	7 80@ 8 10	**7 80@ 8 25**	7 80@ 8 10
Stove	Philadelphia	2 66	8 25@ 8 35	7 95@ 8 25	8 00@ 8 35	7 95@ 8 25	8 00@ 8 35	7 95@ 8 25
*Stove	Chicago	5 62	12 70	12 70	12 70	12 70	12 70	**12 80**
Chestnut	New York	2 61	7 50@ 7 75	7 80@ 8 10	7 25@ 7 75	7 80@ 8 10	7 25@ 7 75	7 80@ 8 10
Chestnut	Philadelphia	2 66	8 00@ 8 40	7 95@ 8 25	7 75@ 8 25	7 95@ 8 25	*7 50@ 8 00*	7 95@ 8 25
*Chestnut	Chicago	5 62	12 70	12 70	12 70	12 80	**12 75**	**12 90**
Pea	New York	2 47	4 50@ 5 50	6 05@ 6 45	4 50@ 5.25	6 05@ 6 45	4 50@ 5 25	6 05@ 6 45
Pea	Philadelphia	2 38	4 50@ 6 00	6 10@ 6 20	4 50@ 5 75	6 10@ 6 20	*4 50@ 5 50*	6 10@ 6 20
*Pea	Chicago	5 62	11 10	11 20	11 10		11 10	**11 25**
Buckwheat No. 1	New York	2 47	2 50@ 3 25	3 50	2 50@ 3 00	3 50	**2 50@ 3 25**	3 50
Buckwheat No. 1	Philadelphia	2 38	2 50@ 3 00	3 50	2 50@ 3 00	3 50	2 50@ 3 00	3 50
Rice	New York	2 47	1 75@ 2 25	2 50	1 50@ 2 00	2 50	**1 50@ 2 25**	2 50
Rice	Philadelphia	2 38	1 75@ 2 00	2 50	1 75@ 2 00	2 50	1 75@ 2 00	2 50
Barley	New York	2 47	0 75@ 1 25	1 50	0 75@ 1 25	1 50	**0 90@ 1 25**	1 50
Barley	Philadelphia	2 38	0 75@ 1 25	1 50	0 75@ 1 25	1 50	0 75@ 1 25	1 50
Birdseye	New York	2 47		2 50		2 50		2 50

*Prices and freight rates, net tons; quotations f.o.b. cars, Chicago.
†Advances over previous week shown in **heavy type**, declines in italics



Coal Age Index 92, Week of Aug. 16, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.

needs is more responsible for the sluggish market than is the question of price.

Reports on the all-rail movement to New England show a decline in tonnage. During the week ended Aug. 6, 2,609 cars of anthracite and 2,780 cars of soft coal were forwarded, compared with 2,543 and 3,029 respectively in the preceding week.

Smokeless Coals at Attractive Prices

The export market is in the doldrums and except for scattered small tonnages moving to Cuba, South America and West Italy, but little business is being transacted. Low prices fail to make a sale as business, temporarily at least, is entirely lacking. Bunkers and coastwise coal to New England, therefore, occupy the Hampton Roads shippers, and an increasing number of New England industries are taking advantage of the situation to procure smokeless coals at attractive figures.

Tidewater movement fell off sharply during July, when 3,601,000 net tons of soft coal were dumped over the North Atlantic piers. Compared with the total dumpings for May, this was a decrease of 891,000 tons, or nearly 20 per cent.

TIDEWATER BITUMINOUS COAL SHIPMENTS FOR JULY, 1921
(In net tons)

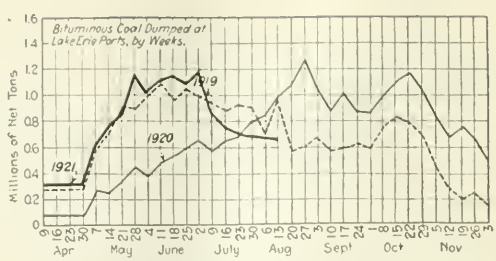
Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total
Coastwise to New England	103,000	46,000	79,000	445,000	...	673,000
Exports	...	62,000	316,000	954,000	55,000	1,387,000
Bunker	377,000	43,000	65,000	368,000	4,000	857,000
Inside capes	...	139,000	52,000	28,000	...	219,000
Other tonnage	413,000	.....	1,000	48,000	3,000	465,000
Total	893,000	290,000	513,000	1,843,000	62,000	3,601,000

CUMULATIVE TIDEWATER SHIPMENTS, CALENDAR YEAR TO JULY 31
(Net tons)

	New England	Exports	Bunker	Other	Total
1919	4,674,000	3,406,000	3,891,000	8,045,000	20,016,000
1920	5,824,000	10,748,000	4,895,000	6,688,000	28,155,000
1921	4,347,000	8,294,000	5,577,000	5,979,000	24,197,000

Screenings, which had advanced of late, are losing some of their caste, with a renewal of domestic production. Dealers say that household buying is on the increase but many are still unable to place orders and their yards remain heavily stocked.

Dumpings of Lake coal are lower. During the week ended Aug. 13, the total loadings were 646,915 net tons, divided; 621,785 cargo and 25,130 vessel fuel. Movement for the season to date is 14,774,715 tons, as compared with



8,556,035 tons last year. The Northwestern market is now absorbing a better volume of coal and pressure on the storage docks at the Head-of-the-Lakes has been lightened. A slight betterment in the iron ore industry is providing down cargoes for Lake coal-carriers and a better feeling prevails in the territory served by the Duluth-Superior docks. Lake shippers feel that with a continuance of the better Inland market, movement up the Lakes may be maintained at nearly the present rate.

Anthracite

Production declined sharply in the week ended Aug. 6. Labor troubles resulted in the closing of several collieries and limited the output to 1,564,000 net tons, nearly 200,000 tons less than during the preceding week. Corrected figures of July production now place the output at 7,050,000 net tons and for the calendar year to Aug. 1, 52,500,000 tons.

Dealers' stocks of domestic sizes are generally heavy, and in the continuance of slow household buying mine orders are becoming scarcer. However, record Lake loadings are reported—199,600 net tons the first week of August—and this furnishes a satisfactory outlet for much tonnage.

Coke

Beehive coke production again recorded an increase when 55,000 net tons were produced in the week ended Aug. 6. Cumulative 1921 production is 3,617,000 net tons, against

Estimates of Production

From the Weekly Report of the Geological Survey

(Net tons)

Bituminous Coal

Total Bituminous, Including Coal Coked

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date *a*
July 23*b*	7,380,000	219,329,000	10,470,000	289,191,000
Daily average	1,230,000	1,274,000	1,745,000	1,675,000
July 30*b*	7,352,000	226,680,000	9,371,000	298,562,000
Daily average	1,225,000	1,273,000	1,562,000	1,672,000
Aug. 6*c*	7,296,000	233,977,000	10,432,000	308,994,000
Daily average	1,216,000	1,271,000	1,739,000	1,674,000

(*a*) Less 2 days' production during New Year's week to equalize number of days covered for the last two years. (*b*) Revised from last report. (*c*) Subject to revision.

Anthracite

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date *a*
July 23	1,837,000		1,819,000	
July 30	1,750,000		1,912,000	
Aug. 6	1,564,000	54,064,000	1,805,000	54,205,000

(*a*) Less two days' production during New Year's week to equalize number of days covered for the last two years.

Beehive Coke

Week Ended Aug. 6 1921*a*	Week Ended July 30 1921*b*	Week Ended Aug. 7 1920	1921 to Date	1920*c* to Date
55,000	45,000	382,000	3,617,000	12,793,000

(*a*) Subject to revision. (*b*) Revised from last report. (*c*) Less two days' production during New Year's week to equalize number of days covered for the last two years.

12,973,000 in 1920. Total production of all coke in July was 1,465,000 net tons, as compared with 1,642,000 in June. This is less than the monthly average of any of the last four years.

Some new inquiries are being received, but operators are cautious in quoting prices, feeling that present figures are too low to form a basis for future business. Connellsville quotations are purely nominal: Spot furnace $2.90@$3; contract furnace $3 and foundry $4@$4.50.

The depression in the coke industry throws a flood of light on the absence of demand for coal. It is estimated that the coal consumed in the manufacture of coke in the month of July was 2,132,000 tons, of which 1,846,000 tons were used in by-product ovens. The coke industry, which normally takes 15 per cent of the coal supply of the country, is now consuming coal at a rate of less than one-third of its requirements during periods of greatest business activity.

ESTIMATED MONTHLY CONSUMPTION OF COAL FOR MANUFACTURE OF COKE

(Net tons)

	Consumed in By-product Ovens	Consumed in Beehive Ovens	Total Coal Consumed
1917 Monthly average	2,625,000	4,354,000	6,979,000
1918 Monthly average	3,072,000	4,014,000	7,086,000
1919 Monthly average	2,988,000	2,583,000a	5,571,000
1920 Monthly average	3,685,000	2,758,000a	6,443,000
June, 1921	2,026,000ab	367,000a	2,393,000
July, 1921	1,846,000b	286,000a	2,132,000

(a) Assuming a yield in merchantable coke of 69 6 per cent of the coal charged in by-product ovens, and 63 4 per cent in beehive ovens. (b) Revised from last report.

Inspection Necessary to Maintain Standards of Coal

Lack of Definitions in the Coal Trade Must be Overcome Before a Coal Exchange Can Function

BY PAUL WOOTON

THE expected discussion on the floor of the Senate of the possibilities of a coal exchange as a stabilizing element in the coal industry did not materialize due to the fact that Senator Dial's amendment to the grain futures bill was unexpectedly withdrawn. It had been the South Carolina Senator's intention to insist on a vote on the amendment which would have resulted in the destruction of cotton exchanges. Senator Ransdell, of Louisiana, in whose state is located the large New Orleans Cotton Exchange, was prepared to oppose the amendment and expected to shown that high government officials are at this time engaged in urging a coal exchange for the coal industry.

The withdrawal of the Dial amendment means that the discussion will be transferred to a sub-committee of the Committee on Agriculture.

Senator Ransdell's public statement that the coal exchange is being looked to as a stabilizing factor in the coal industry brought to light the fact that the matter has been under quiet discussion in government circles for the past several weeks. The idea has received stimulation in the success of the Sewell's Point Coal Exchange. It also has been learned that the American Wholesale Coal Association has made a formal proposal to assist the Department of Commerce and the Bureau of Mines in the study of the matter and that the tender of assistance has been accepted in each case.

It is admitted that the principal difficulty which must be surmounted is the fixing of the grades of coal. The matter of sampling an analysis is not regarded as an obstacle, as it is known definitely that this can be done promptly and with sufficient accuracy to meet the requirements. At present, the grades of coal are hardly deserving of the name. Such terms as steam coal, domestic coal, lump, and screenings may mean nearly anything. It is recognized that no such generalities could be made if coal is to be dealt with on an exchange. It also is recognized that, in addition to such sampling and analyzing as may be done, practice and experience must be utilized to a large extent in such determinations.

The Sewell's Point Exchange is the first attempt to classify coal on a rational basis and to publish the analytical limits of these classifications. The plan has worked out so well on the Virginian railroad that it is declared by a high government official that a coal exchange could be put into immediate operation to cover transactions on coal that is shipped over Sewall's Point pier.

An absolute prerequisite to the plan is that there be an inspection system which shall be impartial and which shall be in operation at all times, in order to keep the coal up to the standard.

In such a plan, the Bureau of Mines' function, as interpreted by Bureau officials, would not be to classify but to gather facts on which the classification would be based. The industry itself would be required to do the classifying.

Glen Alden Will Lay Off Men

THOUGH W. W. Inglis, president of the Glen Alden Coal Co., denies that it is the intention to close down six collieries on Aug. 27 when the Kohler and Fowler bills come into operation, he is announced as declaring that any plant that cannot be operated without violating the mine cave laws will have to be closed. S. J. McDonald, president of the Central Labor Union, has made the statement that the Glen Alden Coal Co. will close six collieries rather than face the possibility that the Kohler and Fowler bills are constitutional.

Manufacturers Ask Congress to Speed Railroad Financial Relief

WITHOUT question the resumption of demand and of production of bituminous coal hinges largely on the ability of the railroads to re-establish their credit and to enter the market for such equipment and raw material as they are reported to greatly need. The feeling is well grounded that prostrate railroads mean prostrate industry. Manufacturers of railway equipment, material, and supplies forming a group known as the Railway Business Association have addressed a letter to Senator Cummins urging the prompt consideration and passage of Senate Bill 2337, which gives the railroads time in which to repay sums advanced by the government during federal control for capital purposes and also releases for immediate use balances due the roads from the government on other accounts.

Pointing out that hundreds of thousands of unemployed men look for work to the employers represented in this association, the letter to Senator Cummins signed by A. B. Johnson, president of the association, says: "Rather than contribute even a half hour to the delay, the Railway Business Association refrains from offering testimony at your hearings, and requests instead that this letter be inserted in the record. We urge—

"(1) Prompt action. The voluntary vacation for Congress without this enactment would mean an involuntary vacation without pay for hundreds of thousands of industrial employees.

"(2) Separate action. We hope you will exclude serious consideration of amendment not essential to clarify the primary purpose of the bill. Congress has no mandate of ascertained public purpose to modify any essential principle of the Transportation Act of 1920. If discussion of general amendment is desired it can be conducted most advantageously on its merit free from confusion with the discharge of plain governmental obligation, so recognized by the President of the United States, the Secretary of the Treasury and the Director General of Railroads. If it shall be chosen that Congress at this time abandon its established policy in order to make railway rates by statute, instead of through an administrative tribunal created by it, such a reversal of Federal method and practice requires in safety to the public a discussion so thorough that postponement of industrial resumption through the debate is unthinkable."

Foreign Market And Export News

Stern Necessity for Export Trade Forces British Prices Down

Production Continues to Improve — Continuation of Mine Operation Depends on Getting Business — French and Italian Markets Dull — Large Order in Argentine

British coal production continues its climb back to the pre-strike level. Cabled reports to *Coal Age* show the output in the last week of July as 4,587,300 gross tons, a gain of more than 200,000 tons over the preceding week and above the tonnage of the corresponding weeks of both 1919 and 1920. Excepting only Northumberland, every district recorded a gain in the week of July 23 over preceding weeks, despite the fact that fewer pits are being worked. Yorkshire, South Wales and Monmouth each passed the three quarter million ton mark and Durham and Derby for the second week each produced in excess of 500,000 gross tons.

Under pressure from every side the British export prices are being forced downward. The London Coal Exporters' Association has addressed a letter to the Prime Minister, urging the danger to the coal industry and to the whole community of the continuance of the present exorbitant prices, this being entirely against the spirit of the settlement under which the Government provided £10,000,000 to enable the collieries to recover the former home and export coal trades. The Association emphasizes that no time should be lost in offering coals at much lower prices for forward delivery, otherwise stoppage of the pits must occur very shortly. The cost of production in July has no bearing on the probable cost in August and September, when output should be in full swing, and the price must be cut now or trade cannot be recovered.

The drop in British prices is evident from the following quotations cabled to *Coal Age*:

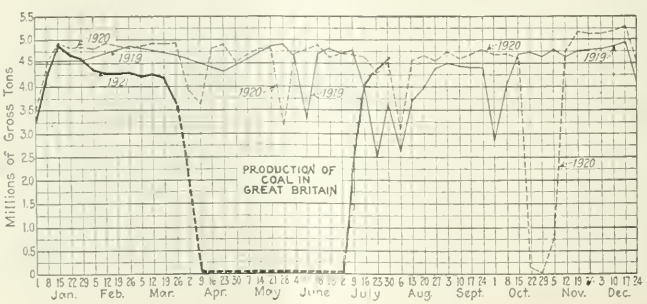
CURRENT QUOTATIONS, BRITISH COAL, F.O.B. PORT, GROSS TONS

Cardiff:	Aug. 6	Aug. 13
Ad., Large	40s. @ 42s. 6d.	37s. 6d. @ 38s. 6d
Steams, Small	20s. @ 22s. 6d.	19s. @ 20s.
Newcastle:		
Best Steams	37s. 6d. @ 40s.	32s. 6d.
Best Gas	37s. 6d.	35s. @ 37s. 6d.
Bunkers, Specials		32s. 6d.
Bunkers, Best	35s. @ 37s. 6d.	30s.

Exports of coal from the United Kingdom in July were 816,000 gross tons, compared with which exports from North Atlantic ports of the United States were 1,295,000 gross tons. Hampton Roads alone loaded more export cargo coal than all of the United Kingdom in July.

It is stated on good authority that a contract has just been concluded for 40,000 tons of Monmouth black vein coal for the Argentine. The shipments, which will be at the rate of 10,000 tons per month, will begin in September. The price is stated to be 35s. per ton for large, and 20s. for small coal. This is regarded as the opening of a British campaign to regain the Argentine coal trade.

In all, there are 131 mines that have not as yet been reopened since the strike. These pits, of which 36 are in South Wales and Monmouthshire, 21 in Durham, 18 in Yorkshire and the others in nine other fields, normally employed 25,629 men, which indicates that they represent but a small portion of the total. In addition there were 93 mines normally employing 29,000 men where work on dewatering is in progress.



Pier and Bunker Prices, Gross Tons

(Exchange Rate. Quotations by Cable to Coal Age)

PIERS

	Aug. 6	Aug. 13
Pool 9, New York	$5 90@$6 10	$5 70@$5 95
Pool 10, New York	5 40@ 5 75	5 35@ 5 75
Pool 71, New York	5 90@ 6 00	5 90@ 6 00
Pool 9, Philadelphia		5 80@ 6 00
Pool 10, Philadelphia		5 40@ 5 70
Pool 71, Philadelphia		6 00@ 6 35
Pool 1, Hampton Roads	5 50@ 6 00	5 50
Pools 5-6-7, Hampton Roads	4 75@ 5 25	5 00

BUNKERS

Pool 9, New York	$6 20@$6 45	$6 00@$6 25
Pool 10, New York	5 70@ 6 10	5 70@ 5 90
Pool 9, Philadelphia		6 10@ 6 30
Pool 10, Philadelphia		5 70@ 6 00
Welsh, Gibraltar	60s. f.o.b.	60s. f.o.b.
Welsh, Port Said	80s. f.o.b.	80s. f.o.b.
Welsh, Singapore	102s. 6d. f.o.b.	102s. 6d. f.o.b.
Welsh, Rio Janeiro	90s. f.o.b.	90s. f.o.b.
Welsh, Algiers	60s. f.o.b.	60s. f.o.b.
Welsh, Malta	75s. f.o.b.	75s. f.o.b.
Welsh, Lisbon	85s. f.o.b.	85s. f.o.b.
Welsh, La Plata	80s. f.o.b.	80s. f.o.b.
Welsh, Madeira	65s. f.a.s.	65s. f.a.s.
Welsh, Teneriffe	65s. f.a.s.	65s. f.a.s.
Welsh, Genoa	69s. t.i.b.	69s. t.i.b.
Durham, Newcastle	35s.@ 37s. 6d. f.o.b.	35s. @ 37s. 6d. f.o.b.
Local, Sydney		31s. 6d. f.o.b.
Local, Newcastle		22s. f.o.b.
Local, Port Kembla		30s. 9d. f.o.b.
Local, Wellington	...	47s. 9d@ 51s. 10d. f.o.b.

Hampton Roads Inactive as Export Demand Slumps

With export business continuing to exhibit a pronounced slump, the coal trade is coming to rely more and more on bunker business and New England movement. Neither of these are very active, but they are relatively more important now than the oversea trade. Even compared with March, the present apathy of the market is unusual. Export clearances have grown so infrequent that there are now no more in a week than occurred every day during the greater part of June.

The technical position of the spot market is rendered more stable by the fact that shipments from the mines have been promptly curtailed with the shrinkage in dumpings. As a result there is no such overburdening accumulation of tonnage as forced the market down during February and March. Distress coal has been quoted at extremely low figures, but the real market price is hardly below $5.50 for Pools 1 and 2.

PIER SITUATION

	Week Ended Aug. 4	Aug. 11
N. & W. Piers, Lamberts Point:		
Cars on hand	2,633	2,100
Tons on hand	124,849	103,655
Tons dumped	212,282	128,912
Tonnage waiting	7,400	3,600
Virginian Ry. Piers, Sewalls Point.		
Cars on hand	2,052	2,080
Tons on hand	102,600	104,000
Tons dumped	83,811	80,812
Tonnage waiting	15,407	4,650
C. & O. Piers, Newport News:		
Cars on hand	2,309	1,889
Tons on hard	115,450	94,450
Tons dumped	71,748	51,913
Tonnage waiting	5,485	7,980

Only a little more than 300,000 tons have been reported at the various terminals any time this month. In comparison with the small amount of vessel tonnage registered for loading this figure represents a heavy accumulation, but early in the year the amount of coal on the tracks here was often above 400,000 tons.

Such inquiries as are received concern chiefly the low-volatile pools. There is practically no interest in high-volatile coals in the oversea trade. Spot prices on such pools at $5 or under are said to be considerably under cost of production, but even at such figures, there is no market.

Upper Silesia Production Below Normal

Production of coal in the Ruhr in the week ended July 30 was 1,761,000 metric tons, a slight decrease from 1,779,000 tons the week previous. A further cable to *Coal Age* gives the output in Upper Silesia in July as 1,998,797 tons, which exceeds the average per month for the five months ended with May (1,662,000 tons) but is much below normal, the output in February, 1921, for instance having been 2,811,904 tons.

Belgian Coal Prices Reduced

Advices to *Coal Age* under date of Aug. 3 are to the effect that on the Belgian coal market there is an absence of activity except in domestic descriptions. A reduction of four francs has been made on industrial sorts and 8 to 10 francs on other descriptions. It is asserted that the miners' unions will insist on a reduction in the price of domestic coals since the agreement relating to the reduction in wages of five per cent was made on condition that the prices of all coals should be brought down.

Quotations on domestic coals are 123.5 francs for large sizes, and for industrial coals; run of mine 25 per cent, 89 francs, 35 per cent, 93.5 francs, 40 per cent, 96 francs. Briquets are quoted at 100@116 francs and bunkers at 135 francs.

American gas coal is quoted in Rotterdam under date of Aug. 12, at $7 per gross ton, f.a.s. and British steam coal is quoted at 39s., which is approximately $7.50 at current exchange.

Italian Imports, Mainly German Coal

Imports of coal into Italy the first half of July were 174,000 metric tons, of which the United States sent 61,000 tons, Westphalia (Reparations coal) 106,000 tons, and Upper Silesia, 2,000 tons.

Quotations by cable on Aug. 12 were for American steam coal at Milan, 310 @315 lire, compared with which prices were 315@320 lire on Aug. 1. Cardiff coal is now quoted at 325@335 lire per ton, or higher than coal from this country.

Export Clearances, Week Ended Aug. 11

	Tons
From Baltimore	
For Argentine	
Br. SS. Glendenon	5,456
For Italy.	
Port SS. Faro	5,132
For Sweden.	
Sw. SS. Lestris	3,737
From Hampton Roads	
For Atlantic Islands	
Am. Schr.—Frank A. Morey, for Hamilton, Bermuda	828
Nor. SS. Bratland, for Port of Spain	2,731
For Brazil:	
Grk. SS. Ionia, for Rio de Janeiro	6,032
Am. SS. Orient, for Rio de Janeiro	5,693
Du. SS. Wolsum, for Buenos Aires	5,610
For Cuba	
Am. SS. Moosehaute, for Havana	4,634
Cu. SS. Estrade Palma, for Havana	5,363
For Greece	
Grk. SS. Pokos Vergottis, for Piraeus	7,960
For Italy	
Br. SS. Thamesmede for Trieste	5,049

C.I.F. Prices, American Coal

	—Aug. 6—		—Aug. 13—	
	Low Vol.	High Vol.	Low Vol.	High Vol.
River Plate	$9 95	$9 05	$9 70	$9 10
French Atlantic	10 95	9 15		
United Kingdom	10 80	10 00		
West Italy	11 40	10 50	10 00	9 50
Scandinavia	11 00	10 50		
Port Said	12 00	11 25		
Piraeus			10 90	10 30

Reports From the Market Centers

Tidewater—East

NEW YORK

Anthracite Buying Slow—Effect of Tax Bills Unknown—Inquiries for Bituminous Increase, While Harbor Quotations Show Slight Decrease—Buying Revival Expected Shortly.

Anthracite—Demand centers around stove coal and the other large sizes are being moved because of it. Some tradesmen see a slight betterment due to the many interruptions in mining and the continued urgency of dealers to their customers to put in their winter fuel.

The companies' supply of pea is steadily increasing, but so far, because of the demand outside of this district, has caused them no trouble. Independent operators and shippers are not having as easy a time to keep their product on the move. An effort is being made to include portions of egg and chestnut sizes in all orders for stove and on this account quotations in most instances have been around company schedules.

Some curiosity exists as to what the operators will do with regard to prices when the Kohler-Fowler Mine Bills become operative the last of this month. Nothing as to their attitude has yet been learned.

Bituminous—In the opinion of some coal men the optimism prevalent a week ago was not so prominent in the week just past. From reports among the trade it is evident the railroads do not intend to do any amount of heavy buying at this time. Most of the roads have many days supply on hand and have contracts for their ordinary requirements.

Dealers, as a rule, look for a decided improvement in the next couple of weeks or at the latest by the middle of September. Inquiries for bona fide business are increasing although the placing of buying orders is delayed.

Collections are slow and shippers in many cases are complaining. In some instances the buyer with the ready money is securing concessions that the slow payer does not receive.

While there is considerable more coal out of the pools than in the pool in this harbor, quotations for the pool coals are slightly lower unless the buyer can be guaranteed that he will be given the particular coal he desires. On the other hand some coal has been sacrificed to save extra charges, but these occasions are few.

PHILADELPHIA

High Anthracite Prices Annoy Consumer—Quotations Firm, Except Pea—Some Mines on Part-Time—Bituminous Quiet, but with Signs of Improvement—Industry Better.

Anthracite—It has come close to being a fair week with the retailers, considered from the standpoint of coal sent out. Nobody was rushed, but the consumer shows renewed interest.

The consumer is puzzled by the continued high prices, and the fact that it is not coming down causes much feeling, especially when the retailer advises it is likely to go even higher. The question of quality seems to be the last consideration.

Dealers continue to stock pea in order to get the larger sizes, yet they grow doubtful of their ability to move all they have in stock during the coming winter.

Prices on the family sizes continue unchanged, except, of course, on pea. The majority of shippers are holding firmly to their prices, even though they have many cars of this size standing on demurrage.

The matter of tax continues to bob up and recently the rumor was current that the companies were about to make a separate charge, both for the tax at the mine mouth and the tax under the mine subsidence law. There is no doubt that something is brewing beneath the surface and that an announcement will soon be forthcoming.

Steam coals remain flat, with buckwheat the only size being moved to any extent.

Bituminous—Buying remains on the same level, but with an occasional exception, as several shippers report a moderate increase in sales the last few days. There is also a more frequent inquiry for prices and it would seem that the consumer is giving more attention to his fuel requirements as fall approaches.

Recently there has been some quiet activity on the part of producers of high grade fuels to get more tonnage under agreement. No prices have been

given out, but some consumers intimate that they could get a fair tonnage for the balance of the coal year at a favorable figure, and in fact a few have closed.

There has been some real improvement of business conditions, for iron plants that were not running at all have now started up on a small scale. Textiles also have improved, with the ending of a strike of long standing in the carpet trade.

Tide business is not even ordinary, being principally a light bunker trade, with a few coal charters closed recently.

BALTIMORE

Demand Continues Poor—Prices Extremely Low—Hard Coal Trading Still Off-Color—Dealers See Fall Jam.

Bituminous — Demand for all grades continues poor and there is so far an utter lack of orders for the usual mid-August supplies by business houses and factories. Should there be a decided awakening of business this fall an undoubted jam will occur in transportation and the inability to supply all coal at one time will be sharply felt once more.

There is no doubt that the dearth of orders is this time not so much due to inability to grasp the idea that everybody cannot be supplied at once, or because prices are not extremely low, as it is to the fact that it is extremely difficult for the average business man at this time to gauge his needs. No matter what the cause, however, a most unfortunate situation is likely to result.

Best grades of steam coals and of lump gas are still on this market around $2@$2.40, while lower grade coals can be had at such prices that there can be no question of the fact that business men as a whole must know that now is the low buying period.

Anthracite — There is little change in the situation here. The public is still unconvinced that it is not to get coal at lower prices. Retail dealers are in a quandary what to do to straighten out public opinion and secure the amount of ordering that is so necessary in the next few weeks if there is not to be a most unfortunate congestion this fall and early winter.

BUFFALO

Trying to See Improvement in Soft-Coal Situation — Anthracite Inactive — Lake Shipments Heavy.

Bituminous—At least one of the Buffalo operators and jobbers announces that he can see an improvement in the demand for coal and he claims that it will be apparent to all before long. This sort of report is more or less common. It may mean something and it may be merely an echo of the ardent wishes of the coal man.

The fact is that here and there a slight stir is appearing. It may broaden into a general wave of business and it may not. The chances are that it will not, at least right away. The latest report from the iron trade is that there is no improvement. That means that coal must wait awhile yet.

With the greater part of the iron furnaces in this section shut down, it cannot be expected that coal will move any faster than it has done. All that can be done is to keep sales organization in good running order and wait for the stir. Meanwhile prices are dull and weak, except slack, at $3 for Youghiogheny gas lump, $2.75 for Pittsburgh and No. 8 steam lump, $2.50 for Allegheny Valley mine run and $1.75@$2 for slack, adding $2.36 to Allegheny Valley and $2.51 to all other coals to cover freight.

Anthracite—The trade drags, much as formerly. The consumer who has no coal will do nothing but complain of the high prices and claim that if he holds off till fall they will come down. Every coal shipper tells him that such a thing is not likely, but the daily press has set the mark and the consumer believes the report that is best suited to his notions.

Meanwhile the Chamber of Commerce is becoming uneasy and a meeting of anthracite interests has been called to see what can be done. Something of the sort was done last year, but it is hoped that more is possible now. The idea is that certain large consumers, such as churches, can be got out of the way before the rush comes, as it is sure to do before winter.

Shippers are sending much of their coal up the Lakes, breaking the record, week after week. The amount for the week ending Aug. 9 was 199,600 tons, of which 90,200 cleared for Duluth and Superior, 52,300 for Chicago, 18,500 for Fort William, 17,300 for Milwaukee, 10,500 for Sheboygan, 6,700 for the Sault, 3,000 for Racine and 1,100 for Cheboygan, Mich. Shipments for the season to Aug. 1 are 1,964,886 net tons, as against 1,528,662 tons to the same date last year.

Coke—With practically all the local byproduct ovens shut down, to the great inconvenience of city gas plants, and with the furnaces in this district as nearly idle as they have been in many years, the coke market maintains only bottom prices, $4@4.25 for 72-hr. foundry, $3@$3.25 for 48-hr. furnace and $2.75 for stock, with a little chestnut size for domestic use $5@$5.25, adding $3.64 for freight to Buffalo.

Northwest

DULUTH

Inland Movement Heavier—Lake Receipts in Good Volume—Ore Trade Shows Signs of Life

A boom in trade which promises to relieve the congestion and clear up the stagnant coal situation has been experienced here. During the past week dock men report that demand has improved even beyond their hopes, and that the prospect is bright for such a revival of trade as will permit shipments to continue coming to the harbor.

Lake receipts continued during the past week in much the same volume as before. Forty cargoes arrived in all, of which eight were anthracite. Twenty-two are reported on the way of which eight are hard coal. There is every likelihood that shipments will continue in this volume or even greater as iron ore shipments are picking up which gives down cargoes for the boats.

Dock men recently let it be known that they would refuse to "hold the bag" this year and did not intend to bring more coal to the Head-of-the-Lakes than could be consumed. Several of the larger companies have asserted that when once their docks are full they will stop shipments and will not continue them again, regardless of consequences.

It has been estimated that the bituminous supply on docks, together with the normal shipments coming in, will run this district through the winter without any danger of shortage.

Eight hundred thousand tons of anthracite are still lacking to supply the probable demand of this winter. Last month more than 300,000 tons came to the Head-of-the-Lakes. Four months remain in which to get up the necessary tonnage, and dock men say that, barring accidents, the needed amount will get here.

Prices remain firm as last quoted. Sellers are making no sacrifices and feel that the market will not sag. Anthracite is due for another 10c. increase Sept. 1, which will be the last advance this year.

MILWAUKEE

Better Interior Movement—State Officials to Investigate Coal Prices—Lake Receipts Lower—Vacant Yards being Stocked.

Because of intensive solicitation, together with a guarantee that prices will not go any lower than at present, there is a better movement of coal both in the city and to the country. Prices continue undisturbed. Reports are current that one dealer is cutting the schedule of Eastern soft coal, but if this be true, it has had no effect on the market.

The feeling that anthracite prices are too high is so strong throughout the state that Gov. John J. Blaine, Attorney-General Morgan and the State Department of Markets are making a sweeping inquiry in regard thereto. Milwaukee dealers are seemingly little disturbed by the announcement.

Receipts by Lake thus far in August aggregate 44,242 tons of anthracite, and 81,731 tons of soft coal, making the total since the opening of navigation 2,120,356 tons, of which 569,657 were anthracite and 1,550,699 soft coal. Last year's anthracite receipts during the corresponding period were 406,068 tons, and soft coal 693,788 tons. Indications are that the movement of coal up the Lakes will be more moderate as the season advances. It is expected, however, that stocks at Milwaukee yards

will be replenished at the rate of 60,000 to 80,000 tons per week, to keep pace with the outward movement. All available river frontage is being utilized for coal storage.

Inland West

CLEVELAND

Industrial Situation Improves—Demand for Coal Not Affected Yet—Lake Trade Slackens—Retail Demand Stronger.

Business conditions in this district have shown further perceptible improvement during the last week, with the cautious advances being made toward recovery from the extreme slump in the iron and steel industry. However, sufficient progress has not yet been made to find any considerable reflection in the coal trade. Companies who have felt the stimulus of bettering demand are inclined to wait more definite assurances that the upturn is not merely a temporary recovery before enlarging their schedules of production. In the meantime, stocks of coal at plants are at a point which will necessitate buying if trade activity continues to grow. Experiences through which the business community has passed in recent months, have bred caution in a superlative degree.

On the whole, however, underlying sentiment is better and the feeling pervades the coal trade that any changes henceforth will be upward. Coal men cite the evidence of strengthening commodity prices, and other developments as lending color to this view. Aside from the Lake trade, the coal market in this district has been unusually dull this summer, due to the wide-spread curtailment in steel. This industry and its allied lines is of supreme importance in and around Cleveland.

A better feeling prevails in the retail trade also, with the appearance of more buying as the summer wanes. The city board of education has let contracts for 25,000 tons of coal for school buildings. This coal has been allocated to nearly all of the dealers in the city.

Steam slack continues strong, being quoted $1.70@$1.85 a ton. Mine run spot prices range $2.25@$2.30 and lump coal is selling $2.60@$3.00.

Due to lessened Lake coal shipments the output of the Eastern Ohio mines is lower. Lake dumpings last week were 698,781 tons. The total movement for the season up the Lake to date has been more than 14,000,000 tons, nearly twice last year's total for the same period.

Bituminous coal receipts for industries and retailers at Cleveland, during the week ended Aug. 6, amounted to 557 cars, divided; industrial 417, retail 140; as compared with a total of 546 cars the previous week. This is only about 40 per cent of Cleveland's minimum requirements during normal times.

DETROIT

Buying Continues Sluggish—Shipments Are of Small Volume—Little Free Coal Available—Anthracite Demand below Normal

Bituminous—Efforts to stimulate interest of consumers in offerings of bituminous coal are not yet productive of encouraging results in either steam or the domestic sections of the trade. Buying is still of small volume.

Many of the large steam consumers seem to be restricting their purchases to quantities sufficient for satisfying only a few days' requirements. As manufacturing plants in many instances are running on schedules which make possible a large reduction in their normal fuel consumption, the volume of sales is at a low level.

A number of establishments have been able to accumulate small reserves. It is believed that resumption of normal industrial activity would clear away these reserves speedily. Jobbers feel that such a development would be quite likely to find Detroit coal users confronted with a serious shortage in coal supply and that the mines probably would be unable to provide coal in sufficient quantity to prevent troublesome complications from ensuing.

The small volume of buying by household consumers provokes sharp criticism. Many domestic consumers, now out of employment, are perhaps unable to stock up, but jobbers place stress on the contention that were those who are not so handicapped to place their orders now, it would aid materially in reducing stocks in yards of retailers. This would relieve the pressure on distribution later in the year and would enable the dealers to bring in additional supplies to provide for requirements of those who by force of circumstances, may be obliged to defer their buying to a later date.

Smokeless lump and egg is quoted $5.25, mine run $3, slack $1.50@$2. Ohio domestic lump is $3.25, 1¼-in. lump $3, egg $2.75, mine run $2.50, nut and slack $1.50. West Virginia 4-in. lump is $3.25, 2-in. lump $2.90@$3, egg $2.75, mine run $2.15, nut and slack $1.50.

Anthracite—Only a small proportion of the normal distribution has been made to household consumers. The backwardness of buyers is ascribed to the high retail prices, ranging $14.25@$14.75, and the expectation that reduction in freight rates or some other change in existing conditions will result in lower prices.

ST. LOUIS

Conditions Show Slight Improvement, Both Steam and Domestic—Country Business Picking Up—Retail Stocks Very Heavy—Prices Unchanged.

A little better tone to the country domestic market is about the only change here. There has, however, been some ordering on the part of the domestic consumer, but this is so small that it has not yet become a factor. Indications are that it will soon get under way as fall approaches. Dealers are continuing to keep their yards loaded, but buying is so limited that they are unable to take in much additional coal.

Steam conditions are showing some improvement, but only in a small degree so far. A little storage coal is coming in here and there.

Smokeless and anthracite is slow and no Arkansas coal is moving at all. The coke situation is showing a little activity. Retail prices are as yet unchanged.

CINCINNATI

Fall Purchases Delayed—Steam Sizes Decline—Smokeless Market Uncertain.

Possibilities of a reduction in freight rates and governmental activities that tend toward that end have been seized upon by the large buyers here as an excuse against ordering any great stock of coal for early fall delivery. Business that has been anticipated from this source, therefore, has fallen flat. Country dealers' orders have been a little better.

The recent slight advance in slack prices have failed to hold, and Kentucky again has a range of $1@$1.25 and West Virginia $1.25@$1.35.

Mine run has been a bit better in demand. Most of the sales were around $1.75, a ten-cent advance. West Virginia lump can be bought $2.75@$3, with better grades and future deliveries going as high as $3.75. Kentucky block dropped to $3@$3.25.

The uncertainty of the smokeless market has been reflected in the lump prices which are now being quoted at $5. Slack took another tumble to $1.50 @$2.25, and mine run to $2.50, with a dollar range upward for coal that is being held by old-line producers. Nut is quoted $4@$4.25.

The retail market received a little encouragement this week. Householders are showing some disposition to put coal away now that fall may catch them unprepared. There has been no change in the price situation.

COLUMBUS

Slightly Better Domestic Demand—Steam Business Still Slow—Lake Tonnage Dropping.

It is now the time for consumers to secure their winter stocks and some are following the usual rule. But the movement is not as general as in previous years. There is a prevailing feeling that freight rates will be reduced and that this will be reflected in the price. Another reason is that many consumers have not the money to pay for their coal and the retailer is unable to extend any further credit as he is growing short of ready cash.

Retail prices are fairly steady at former levels. Hocking lump sells around $6.50, while the re-screened

varieties are about 25c. higher. West Virginia splints are $7.50 and Pocahontas is $9.50@$10. Anthracite ranges $11.50@$15.

The Lake trade is gradually slowing down although loadings at the docks do not indicate such a falling off. But as far as Ohio coal is concerned, the Lake outlet is plugged. Producers believe this will be only temporary and they are expecting a lively movement in the fall.

Steam trade is extra slow and the market is the weakest in months. There is considerable distress mine run on th Columbus market. Railroads are not taking much tonnage and manufacturing concerns are slow in resuming operations.

Production is still at a low point and little improvement is expected until the domestic trade shows more activity. The Hocking Valley, Crooksville and Cambridge fields report about 22 per cent output. In the Pomeroy Bend district the output is about 25 per cent.

South

BIRMINGHAM

Temporary Improvement in Steam Demand—Domestic Mines Suffer Sluggish Market—Quotations Stationary

Inquiry for steam coal was slightly on the increase the first part of the week and the movement was a little better than for some weeks past, but the trade has again settled down and is quiet and listless. There is a good deal of surplus coal in cars, which is being disposed of slowly and with difficulty. Outside of the starting up of a few oil mills, consuming sources have not been augmented.

Mine run quotations f.o.b. mines are as follows: Black Creek $2.75@$3, Cahaba $2.50@$3, Carbon Hill $2@$2.40, Big Seam $2@$2.25, Pratt $2.50@$3, Corona $2.25@$2.50, Jefferson $2.25@$2.50.

Consumers are not buying their winter coal to any extent as yet and domestic mines are having to curtail operations as dealers decline to take their regular contract quotas. That dealers will be unable to supply the coal demanded when winter weather arrives is the unanimous opinion of coal men as the necessary equipment for moving will not be available. Domestic quotations are unchanged.

LOUISVILLE

Retail Movement Growing — Prices Firm—Conditions Improve Slowly.

It is reported that demand for prepared sizes is somewhat better, orders and inquiries being more active, as retailers are buying with more confidence. In the period from April through June, retailers stocked a good deal of prepared coal, when the market ranged $3.50@$4, and then saw it slump to $3@$3.50, which destroyed confidence. However, there was some summer stocking, which reduced holdings of higher-priced fuel, forcing the retailers back into the market, in view of the fact that prices have been advancing since the low level was reached in July.

In filling retailers' requirements for prepared sizes there may be some increased production of screenings, which will tend to lower the market. It is claimed that mine run is at rock bottom, and operators will close down rather than sacrifice at a lower price.

There is a more optimistic spirit shown in the coal trade, as it is held that the turning point has been passed, and from now on business will be better. Industrially, things are still quiet, but showing improvement.

Machine shops, metal working and hardwood lumber industries are very slow, with many plants down, but other industries are fairly active. In Louisville, industry is greatly diversified, and building operations have been fairly active, which has also aided in absorbing labor.

West

DENVER

Markets Dull—Production Low—Agitation for Municipal Retail Yard.

With the output still 60,000 tons a week behind last year's record, and retail markets showing a corresponding dullness, operators and retailers are wondering just how the demand will be supplied when the heavy trade begins. In addition, retailers are facing troubles in the issue of a proposed municipally operated retail yard here, urged by those who think the coal users are being treated unfairly.

The city is still getting coal from a mine under lease, but the service from this mine is now restricted to municipal buildings. The new plan is to take up coal land on four sections of unappropriated federal land, in accordance with the act of Feb. 25, 1920.

An early adjustment of the claims for back pay held by some of the miners in the Big Six and Red Ash mines in northern Colorado is likely, pending which the mines will continue operation. There is an attempt to force the closing down of the mines until Carl De Lochte, state labor commissioner, recently addressed the men. He told them that those who had legitimate claims would receive the amount due them, but that any foreigners who interfered with operation of the mines would be turned over to the Federal authorities for the institution of deportation proceedings.

Canada

TORONTO

Trade Still Quiet but Improving—Large Supplies on Hand—Shipment Received from Nova Scotia.

Although trade continues quiet there is a slight improvement and orders for fall and winter supplies of anthracite are beginning to come in more freely. Yards have large supplies on hand of all grades except stove of which there is a chronic shortage.

A shipment of 2,200 tons of Nova Scotia coal recently arrived here by water. This is regarded as exceptional rather than as a forerunner of any extensive trade, although large expenditures on improvements of the harbor are making it accessible to ocean going vessels.

Quotations for short tons are as follows:

Retail:	
Anthracite, egg, stove, nut and grate	$15 50
Pea	14 00
Bituminous steam	11 00@ 11 50
Domestic lump	12 25
Cannel	16 00
Wholesale f.o.b. cars at destination:	
¾-in. lump	7 75@ 8 50
Slack	6 00@ 6 75

News From the Coal Fields

Northern Appalachian

ANTHRACITE

Duller Markets Reflected in the Output — Labor Troubles Disturb Running Time

A further reduction in output appears inevitable. Labor troubles are developing and production is being further whittled down by the waning demand. A number of independents are entirely closed down while others are operating part time.

No improvement is expected during this month and it may be the middle of September before the demand picks up.

UNIONTOWN

Coke Market Shows Stability—Slack Coal Scarce — Other Sizes Sluggish — Returning Business Will See Keen Competition.

While the coal and coke trade continues to live on hope, the prospects are accumulating each week that something more tangible will reward their consistent policy of optimism. Returning business will see competition the keenest in history but there will be few reckless moves, as witnessed this week by a firm quotation of $3 for furnace coke. During the past several weeks a number of odd-lot sales have been closed at $2.75 but the interest created in contracts recently made, together with the budding inquiries which may bloom into contracts, has caused

operators to resist a price below $3. Foundry coke is active at $4@$4.25 with most of the spot tonnage being bought by Western consumers.

A rather nebulous condition prevails in the coal market as regards slack and prepared sizes. While there is an active slack demand by cement concerns there is practically no call for the ¾-in. As a result, quotations of slack took a jump from a range of $1.50@$1.75 to $1.65@$1.90. Lump on the other hand took a slight drop, being quotable at $2.25. There is practically no demand for other grades handled in the Connellsville region.

PITTSBURGH

Little Business Except in Gas Coal—Competition of Non-Union Districts—Steel Corporation Using Connellsville Instead of Pittsburgh Coal.

Competitive conditions between the Pittsburgh and nearby non-union districts show no particular change. Current market demand continues very light and is going to the non-union fields in most cases, the prominent exception being in gas coal, a market that the Pittsburgh district can keep largely to itself.

Production of slack is decreased farther by the decline in shipments in the Lake trade, and is working up toward the level at which mine run is held, a difference being that the slack production is bought freely while there is very little buying of mine run steam coal, which presents a market that is almost nominal.

Operations at the steel mills have been increasing slightly, but the steel industry is taking only a little more coal from the Pittsburgh district. Since the termination some time ago of the long-term contract between the Pittsburgh Coal Co. and the United States Steel Corporation the latter seems to be getting coal instead from the Connellsville region, chiefly from its own mines there, attached to coking plants, with some purchases from other operators.

Nothing new has developed in the matter of wages. While the men are very poorly employed they are making no definite move to remove the disadvantage they are under by reason of the competition of non-union districts.

Prices are largely nominal, there being scarcely any transactions: Slack, $1.65@$1.75; steam mine run, $2@$2.15; ¾-in. steam, $2.25; gas mine run, $2.20@$2.35; gas lump, $2.60@$2.80 per net ton at mine, Pittsburgh district.

CONNELLSVILLE

Market Very Dull Except for One Inquiry—Prices No Lower—Soft Coke Brings Fair Figure.

Following the occasional transactions in the past few weeks in furnace coke there is nothing new this week except an inquiry for 10,000 tons for September for a blast furnace at Columbus that may possibly be started. The majority of operators will not quote as they expect a few sellers to name prices they would not care to consider, i.e., prices of $3 or possibly a trifle less. The actual limit of some operators seems to be $3.25, while others are talking of $3.50, although they might split the difference between that and $3 if they saw a chance of securing a contract that would justify their blowing in some ovens.

Spot furnace coke business is confined to small lots, chiefly carloads, for miscellaneous consumers, and this market is a shade stiffer, $3 being often obtained from dealers, who add a margin besides, but this is for particularly good coke. On the other hand first drawings and other soft coke are sometimes sold at $2.75 or less and are reported in some quarters as being sales of standard furnace coke. For a good grade of soft heating coke $2.75 can be obtained.

Buying of spot foundry coke shows a slight improvement, though the movement is still relatively light. Sales at less than $4 are believed to be off-grade material.

The market remains quotable as follows: Spot furnace, $2.90@$3; contract furnace, $3; spot foundry, $4@4.50, per net ton at ovens.

EASTERN OHIO

Production Off—Lake Trade Dropping—More Interest in Fall Deliveries—Domestic Market Active.

Notwithstanding that Ohio's industrial situation showed a slight turn for the better during the week, a slowing down in Lake shipping overbalanced any improvement in the coal trade from other directions and production declined some 22,000 tons. Aggregate output amounted to 378,685 tons. Production for the year to Aug. 6 is estimated at 10,344,043 tons, which is 54 per cent of rated capacity for that period.

Railroads are taking a little better than 35 per cent of the output for fuel and there are indications that some lines are doing a little stocking in anticipation of fall and winter requirements.

Reports are being received that interior buying in the Northwest, both from industrials and railroads, is showing some new life. However, the opinion is that unless the Northwest market takes coal from the docks, thus relieving the congested storage situation, Lake shipping must show an abrupt falling for the balance of the season.

Eastern Ohio producers, having West Virginia operations supplying trade in the East, state that inquiries from the East are decidedly better than from the Middle West, from which it may be concluded that industrial revival in the East is being felt more perceptibly than throughout this section.

Operators say that contract and spot inquiries are somewhat better than during previous weeks. There is more slack available but the price has held pretty much near the figure to which it recently stiffened.

While operators may not be said to be optimistic, retailers are more hopeful and report domestic demand much improved. The retailer's season is fast approaching and the recent unfavorable developments in the natural gas controversy in Cleveland will no doubt cause many domestic users of gas to give more serious consideration to burning coal.

UPPER POTOMAC

Unprecedented Sluggishness — Mine Closings Increase—No Business Available.

Mine closings were even more common during the first week of August. Competition of the non-union fields to the north was being felt very keenly and not even inquiries were being received. Such a slack condition of affairs was almost unprecedented in the history of the field.

FAIRMONT AND PANHANDALE

"No Markets" Further Curtail Production—Lake and Tide Shipments Wane—Prices Soft.

Fairmont

Production during the week ended Aug. 6 was lower than at any time during the year, idleness growing throughout the week. Shipments dropped from day to day with little or no coal moving to Tidewater or Lake.

Northern Panhandle

Diminishing demand tended to still further curtail production during the first week of August. As shipments to the Lake declined it was almost impossible to market any coal. Tidewater shipments were at a standstill. Prices offered, in most cases, were too low for acceptance.

Middle Western

SOUTHERN ILLINOIS

Some Improvement Noted—Domestic Orders Increase—Prices More Stable—Car Shortage Indications Appear.

There is a little improvement in the Carterville field except on nut. Chicago has picked us some on the movement of screenings, and lump at many places is scarce, being oversold, while egg is about even. Nut is a problem that has not been solved.

The first indication of future car shortage is appearing right now, especially on the Illinois Central, and if the movement of coal begins at all early—and the chances are that it will get underway pretty well before the end of the month—by the first of September car shortage will again be a factor of production.

Prices seem to be more stable on lump and egg. Independents are gradually drawing closer to the $4.05 price on lump and many of them are holding egg at that. The nut market, however, is down below $3, with screenings $1.25

@$1.50. Mine run prices are at variance. Railroad tonnage is showing up fairly well. Independent prices on lump are occasionally as low as $3.50.

The situation in the Duquoin field shows some improvement, while Jackson County operating conditions are continually growing better. Prices are somewhat the same as those prevailing in the Carterville field.

Some improvement was noted last week in the Mt. Olive district but not to any marked extent. No changes reported from last week in prices.

The Standard situation shows some improvement, especially in the movement of coal to the country west of the river. Conditions, however are not as satisfactory as they should be. Screenings are still around the dollar mark, with 2-in. lump at $2 and up and 6-in. lump $2.50@$2.75, and getting stronger. Nut, however is a drug on the market and steam egg somewhat similar, both of them selling from $2 upward.

Mines are averging a little bit better working time, although at many places unbilled cars are causing trouble. Railroad tonnage shows some improvement in this district.

WESTERN KENTUCKY

Slightly Better Movement — Prepared Sizes Improving — Good Outlook for Fall

Movement has been better during the past week, and prospects are for a heavier demand as the fall advances. Retailers are placing more orders and making more inquiries for prices. Operators are having no difficulty in disposing of screenings, regardless of the fact that general industrial demand is not strong.

There is not much development activity just now as some of the larger operators are not running all of their mines, demand not having reached a point as yet where they can market full production.

Operations are averaging around two days a week, some of the larger companies working full time at such of their mines as are being operated at all.

INDIANA

Better Market Tone Developing—Industrial Consumption Improving Slowly—Prices Unchanged.

There is a much more optimistic tone to the market. There appears to be a decided increase in inquiries from industries and retailers report more domestic call.

Gas utilities are still piling up coke, for which there is no call and this is being sold as low as $8 on a contract basis. Most of the municipalities and county units are taking bids for public coal and this has created a new demand. This action is later than is usual and some bargain bids are being reported.

Many of the industries throughout the state are reporting more production than for months, although the industrial situation is far from satisfactory. Operators are rather inclined to the belief that it will be the middle of September before any real demand begins. There is considerable activity among the railroad repair yards in an effort to get sufficient coal cars in good order to minimize the danger of a coal famine.

Middle Appalachian

HIGH-VOLATILE FIELDS

Weak Markets Cut Production—Lake and Tide Demands Slump—Some R.R. Fuel Activities.

KANAWHA

Dullness was even more pronounced during the first week of August, the output being limited to about 30 per cent of capacity. Tidewater movement was difficult at any price and there was little or no Lake demand.

LOGAN AND THACKER

Logan production likewise declined and was limited to a few companies, most of the mines being shut down because of "no markets." Some coal was still being stored but in limited quantities only. Eastern and Lake markets afforded no outlet and prices were softening from former levels.

Reduction of Thacker production kept pace with the other high-volatile fields, although there was better output proportionately because of the railroad fuel tonnage needed. However, production did not exceed 40 per cent of capacity.

NORTHEASTERN KENTUCKY

General market conditions were unimproved, domestic demand was at a standstill, and industrial buying was very irregular. Operations were confined to not more than two days. Screenings were comparatively firm but lump and mine run prices softened a trifle.

VIRGINIA

"No market" losses made it impossible to increase production, which remained on a basis of three days per week. Smaller concerns without contracts found little encouragement in the situation. Coke production was almost negligible.

LOW-VOLATILE FIELDS

Sluggishness at Tide Affects Production — All Demands Weaker — Dull Month Predicted.

NEW RIVER AND THE GULF

New River production was further curtailed in the first week of August, as it was increasingly difficult to find an outlet for coal. Tidewater prices were not in excess of $5.50 at Hampton Roads and even at such low figures little tonnage was being moved.

Inability to secure orders necessitated a like suspension in the Gulf region. There had ceased to be any Tidewater demand and it was equally as hard to dispose of coal in other markets.

POCAHONTAS AND TUG RIVER

Although there was a material decrease in the Pocahontas production, operators felt they were doing better than in neighboring fields, with activity listed at about 40 per cent of capacity. Producers did not seem to be much concerned as to the prospect for business a little later. There was a rather small Tidewater movement and only very few spot sales.

Although a decline was registered in the Tug River field, production held up to a greater extent than had been anticipated. It was believed that dullness would continue through August, when some improvement might be looked for.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Domestic Trade Reviving—Southern Market Relieved of Over Production.

A good deal more enthusiasm is being manifested among coal operators, indications being that the worst is over and that the fall demand will soon begin. Already there is more activity, especially in the domestic trade.

Prices remain about the same, good block being sold $3.50@$3.75; egg $3.10@$3.25; mine run, $2.25@$2.40 and screenings $1.50@$1.75.

It has been rumored that several of the large operations in Harlan and Bell counties, owned by consumers in the North and Northwest who have had their coal on the Southern market, are beginning to divert it to their own plants, thereby relieving the already overburdened market of this coal.

West

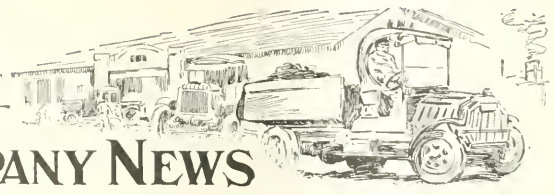
UTAH

Storage Demand Grows—Heavy Retail Stocks on Hand.

Demand for storage coal continues to improve slightly. Consumers seem to be convinced now that prices are not coming down, but so far they are not crowding dealers with orders. Last year a vigorous campaign was carried on, which succeeded in filling most of the coal bins before cold weather came, with the result, due to the mildness of the season, that many consumers who expected to have to place another order in February had some coal on their hands in May.

Coal on hand in the yards of Salt Lake City is growing and now amounts to approximately 100,000 tons. The car situation, which was reported last week as likely to be serious, is showing signs of improvement.

MINE And COMPANY NEWS



ALABAMA

Figures compiled from available data on coal production in Alabama for the first six months of 1921, show an output of approximately 5,500,000 net tons, which is about 2,000,000 short of what it should be to attain the record of last year, of 15,306,440 net tons, the lowest production since 1915. The poor showing is due to the extremely dull market which has prevailed throughout this year.

ILLINOIS

The Consumers' Co., the largest retail dealer in coal in Chicago, has recently formed a merger with the **Cook County Supply Co.**, dealers exclusively in building material. It is said that from five to seven million dollars are involved in the deal. The Consumers' company now practically controls the crushed stone and gravel producing business in and about Chicago. Also the Cook County Supply Co. is almost independent of railroad transportation, as it operates its own docks together with a boat line for handling the stone from the quarries to the main distributing points. The subsidiary companies affected by the merger are as follows: United States Crushed Stone Co., McCook; Argo Stone Co., Argo; Illinois Stone Co., Lemont; Universal Stone Co., Racine; Lake Shore Sand and Gravel Co., Algonquin; Federal Sand and Gravel Co., Beloit; Producers' Material Co., the Agricultural Brownstone Co., the Artesian Stone Co., and the United States Building Material Co., all of Chicago. Wm. H. Leland, vice-president of the Consumers' company, has resigned to engage in other business. His successor is H. M. Hallock, who up to now has been president of the Cook County Supply Co., and its subsidiary organizations.

INDIANA

W. D. Curl, of Petersburg, has been named state agent for the **Enos Coal Mining Co.**, an Ohio corporation. The company recently filed papers with the secretary of state which will permit it to transact business in Indiana and it plans to mine and deal in coal and coke.

Liabilities amounting to $43,326.36 and assets of $33,349.37 are listed in a voluntary petition in bankruptcy filed in the Federal Court by the **Etnica Coal Co.**, of Clinton. The petition is signed by Vincent Verde, president of the company.

The Robinson Brothers Coal Co., of Linton, is operating a new mine on the Thurman Jeffries farm, near Lyons. The mine is equipped with modern machinery and 100 men are to be employed.

KENTUCKY

The Maginnis Brothers, formerly engaged in the coal mining industry at Windber, Somerset County, Pa., are interested in a new coal company recently organized in Morganfield, Union County. John V. Maginnis will be manager and Joseph B. Maginnis will serve as secretary-treasurer. The new company has been incorporated as the **Morganfield Coal and Coke Co.** They have taken over all the holdings of the **Morgan Coal & Mining Co.**

The Harlan Coal & Coke Co., High Splint, Harlan County, capital $25,000, has filed amended articles increasing the capital to $100,000, the debt limit being of the same amount.

MINNESOTA

Dean Appleby and Professor W. H. Emmons, the former of the school of mines and the latter of the department of geology of the University of Minnesota, have arrived in Yokohama, on their trip to Manchuria, investigating the coal deposits of that country.

The new 500-ft. extension of the **Inland Coal and Dock Co.'s** receiving dock at Duluth is now complete and coal is being dumped.

The Fuel Supply Co., of Minneapolis, is a new corporation, formed for the purpose of handling fuel, and for prospecting for ores. The capital stock is $50,000.

The Boston Coal Dock will have a 300-ton class scales capacity when rebuilding is completed.

New track scales, which will accommodate loadings up to 300 tons, are being installed at the **Carnegie Dock and Fuel Co.**, in Duluth. These will replace the present scales, which have a capacity of 150 tons.

NEW YORK

The Building Managers' and Owners' Association of New York has sent a circular to its members advising them to buy coal now. In its circular, the fuel committee of the association asks the members to give the matter serious attention, saying: "We can help the miner, the operator, the railroad carrier and ourselves by buying coal now."

Cosgrove & Wynkoop Coal Co. has just opened an office at 133 Fenchurch St., London, England, with C. Brooman White as resident manager. Mr. White was interested in American & English coal companies prior to the war, when he was one of the British officers in charge of supplies at New York.

OHIO

The C. D. Grimes Coal Co. has been chartered with a capital of $25,000, to mine and sell coal in the Tuscarawas district. Among the incorporators are William Loveday and A. J. Loveday.

The Packard Coal Mining Co., of Columbus, which had been in existence for several years, has been reorganized by combining the **Packard Coal Co.**, also a Columbus concern, in one corporation. The Packard Coal Co. was a mining company and the Packard Coal Mining Co. a jobbing concern. Under the reorganization the authorized capital is $250,000 instead of $50,000. Officers are M. L. Yuster, president; C. F. Tuschman, secretary, and H. S. Reddel, treasurer.

PENNSYLVANIA

The Everson car shops of the **H. C. Frick Coke Co.** resumed operations Aug. 1 after a suspension of two weeks.

The following Pennsylvania charters have been approved by the Governor: **Brydon-Crane Coal and Coke Co.**, Philadelphia, buying, selling and dealing in coal and coke; capital stock, $50,000; Howard P. Brydon, Piedmont, W. Va., treasurer. Incorporators: Howard P. Brydon, Piedmont, A. B. Crane, Wayne and Leighton P. Stradley, Land Title Building, Philadelphia. **Stackhouse Coal and Feed Co.**, Fairmont, Delaware County, buying, selling and dealing in coal, feed, lime and cement; capital stock, $10,000; James J. McShane, Oakview, treasurer. Incorporators: James J. McShane, Oakview; John S. Roberts, Franklinville, N. J., and Thomas F. Slattery, Philadelphia. **Manayunk Coal Co.**, Philadelphia, buying and selling coal, feed, lime and cement; capital stock, $10,000; John D. Kelly, Wissahickon, Philadelphia, treasurer. Incorporators: John D. Kelly, John S. Roberts, Franklinville, N. J., and Thomas F. Slattery, Philadelphia. **Angora Coal and Supply Co.**, Philadelphia, buying, selling and dealing in coal, feed, lime and cement; capital stock, $60,000; Cyril A. Slattery, 1008 South 46th St., Philadelphia, treasurer. Incorporators: Cyril A. Slattery, Frank P. Logan, 219 South 61st St., Philadelphia, and John S. Roberts, Franklinville. **Gould Coal Co.**, Pittsburgh, mining, selling and preparing coal and coke; capital stock, $10,000; G. F. Bauersmith, Pittsburgh, treasurer. Incorporators: George C. Blackmore, Edgewood, John A. Gould and A. J. Gould, Avalon. **Slattery Brothers, Inc.**, mining, transporting, buying and selling coal, Philadelphia; capital stock, $100,000; Thomas F. Slattery, Philadelphia, treasurer. Incorporators, E. C. Kervin, Philadelphia; John S. Roberts, Franklinville, N. J., and Thomas F. Slattery.

WEST VIRGINIA

The Abram's Creek Coal & Coke Co., the **Osage Coal Co. and the Monongalia Coal Co.** have been merged and have become a part of the **Brady Coal Corporation** of Fairmont, the details of the consolidations having been perfected at a meeting of the boards of directors of the various companies held at Fairmont, when the capital stock of the Brady Corporation was increased from $2,000,000 to $6,000,000. Acting as chief counsel for the corporation, former Governor Cornwell looked after the legal phases of the consolidation, which brings under the control of the Brady Corporation, in addition to the six mines of the various companies, about 9,000 acres of coal, much of which is in the Pittsburgh seam. Officers of this corporation are: S. D. Brady, president; A. P. Brady, vice-president; S. D. Brady, Jr., secretary and treasurer; James Close, assistant to the president.

Chartered by A. W. Simpson, of Mount Claire, and James A. Meredith, of Fairmont, the **Helens Run Collieries Co.** will mine coal in the Fairmont district. The capitalization is $250,000.

The Yorkville mine of the **Ohio & Pennsylvania Coal Co.**, located near Wheeling, is to be equipped with a new tipple and shaker screen. A heavy type railroad car retarder for a heavy grade is also being installed, the rope being seven-eighths of an inch thick.

Organization of the **Swiss Bi-Product Coal Co.**, of Charleston, presages development of coal lands at Swiss, Nicholas County, on a large scale. This new concern being capitalized at $300,000. This company's property is on the Kanawha & Michigan. Leading figures in the newly organized concern are: F. C. Fifer, F. Horace Fifer, of Charleston; M. I. Hill, Swiss; Joseph Waldman, New York, N. Y.; C. F. Hardesty, Hartford, W. Va.

The Tug Valley Fuel Co., of which W. P. T. Varney of Williamson, is president, has increased its capital stock from $50,000 to $100,000. **The Thermal Coal Co.**, on the other hand, has decreased its capital stock from $600,000 to $5,000.

The Turkey Gap Coal & Coke Co., Dort, has contracted for the complete installation of a new steel tipple at their Wenonah No. 1 mine, at Wenonah. This tipple will be complete with Marcus screens, retarding conveyors, and shaker loading booms, together with refuse disposal machinery.

The Wyatt Coal Co., of Charleston, won its suit against the **McBard Coal Co.**, Cincinnati, in the Superior Court, Cincinnati, for recovery of $6,000 for coal shipped. A counter suit for $20,000 based on breach of contract, was ignored by the jury. Defendant in the original suit has given notice for a new trial.

BRITISH COLUMBIA

Statistics of production for the first half of 1921 as compared with the same period of the previous year are not satisfactory. In 1920, the first half year's production totaled 1,367,502 tons. This year's figures are 1,231,406 tons. The decline was not peculiar to any particular section.

The White Lake Collieries Ltd., capitalized at $400,000, has been incorporated to open up coal lands situated some fourteen miles north of the town of Keremeos, Nicola-Princeton Coal Field. Benjamin Barlow has been appointed manager of operations. It is the intention to install the plant necessary to begin and to maintain production on quite a substantial scale.

Traffic News

In the complaint of the **Commerce Club of St. Joseph**, relating to rates on coal from points in Illinois to St Joseph Mo. the **Central Illinois Coal Traffic Bureau** has been authorized to intervene.

The Utah Public Utilities Commission has ordered the Utah Ry. to put into effect joint through rates Sept. 1 to all points in Utah reached by the road and its connections from the coal mines of the three Spring Canyon coal companies on the Utah Terminal Ry. The effect of the decision is to give the coal companies two railroad connections with at least a portion of their markets.

In the complaint of the **Tuffli Bros. Pig Iron and Coke Co.**, the I. C. C. decides that the charges on bituminous coal from Douglas, W. Va., to Chicago reconsigned to Oakdale and Los Angeles, Cal., were reasonable.

In the tax revision hearings before the House Committee on Ways and Means, representatives of the Committee of Manufacturers and Merchants on Federal Taxation of Chicago advocated the Keller bill imposing a tax on land, which would include coal land.

The I. C. C. has issued a report for class one steam roads for May, 1921, showing coal consumption in road service, both freight and passenger service, as follows: **Freight**—Tons of coal consumed, New England region, 179,409; 165 pounds of coal per thousand gross ton-miles; Great Lakes region, 842,280 tons. 140 pounds of coal per thousand gross ton-miles; Ohio-Indiana-Allegheny region, 1,200,733 tons, 151 pounds of coal per thousand gross ton-miles; Pocahontas region, 307,735 tons, 136 pounds of coal per thousand gross ton-miles; Southern district, 809,463 tons, 163 pounds of coal per thousand gross ton-miles; Northwestern region 628,889 tons; 162 pounds of coal per thousand gross ton-miles; Central Western region, 940 396 tons, 159 pounds of coal per thousand gross ton-miles; Southwestern region, 462,831 tons, 153 pounds of coal per thousand gross ton-miles; total, 5,362,536 tons and 153 pounds of coal per thousand gross ton-miles **Passenger service**—New England, 148,615 tons and 99 pounds; Great Lakes, 360,701 tons and 110 pounds; Ohio-Indiana-Allegheny 538,306 tons and 109 pounds; Pocahontas, 66,206 tons and 128 pounds; Southern, 369,838 tons and 106 pounds; Northwestern, 361,243 tons and 108 pounds; Central Western, 449,170 tons and 101 pounds; Southwestern region, 199,128 tons and 92 pounds; total, 2,493,207 tons and 105 pounds.

The Denver & Rio Grande R.R. has asked the Utah State Public Utilities Commission for permission to reduce its rates on coke from Sunnyside 25 per cent, same being the increase which went into effect last fall.

The Utah Ry. is ordered to refund to the **Lion Coal Co.** $15,054.83 collected in coal shipments from the Wattis mines as switching charges between June 1, 1919, and May 31, 1921. When the Wattis mines were first opened a spur was built by the mining company to the Utah Ry. Co.'s tracks and the carrier charged a switching service. In an appeal to the I. C. C., the company was upheld and the switching charges were declared illegal, insofar as they affected interstate commerce. The order of the Utah commission affects intrastate commerce and upholds the same stand taken by the interstate commission favoring the coal company.

The hearing before a special examiner of the I. C. C. on the complaint filed by the **Southern Ohio Coal Exchange**, seeking to change the differential on freight rates between the inner and outer crescents of West Virginia as compared with the rates from Ohio fields, has been postponed until some time in September.

Personals

W. A. Marshal, of W. A. Marshal & Co., was a visitor in the Morgantown market during the third week of July.

Carl Scholz, Thomas W. Clagett, J. S. Cunningham and C. E. Krebs have been designated by President Edwin Ludlow, of the American Institute of Mining Engineers of New York, as an organization committee in connection with the organization of a section of the institute at Charleston, having a charter membership of twenty-eight. Mr. Scholz will act as the chairman of the organization committee.

The Hutson Coal Co., announces several changes which became effective July 1, and also the consolidation of the Lackawanna and Luzerne districts. **R. H. Buchanan**, who was acting general superintendent of Luzerne district, has been appointed assistant general manager in charge of operations. **R. V. Williams**, former general superintendent of the Lackawanna district was made assistant to the vice-president and general manager, and **J. F. Brown** was appointed assistant to the general manager in charge of engineering.

The position of general manager of the West Virginia operations has been created by the Consolidation Coal Co. and **C. H. Tarleton**, of Fairmont, manager of the West Virginia division of the company, has been advanced to fill this position. This marks another step upward for Mr. Tarleton in a service with the company ranging over a period of 30 years.

The appointment has been announced of **John O. Brooks** as acting superintendent of mines Nos. 21 and 91 of the Consolidation Coal Co., succeeding **James H. Nuzum**, resigned.

The appointment of **John T. Fallon** as superintendent of the Bower plant of the West Virginia Coal & Coke Co. has been announced. Mr. Fallon succeeding **R. F. Cole**, resigned.

J. G. Bradley, of Dundon, was in Chicago during the latter part of July attending a meeting of the directors of the National Coal Association, of which he is president.

W. G. Lee, one of the district mine inspectors in southern West Virginia, is in the northern part of the state, having joined Inspector S. E. Hawkshaw in some of the work he is doing. Mr. Lee was formerly located in northern West Virginia.

James W. Paul, of Pittsburgh, who was for twelve years the chief of the West Virginia Department of Mines, and who is now with the United States Bureau of Mines, was a visitor in Charleston during the meeting of the Mine Inspectors' Institute of America.

A recent visitor in the Huntington market was **E. Shein**, a well-known Mingo County operator, whose headquarters are at Williamson.

Industrial News

Cincinnati, Ohio.—Two changes of location of offices took place Aug. 1. The Amherst Coal Co. moved from 2604 Union Central Bldg., to 815 Dixie Terminal Bldg. and the Monarch Coal Co. from the eighth to the third floor of the Union Trust Bldg. The Emmons Coal Mining Co. has closed its local office.

New York, N. Y.—W. S. Murray, who was chairman of the Superpower Survey, and Henry Flood, Jr., his engineer-secretary in this work, have recently formed a partnership, under the firm name of Murray & Flood, Engineers, Grand Central Terminal.

Washington, D. C.—The Interior Department has approved and will shortly issue regulations governing the lease of public coal lands under the Leasing Law, which will be administered by the Bureau of Mines. They insure conservation of government coal lands and the protection of the government's interest therein, the government to act as a partner with the operator. Care has been taken not to conflict with State laws. The regulations were drafted following conferences with coal operators.

Obituary

D. L. Tuttle, whose death occurred Aug. 5, was held in high esteem by those who knew him personally. Even those who knew him casually were attracted to him by his kindly disposition. He was the Buffalo sales agent of the Philadelphia & Reading Coal & Iron Co.

Wm. J. Hand, superintendent of the Margaret Mines of the Alabama Fuel & Iron Co., and a member of the State Board of Examiners, died recently of heart failure. Mr. Hand was well known in mining circles and was a very efficient executive, having been connected with a number of the coal companies in the district prior to going with the Fuel & Iron Co. about a year ago. He was 49 years of age.

W. C. Rogers, 75 years of age, and for thirty years prominently identified with Cincinnati's coal trade, died recently at the home of his daughter in Oakland, Cal. He retired from active business about two years ago. In 1895 he organized the Rogers Coal and Coke Co., and later was connected with the Consolidation Coal Co., and then as manager of the Reliance Coal Co. He was elected to the Ohio Legislature in 1892 and served two terms.

C. A. Meyeratken, one of the directors of the Hignite Coal Mining Co., died at his home in Covington suddenly. He was also one of the leading politicians of Northern Kentucky.

Association Activities

Hazard Coal Operators' Association

The semi-annual meeting of the Hazard Coal Operators' Association was held in Lexington, Thursday, July 21. Reports were received from the traffic manager and committees in regard to the rates imposed by the L. & N. to cities with river competition. Matters pertaining to wages being paid to the miners in the Appalachia and the Hazard fields were also under discussion and plans made for meeting this question decisively.

Illinois and Wisconsin Coal Dealers' Association

The Illinois and Wisconsin Coal Dealers' Association met for their annual convention at the Hotel La Salle, Chicago. Speakers on the program were: Chas. S. Dodge, treasurer of the association; Chas. H. Markham, president of the Illinois Central R.R., and O. W. Timm, of Plymouth, Wis., who is president of the association. The meeting was very well attended and was a decided success.

Coming Meetings

The Huntington Coal and Industrial Exposition will be held in the Chamber of Commerce Building, Huntington, W. Va., Sept. 19 to 24 incl. Chairman of committee, Thomas A. Palmer, Huntington Chamber of Commerce, Huntington.

American Institute of Mining and Metallurgical Engineers will meet at Wilkes-Barre, Pa., Sept. 12 to 17. Secretary F. F. Sharpless, 29 West 39th St., New York City.

National Association of Cost Accountants will hold its annual convention at Cleveland, Ohio, Sept. 14, 15 and 16. Secretary, S. C. McLeod, 130 West 42d St., New York.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The twenty-fourth annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers will hold its annual meeting at Huntington, W. Va., on Sept. 20 to 23. Secretary-treasurer, Herbert Smith, Huntington, W. Va.

New York State Coal Merchants' Association, Inc. will hold its annual convention at Richfield Springs, N. Y., on Sept. 8, 9 and 10. Executive secretary, G. W. F. Woodside, 250 Arkay Bldg., Albany, N. Y.

Canadian Institute of Mining and Metallurgy will hold its annual Western meeting at Edmonton, Alberta, Canada, Sept. 14, 15 and 16. Convention secretary, T. B. Williams, 10,610 83d Ave., Edmonton, Canada.

American Manufacturers Export Association will hold its twelfth annual convention at the Waldorf-Astoria, New York City, Oct. 5 and 6. Secretary A. W. Willmann, 160 Broadway, New York City.

National Safety Council will hold its annual congress at the State House, Boston, Mass., Sept. 26 to Sept. 30 inclusive Secretary, S. J. Williams, Chicago, Ill.

The Coal Mining Institute of America will hold its annual meeting at Pittsburgh, Pa., Dec 7, 8, and 9. Secretary, Hon. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

An Industrial Relations Conference for all industries in the State of Pennsylvania has been arranged for Oct. 24 to 27 at Harrisburg, Pa., by the Commissioner of Labor and Industry, C. B. Connelly.

The sixth annual convention of the **National Association of Purchasing Agents** will be held Oct. 10-13 at Indianapolis, Ind.

International First-Aid and Mine Rescue Meet. Sixth annual event will be held at St. Louis, Mo., Sept. 1, 2 and 3, under the auspices of the U. S. Bureau of Mines and the Red Cross.

COAL AGE

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C. E. LESHER AND R. DAWSON HALL, *Editors.*

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Mine Wages and Economic Readjustment

A POPULAR conception of the coal operators and the men who mine the coal has the coal "barons" constantly seeking to oppress the workingman, laboring in the dark and dirt of the mine at constant risk of his life, and has the miner, through his union—the strongest in the country—fighting for his life at every turn. As a matter of fact the men who own and manage the coal mines are individually just as close to their men as the employers in any other large industry, where the paid officials of the unions do not prohibit, and are in closer touch than many others where operations are in larger units. In their everyday relations and behind the closed doors of the scale-committee meetings it is "Jack" and "Tom," "Will" and "John," even with the leaders of the union. A vast number of the operators have risen from the ranks of the coal diggers and many of the miners have definite ambitions to be officials of coal companies, if not actual owners of mines. There is ample opportunity for understanding between the capital and labor interests in the coal industry.

Since the early 90's the operators and miners in the organized Central Competitive coal fields have been bargaining collectively with respect to wages. It is important to appreciate fully that in this period of more than twenty years the result of every meeting, save only that of 1904, has been advances to mine labor, in most instances general increases in wages. Not once have the miners been obliged to recede—and in this may be found the reason for the progress and strength of the United Mine Workers of America. That the miners since 1896 have each time gained in their bargaining with capital is no evidence of the weakness of the operators or of the public. From 1896 to 1920 was a period of gradual but continuous rise in commodity prices, and labor, whether or not a commodity, has followed the line of other prices.

But times have changed. The world is now entering a period of indeterminate length in which the general level of prices and of wages is falling. No hokus pokus of man-made unionism can withstand the downward pressure. No beneficent desires of coal operators to maintain wages at or near present levels will serve to prevent the onward push of economic forces. The leaders of the miners' union are extremely able and intelligent men, or they would not have attained their present positions. At the head of an organization of labor that has attained strength through years of winning, these men see possibility of disaster or disintegration in the prospect of losing, for it will be losing for them to take a reduction after their positive declarations for increases next spring. The diplomacy and generalship of these men is even now and will be taxed in the months and years to come, in a new era where by no chance can they fatten on gains, but in which their constituents, the coal miners, may nevertheless live happily and comfortably on less than the present rates of pay.

The operators, on the other hand, having through a score of years become habituated to granting advances, are looking forward to the necessity of forcing a downward revision of wages. That the retreat in rates will be considerable is evident, but there will be no disposition to make it more than necessity requires. What equipment, what preparations have or are the operators likely to make looking to a proper adjudication when the time comes? Theirs is the burden of proof for the first time in twenty-odd years. The public is feverishly interested in coal miners' wages and earnings. The public is interested in the price of coal and is learning the intimate relationship between wages and the minimum price of coal. For four years there has not been a coal-mine wage contract negotiated except the public through the government has sat in as a third party. Has the old way passed out? And if the new way has or has not come, can we imagine the next wage negotiation being settled behind closed doors? The next decision will be reached by feeling out public opinion, and it takes a lot of ammunition to get results that way.

The operators have a Bureau of Coal Economics in their national association that can prepare the kind of data needed or can supervise its collection, but it is a bureau all dressed up but with no place to go. Most of the local operators' associations are equipped for this sort of work, but they, too, are tied to the post.

After the big strike in 1919 one group of operators came to bat with a semblance of big-league regalia, and Illinois is again ready in characteristic Western style for the next combat. It is all well and good to know "Tom" and "Bill" by their first names but it is well also to take a leaf from the immediate past in getting ready for the inevitable next open meeting on the question of coal miners' wages. The Illinois operators have recently adopted a standard form of record on which individual records will be kept of every mine employee with respect to such matters as rates of pay, semi-monthly earnings, payments to the union through the check-off, other deductions, and compensations. Such comprehensive and detailed data are costly, but the operators are determined to match strength with strength.

The Art of Simplicity

EARLY one morning the special train of the American Institute of Mining Engineers—the Institute bore that title, we believe, in that earlier day—pulled up at a Kansas stripping. The guests clambered out of the cars into the tall grass, many leaving their morning meal in the diner to grow cold in their absence. A walk of a quarter of a mile through the

swampy meadow, and the crowd climbed up onto the berm of a strip pit.

The visitors looked down on one of those huge shovels which were making Kansas in that day a wonder and an inspiration to visitors from all parts of the United States. Lazily the big excavating machine was taking a shovel load such as a thousand men alone could lift with their puny hand shovels, was turning slowly round with it and dropping it 90 ft. away with a leisurely swing that suggested power and indifference.

A Japanese engineer—one of the many foreigners from Japan and China always to be found at such gatherings, who by their courtesy and willingness to be pleased and interested make themselves agreeable even despite their broken English—clambered with the others over the rude bank and remarked "How wonderfully simple are these American devices!" He did our American mining methods perhaps too much honor, for his hearers could not help thinking of our subterranean mines with their interminable gangways and multiplicity of rooms, with a man or two in each place—in fact with only one, as a rule, in the Middle West.

Surely these give but little evidence of the presence of the virtues of simplicity and system—mines full of man-power working perhaps a third of the shift, at best one-half, and waiting around the rest of the time wondering if the mine cars are coming or if a wreck, derailment or merely a piece of mismanagement was going to delay matters so much that it were best to hide the tools in the gob, put the oil or carbide in the box, pick up the dinner pail and go home. One might have recalled the places uncut and the loaders quitting, or the coal not loaded out, and cutters and scrapers deciding that there was no more work that day, or again the little crowd around the mine foreman waiting for him to provide for the bailing of a chamber or to view a clay spar and fix a price for its loading out.

Truly not all is simple around a coal bank. The simplicity of the strip pit, the system regulating its methods, the overwhelming power of a steam shovel are models for the underground mine where machinery has been so ineffectively used that it has too often added complication rather than simplified a task that in its nature is by no means involved. Some day we are going to earn for our underground mines the praise: "How wonderfully simple are these American devices!" Cutting machines will be followed by loading equipment along an extended face, and cars will come in trips to be loaded, and when filled will travel without stop to the tipple. Till then we shall continue to debate, What is the best size of hand shovel for loading coal, What is the bonum load, and How high should the car be for the most efficient hand shoveling? Motion studies will be made to ameliorate a bad system, whereas real progress can be attained only by a radical change in all our methods. Eventually we shall make our mines frankly mechanical and use on the coal only large, simple and leisurely machinery. In our present mines we use American hustle—and all to little purpose. All we can say is that at the mines of other countries they do not do even as well.

Many have hailed the prospect of loading all coal by machinery but the practice can be made a striking success only by operating these machines as are railroad excavators, namely, by continuously presenting them with trips or trains of empty cars or by letting them dump into a conveyor that will achieve a like result.

All-Around Education

VITUPERATION has been the lot of the coal man in most localities in recent years and the first outbreaks are on the heads of the retail merchants because they are the direct and intimate contact with the ultimate consumer of coal in greatest number. It is not so much because the retail dealers have in most towns and cities their associations for mutual advantage that they are publicly condemned. It is by the fruits of these organizations they are judged. When the price of coal goes up the obvious inference is that the dealers have combined to put it there.

Indictment by the Grand Jury of Baltimore of members and officers of the Baltimore Coal Exchange, a body formed to regulate trade questions of inter-relations between retailers dealing in hard coal, appears to be the result of a campaign of misstatement in the local press. Charges of unfair prices and improper methods on the part of the members of the Exchange have figured largely in the situation. The attorney for one of the indicted coal men charges that the State's Attorney who directed the action before the Grand Jury repeatedly showed by his prior statements in the public press that he had prejudged the case. The indictment was brought under the common law providing against combinations in restraint of trade, because there is no city ordinance or state statute which prevented the operations of such an organization as the Baltimore Coal Exchange. Julius Hellweg, the veteran secretary of the Coal Exchange, appeared before the Grand Jury and laid the full operations of the body before the inquest, saying that the exchange had nothing to hide. He was exempted from indictment by the Grand Jury. As a matter of fact the whole affair looks like more or less of a tempest in a teapot, although the State's Attorney refused to waive the ordinary bail of $500 per accused because he stated "the charges are so serious."

We do not gather that the indicted men in Baltimore have or had an association that operates more closely to the profit and loss account of its members than that described by the Indianapolis men before the annual convention of the National Retail Coal Merchants' Association at Richmond this spring, but we have not heard of the Indianapolis association getting into trouble. Perhaps the reason is that in the Western city the association does more than watch the trade practices of its members; it advertises its service to the consumer. It has sold the public the idea that this is one association concerned with giving the public a square deal. Putting a medal on the caps of the truck drivers and on the equipment not only tells the passing public that the owner of the truck believes in a square deal, but it acts as reminder to the employee, just as plastering "CIVILITY" on the sides of the Fifth Avenue buses in New York promotes that thought in the conductor and chauffeur.

Retail coal merchants are an essential part of the business organization of every community, but they are too generally blind to the quasi-public nature of their business. In so far as they fail to establish proper relations with the public it is incumbent on the producer and distributor to go over their heads to the people. The Baltimore dealers may be victims of circumstance, but more likely their predicament is the result of their failure to lay their cards on the table before the public before they were called on to show them to the Grand Jury.

Lining a Shaft with Concrete and Gunite Without Interfering with Operation

Concrete Machine-Mixed and Lowered on Cage in Wheelbarrows—During Part of Guniting Operation Gun Was Located on the Surface And During the Rest of the Work Operated in the Upper Coal Bed

By R. H. GILLESPIE*
Allentown, Pa.

SOMEWHAT unusual methods were employed recently in the construction of a permanent self-supporting lining in the hoisting shaft of No. 1 mine of the Lake Superior Coal Co. at Superior, W. Va. The sinking of this shaft began in 1906 and was completed, including the placing of the timber lining, as far as the Pocahontas No. 4 bed—185 ft. below the surface—in December of that year. Early in the autumn of 1910 it became desirable to increase the depth of the shaft so that the Pocahontas No. 3 seam of coal, lying 240 ft. below the surface at this point, might be available for mining.

Although the Lake Superior Coal Co. still has a large acreage of coal in the upper measure, little mining has been done in the No. 4 bed for a number of years, all operations being confined to the lower measure. However, in lining the shaft throughout its entire length with concrete, it was necessary to make ample provision for the future mining of the upper bed.

LANDSLIDE DISCHARGES ROCK INTO SHAFT

For a distance of 45 ft. from the surface the shaft was sunk through earth, clay and loose rock, the remaining distance to the bottom being through hard rock bearing a considerable amount of water. In March, 1914, a serious landslide occurred, coming from the north, or uphill, side of the shaft. This closed down the mine for more than a month. During this time the material that slid into the shaft opening was removed and the timber lining repaired. One of the chief items of repair consisted in filling up in the rear of the shaft a large cavity made by the moving earth. This opening extended northward into the hillside a distance of 20 ft. from the shaft collar and was approximately 35 ft. in depth. More than three carloads of green round timber were used in the building of cribs adjacent to the shaft lining on the north side. This structure was then packed and the remainder of the cavity filled with loose earth.

The inside dimensions of the original shaft with its timber lining were 14 x 20 ft., space being provided for two cage compartments and a pipe gallery. During the summer of 1919 the condition of the old timber lining became such as to make extensive repairs, or the substitution of a new lining, imperative. The Superior company accordingly entered into a contract with the Traylor-Dewey Contracting Co., of Allentown, Pa., for the installation of a reinforced-concrete lining in the upper potion of the shaft and a self-spporting and reinforced gunite lining from the concrete to the shaft bottom.

Work on relining the shaft was begun about Oct. 1, 1919, and carried on continuously, except for a few interruptions arising from slow delivery of materials. It was completed early in January of 1920 the work was performed without interfering at any time with the operation of the mine. The new construction work was done at night, the shaft being utilized for hoisting during the day.

The concrete lining in the upper section of the shaft was placed first. A shelf was excavated in the solid rock at a depth of 55 ft. to form the foundation for the concrete side walls. The work was attacked in sections, the advance being limited in each case to the distance between a pair of range timbers. All the old timber lagging and vertical posts in that section were removed and trench braces were employed temporarily to take the place of the posts withdrawn. Steel reinforcement consisting of ¾-in. square corrugated bars was then placed.

The horizontal bars were spaced on 6-in. centers, while those extending vertically and serving merely as a means for spacing the horizontal members, were placed on 2-ft. centers. One-inch rough boards function-

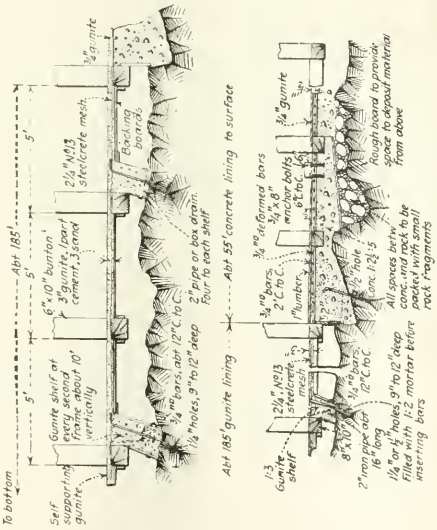

To bottom
Self supporting gunite
Abt 185' gunite lining
Abt 55' concrete lining to surface
Gunite shelf at every second frame about 10' vertically
1/3 Gunite shelf
All spaces betw. conc. and rock to be packed with small rock fragments
Rough board to provide space to deposit material from above

FIG. 1. SHAFT LINING OF CONCRETE AND GUNITE

On the left is shown the lower 185 ft. which is gunited. The ¾-in. square bars in the gunite shelf, or ring, are bent alternately up and down. The section on the right shows the concrete lining in the upper part of the shaft where support of the sides is needed. It also shows at the bottom some of the gunite lining. Where the space permits a board is set as backing to the concrete, and the vacuity back of the board is filled with rock fragments or other imperishable material as shown in the upper part of the section on the right. Where the concreting ended a footing was cut in the rock to support the lining above.

*President, Traylor-Dewey Contracting Co.

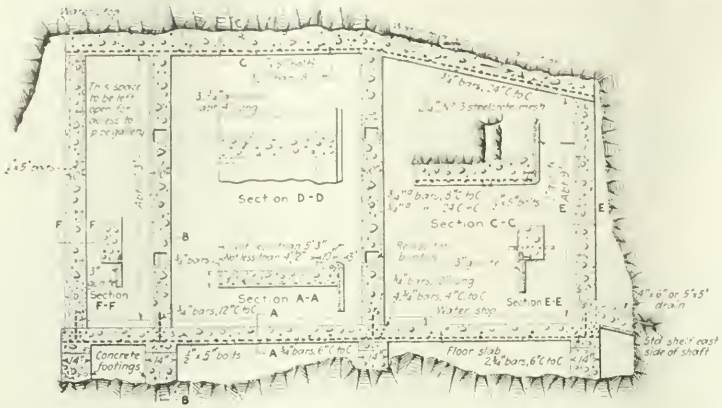


FIG. 2.

North Portal

On north side of shaft looking north from shaft at 180-ft. level. The various footings and the floor slab were cast each in a single operation. Pier steel and forms were then placed, each pier constituting a monolith. Forms and steel were then placed for roof slab, which was cast integrally.

ing as face forms were then attached to the range timbers and the concrete—composed of a mixture of 1 part cement, 2½ parts sand and 5 parts broken stone—was lowered in barrows from a Ransome mixer at the top of the shaft and poured. In this latter operation care was taken to work the concrete well back into all the irregularities of the rock.

Concrete Built up in Five-Foot Sections

In this manner the concrete walls were carried up in sections 5 ft. in height, the range timbers being removed as the concrete was brought up to them. In order that the bottom of the face forms on succeeding sections might be held more firmly in position, heavy wires were cast into the upper portion of each concrete slab.

Rectangular wrought-iron plates, ½ in. thick, were bent to special shape and cast into the east wall at 5-ft. intervals to serve as supports for the cage guides. Back of each a hand-hole recess was formed in the concrete to permit of easy access when renewal of the guides became necessary. Each end of the bunton timbers was fitted with a 6 x 12-in. steel plate, 3 ft. long, bent and bolted to these members so as to form a 6 x 4½-in. projection which rested in the recesses provided in the concrete walls. The new buntons were installed as the walls were carried upward; being placed as a rule about 12 in. below the old buntons.

Throughout the portion of the shaft driven through the earth and loose rock all the old timber cribbing and packing that had been placed after the landslide to serve as a footing to the hill slope was removed in advance by the men constructing the new walls. In its stead other material—mostly ashes—was used to fill the void. The removal of the old timber proved to be a particularly dirty, tedious and dangerous operation, as every kind of wood refuse was encountered, including many green logs and in some instances stumps of trees.

As soon as the concrete walls had risen above the firm rock rough back forms were provided so as to make the thickness of the walls not less than 10 in. When these walls were poured all space back of them was compactly filled with ashes. A coating of gunite, about 1-in. in thickness, was then shot over the inner concrete surface for the purpose of filling any voids that existed. In this manner the surface was thoroughly sealed and made waterproof.

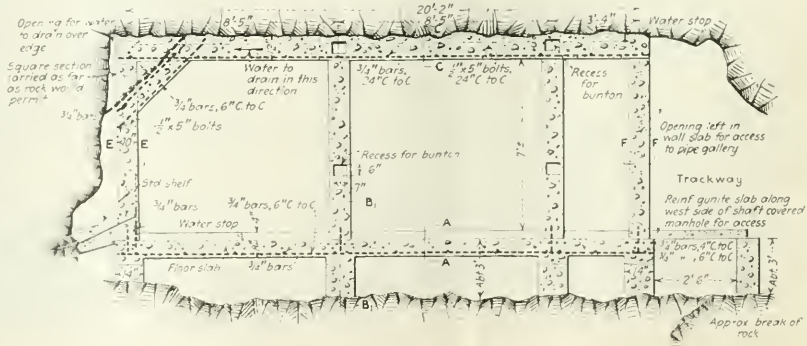
Gunite Shelves at Ten-Foot Intervals

As has been already mentioned, the section of the shaft that had been sunk through the rock was lined with self-supporting reinforced gunite. The methods employed in this construction consisted of building at 10-ft. intervals, or immediately above every second range timber, a gunite shelf approximately 10-in. in thickness. This ledge was constructed on all four sides of the shaft. The work was accomplished by drilling 1½-in. holes in the rock at horizontal intervals of about 1-ft., into which were grouted ¾-in. square corrugated bars, bent and hooked in such a manner as most efficiently to take up the tension and engage the reinforce-

FIG. 3.

South Portal

At 180-ft. level, on south side of shaft looking south from shaft. On left is shown appearance where rock permits square construction and the concreting method where the rock follows the heavy dotted line. For cross-sections and erection methods see Fig. 2.


Water stop
Water to drain in this direction
Recess for bunton
Opening left in wall slab for access to pipe gallery
Trackway
Reinf gunite slab along west side of shaft covered manhole for access
Std shelf
Floor slab
Approx break of rock

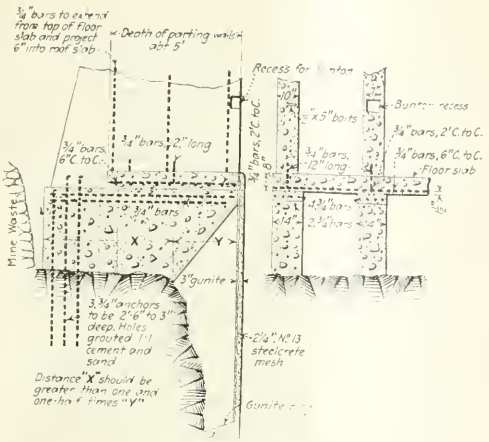


FIG. 4. SECTION B-B IN FIGS. 2 AND 3

This illustration shows how the portals are brought out to the edge of the shaft and are bedded with anchors to the rock at the shaft side; also how the gunite of that part of the shaft below the 180-ft. level is hung as a curtain from the portal and is sustained by a gunite ring or shelf.

ment in the gunite slabs that were to be constructed later.

Rough shooting forms were then placed and the shelves shot with a cement gun. The faces of the shelves were left rough and about 2½ in. in rear of that of the finished lining. In providing for drainage, an opening was formed in each shelf on each of the four sides of the shaft by casting in a short piece of 3-in. pipe or a wooden box 4-in. square.

Where Rock Was Broken Brackets Were Built

When rock was encountered that had been shattered so far back from the finished lining as to make this type of shelf construction impractical, heavy brackets were cast. These were generally of concrete and thoroughly anchored to the rock by means of ¾-in. corrugated bars that had been previously grouted into holes drilled for that purpose. From bracket to bracket a reinforced-gunite beam was formed. This, as a rule, was about 10-in. wide and of varying depth, depending on the length of the span. Into the inner face of the beam ½ x 5-in. machine bolts were cast with heads projecting 1 in. to permit of fastening the reinforcement of the lining slab.

All wooden posts were then removed so that the range timbers were supported by the 1-in. material used for backing during the shooting operation. Forms were placed for gunite posts at the bunton ends and at the center of the east side of the shaft; the latter to provide a body of gunite within which the iron guide supports could be embedded. Where the posts intersected the range timbers 4 in. was cut away from their back so that the posts would be continuous from shelf to shelf. The thinner sections of the posts or the points where they crossed the range timbers were reinforced with ¾-in. steel bars.

Expanded Metal Reinforces Gunite Lining

Backing or shooting forms were made of rough 1-in. lumber nailed to cleats attached to the range timbers or wedged against the gunite shelving. These boards were spaced from 6 to 12 in. apart and covered with tar paper. No. 13 expanded metal or "steelcrete," which formed the reinforcing for the slabs, was then put in place and securely fastened to the bar or bolt anchors already mentioned.

The gunite slabs then were shot to a finished thickness of 3 in. with the cement gun operating under an air pressure of from 30 to 50 lb. per square inch. The gunite was composed of one part cement and three parts of well-screened sand. As in the case of the concrete lining, recesses were formed in the gunite for all bunton supports, as well as hand holes at all guide fastenings along the east side of the shaft.

Footing Piers Built Out From No. 4 Bed

Where the shaft intersected the No. 4 bed—180 ft. below the surface—four concrete footing piers, each 14 in. wide and extending from 4 to 7 ft. from the shaft line into the heading, were constructed on each side of the shaft. As these piers had to be cantilevered beyond the edges of the rock in order to reach the shaft lines, they were heavily reinforced in their top sections and anchored to the floor with steel bars set deep in the rock. On these piers a reinforced-concrete landing slab 8 in. thick was constructed. Superimposed on the slab and directly over the cantilevered footing piers, concrete piers 10 in. in thickness and extending from the shaft line into the heading from 4 to 6-ft. were built.

The piers support a reinforced-concrete roof slab which serves both to hold up the roof at the shaft and the gunite lining at the top of the portals. In order that this type of construction might be the more easily

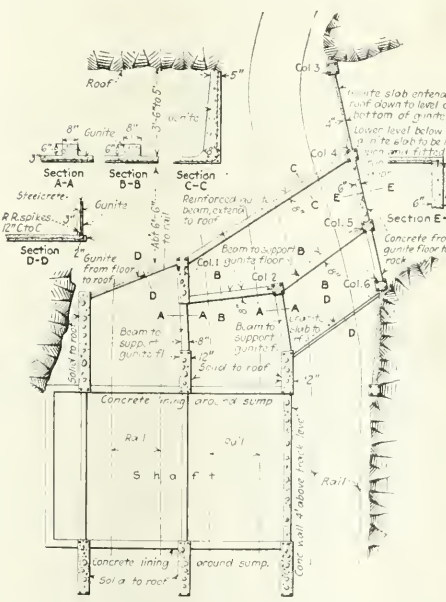


FIG. 5. OVERCAST RECEIVING AIR FROM HEADING ON RIGHT AND DELIVERING IT TO SHAFT ABOVE PORTAL

All columns are 12 in. square and extend from track to roof except those numbered 5 and 6, which extend to gunite floor only. The steel bars in the columns extend 6 in. into the rock bottom.

carried out, ¾ x 5-in. anchor bolts were cast in place with heads projecting, to which was fastened the expanded-metal lining reinforcement. This means of support for the lining likewise is provided in the face of the end piers and the landing slabs. Cut-off walls were constructed at the back of the landing slabs; these extended down to the rock floor to prevent mine waste from falling down the shaft and behind the lining. Upon removing the forms from the reinforced concrete, all accessible surfaces were sealed off with a thin coating of gunite.

Where the shaft intersected the No. 3 bed—240 ft. below the surface—concrete was built from the mine floor to the roof as in the bed above. In this instance, however, the gunite shaft lining terminated 10 ft. above the roof, as the last 10 ft. of the shaft was lined with a concrete wall. This lower section was constructed in the same manner as the wall near the surface, except that the reinforcing rods which were used in the upper sections were in this case ommitted.

Water Conducted Freely Behind Lining

When the relining work was started the shaft was extremely wet, particularly the upper 50 ft. of its length. After the work had been completed no water was to be found inside the lining excepting that resulting from leaking steam pipes and from condensation. All the water reaching the shaft was drained from shelf to shelf and finally led from the lowest shelf through a pipe to a sump where pumps were located.

The intake air current of this mine passes down an airshaft and after circulating through the workings returns through a crosscut leading directly to the hoist. In the past no definite steps had been taken to prevent this flow of gas-laden air from coming in contract with the wires serving the electric locomotives. At the bottom of the shaft an overcast was constructed to permit the return air to pass to and up the hoist shaft in such a way as to avoid touching the electric wires furnishing power for the operation of the mine.

At the north side of the shaft bottom and opposite the entrance of the crosscut mentioned, six concrete columns each 12-in. square were constructed in such locations as not to interfere with the mine tracks and car clearances. On these columns, together with the piers supporting the north side of the shaft lining, reinforced-gunite beams were built. These in turn supported a reinforced-gunite floor 3-in. in thickness at such a height above the floor of the mine as to give a clearance of 6 ft. 6 in. over the tracks, leaving a height of from 3½ to 5 ft. between overcast floor slab and mine roof.

The lower half of the crosscut was shut off by the construction of a concrete wall extending from the track level to the floor of the overcast, so that the space above that floor could be utilized for the admission of the air. An opening was left in the wall for access; this was fitted with a large plate door. The balance of the overcast was then enclosed by gunite walls extending from the floor to the roof, with the single exception of the shaft side. Thus the gas-laden air passes by way of an overcast to the hoisting shaft.

Lined 135 Lineal Ft. With Gun on Surface

While sinking to a depth of 135 ft. from the ground level the cement gun was located on the surface, only the nozzle being in the shaft. For the remainder of the work the gun was moved down to the landing at the No. 4 bed, being supplied with cement and sand lowered on the cage.

It is believed that the old range timbers left in place will rot and in time fall to the shelf below. As this distance, however, will in no case be as great as 10 ft., no damage is expected. Because of the nature of the work and the difficulties and hazard encountered, progress was necessarily slow. Practically all of the work had to be done from the cage and as its floor dimensions were but 7 x 12 ft., it was only in rare instances that more than four men could be employed to advantage simultaneously.

Bureau of Mines and Carnegie Tech. Study Constitution of Coal and Corrosion

UNDER a co-operative agreement with the U. S. Bureau of Mines, work on fellowship problems on the "Constitution of Coal" and "Acid-Resisting Equipment for Use in Coal Mines" has just been begun at the Carnegie Institute of Technology, Pittsburgh, Pa.

The research work on the constitution of coal will consist especially of the microscopic study of the Freeport coal bed with a view to the economic utilization of the bone and cannel coal constituents. This problem will be undertaken by A. W. Voorhees, who holds the degrees of B. Sc. from Rutgers College and M. S. in geology from Princeton University. Mr. Voorhees, as a research fellow at the Idaho School of Mines in 1920, worked on flotation problems in the Cœur d'Alêne region. In his collegiate work he specialized in chemistry, economic geology and petrology, and did special work on the preparation of thin sections.

The problem on acid-resisting equipment for use in coal mines will include the collection of samples of mine water from various bituminous coal mines and the determination of the degree of acidity; a survey of the acid-resisting materials available for use in coal mines, and tests on the acid-resisting materials selected on the basis of this survey. This problem will be undertaken by George M. Enos, who holds the degree of B. S. in metallurgical engineering from the South Dakota School of Mines. Mr. Enos acted as analytical assistant at the mining experiment station of the South Dakota School of Mines in 1920, and has contributed a paper on "A Volumetric Method for the Determination of Tungsten" to the technical press.

Suffolk Quicksand Menaces a Dunmore Mine

CHIEF of Mines Seward E. Button, of the Department of Mines, Pennsylvania, acting upon the complaint of the Pennsylvania Coal Co., Dunmore, that the mining methods of the Suffolk Coal Co., whose property adjoins that of the complainant, will result in letting water and quicksand into the workings of the Pennsylvania company, has appointed a commission to investigate and make a report. On the commission are Inspectors Augustus McDade, 7th district, in which the two companies are located: Frank Kittle, 13th district, and Joseph Walsh, 14th district.

A preliminary inspection has been completed and the inspectors have within the past week held a conference with Chief Button, who sent the commission back to the mines for a further investigation. A report is also expected soon from the commission which was named to investigate conditions at Lansford.

A second edition of the reprints of three articles by Dr. H. M. Payne on Tidewater Coal Pools, appearing in COAL AGE *in March of this year, is now ready for distribution.*

Guarding Transformers and Rotaries from Overload and Entire Installation from Lightning and Surges*

Fuses on Transformers—Where to Place Fuse Cutouts—Bad Rail Bonds Cause Armature Burnouts—How to Test Bonds—Testing Overspeed Devices—Four Lightning and Surge Arresters and Their Advantages

By B. F. Grimm†
Fairmont, W. Va.

IN MANY instances transformer fuses of improper size are installed. It is often argued by those who make such installations that when fuses of proper size are put in place they will not hold and consequently are no good. In many instances the capacity of the fuses is so much increased that when short-circuits occur on the load side of the transformer the fuses do not blow, and as a result this piece of equipment is burned out. It is not always possible to employ fuses corresponding to the current rating of the transformers, but those of the lowest rating capable of carrying the load under normal conditions should be used.

Where motors and other equipment requiring high starting current are connected to the load side of a transformer it is necessary to use fuses rated higher than would be employed for plain lighting service. If at all possible fuses rated according to the recommendations of the transformer manufacturers should be employed. In installing pole-type transformers it has been found convenient to place the porcelain fuse cutouts on the end of the bottom cross arm, making this arm of the same length as the one at the top. With this arrangement fuses can be replaced without danger. Choke coils are made and suspended between the bottom and top cross arms, and lightning arresters are installed on the top arm.

Copper Fuses Better Than Lead or Aluminum

Where open wire fuses are used on horn gaps it has been found that copper wire gives better service than those made of either lead or aluminum, with either of which an electrolytic action is set up between the dissimilar metals. When tightening down the setscrews either lead or aluminum wires are damaged more easily than copper. One large copper wire is better than two small ones, as it has more mechanical strength. There are now on the market fuse wires inclosed in glass tubes to protect them from impurities in the atmosphere; heavy copper terminals are provided. My company has tried out a few of these and they have been found to yield highly satisfactory results.

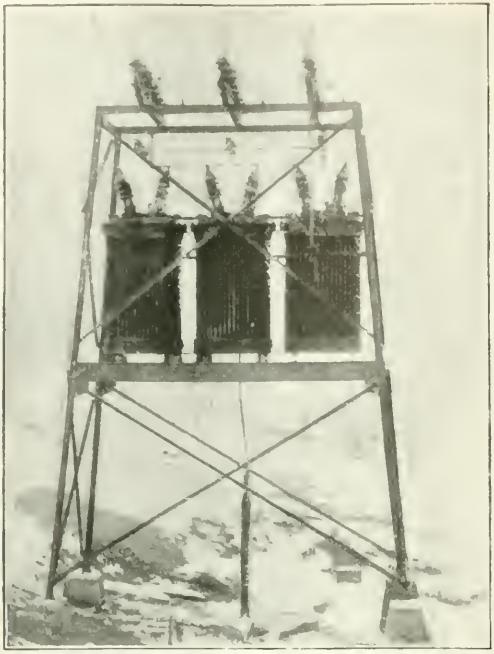
A frequent cause of armature burnouts is low voltage as the result of inadequate track bonding and poor joints in feeder wires. Frequent voltage readings should be taken at all working places in the mine. A convenient and rapid method of locating lengths of

*Second installment of article read before the West Virginia Coal Mining Institute at its Fairmont meeting, June 7, 1921, and entitled "Protection of Electric Equipment in Coal Mining Service." The first installment appeared last week and was entitled "How to Guard Electric Equipment by Fuses, Starting Devices, Independent and Tie Circuit Breakers."

†Superintendent, Power and Mechanical Department, West Virginia Division, The Consolidation Coal Co.

Lightning Arresters at Shaft Station

These are horn-gap arresters which in this case protect three 250 kva. transformers stationed below them, which step down the current from 22,000 to 2,200 volts and furnish power to a motor-generator set supplying direct current for a 1,400 hp., direct-current hoist motor. This is one of the plants of the Consolidation Coal Co.



HORN-GAP ARRESTERS PROTECT BANK OF 50 KVA. 22,000/2,200 VOLT TRANSFORMERS
The 2,200-volt alternating current passes through a borehole to a rotary converter installed inside the mine

improperly or inadequately bonded track is to measure the voltage drop on 1,000 joints of track, using suitable portable resistance or other equipment which will draw sufficient current to cause an appreciable voltage drop on the section of track being tested.

The method employed by the Consolidation Coal Co. in making this test is to use a haulage locomotive to draw the desired current. Either a loaded trip can be coupled to this machine or the brakes can be set so that the desired current will be consumed. Simultaneous voltage and current readings are taken. If a voltage drop on the track is discovered arising from other loads in the mine such as mining machines, pumps and the like, this voltage reading is deducted from that taken while the locomotive is in motion.

Rotary Converter Must Be Well Protected

Three causes of serious burnouts of rotary converter armatures have been: Failure of overspeed devices, bearing burnouts and operation on single phase. To lessen the likelihood of failure of overspeed devices weekly tests should be made upon them. Of course, these devices are required only at installations where two or more rotary converters operate simultaneously. The necessary test can be easily made by tripping the oil circuit breaker on the alternating-current side of the machine and letting it continue to run from the direct-current side, weakening the field if necessary to cause overspeeding.

Such devices usually are arranged to operate at 15 per cent above normal. If the overspeed device fails to trip the direct-current circuit breakers at the proper speed, the necessary adjustments should be made either upon the overspeed switch of the rotary converter or upon the direct-current circuit breaker.

To prevent bearing burnouts use an oil of proper grade, which should be changed often enough to suit the operating conditions. Bearing thermostat relays are considered a good investment. To prevent the possibility that the rotary converter will run on single phase owing to line trouble, and that it may continue to run for a length of time sufficient to overheat the armature, inverse time or thermal relays should be installed.

Four Lightning and Surge Arresters

To protect the insulation of machinery and transmission lines from damage by lightning, arresters must be provided. These should be capable of conducting to the ground the excessive energy arising from lightning or surges. Space will not permit a complete description of all types of these devices, but a brief delineation will be given of some of the best-known varieties now in use. These include the electrolytic, oxide-film, horn-gap and liquid-rheostat types.

Electrolytic lightning arresters consist of a series of aluminum trays stacked up inside an iron tank. Each tray is partly filled with the electrolyte, the remaining space being filled with oil to prevent evaporation. One cell is provided for each 250 to 280 volts of normal line potential. Each single-phase set of trays is con-

STEEL TOWER CONTAINING TRANSFORMERS PROTECTED BY HORN-GAP SWITCH AND LIGHTNING ARRESTER
The transformers are of the indoor type and consequently are covered by sheet iron at the sides and above. The secondaries of the transformers are connected to a three-conductor lead-covered steel-armored cable leading through a borehole to a pump inside the mine, the discharge pipe of which can be seen under the tower.

nected to a line wire through an air gap. This gap should be shorted every few days, causing the arresters to discharge and build up an insulating film on each tray. When high voltage occurs on the line the air gap is jumped and the current breaks through the insulating film on the trays. When normal potential is restored, the insulating film prevents further discharge of current.

Arresters should be thoroughly overhauled once each year. Experience shows that a certain amount of rust accumulates on the inside of the iron tanks even though they be filled with oil. Some of this rust has been found in the trays. The Consolidation Coal Co., when it made its spring overhauling, painted the inside of the tanks with shellac. It is hoped that this will prevent further rusting.

Horn-Gap Arresters Cheap But Efficient

The cheapest form of lightning arrester is the horn gap, yet the results it gives are quite satisfactory. The arresters consist of an air horn gap connected to the ground. A suitable resistance in series with the air gap often is provided. This allows current to be discharged to the ground when high voltages come upon the line. When normal line voltage is restored the resistance is sufficient to help cut down the flow of current. The discharge is interrupted also by the arc following up the horns of the air gap.

An auxiliary air horn gap often is provided which allows discharge to go to the ground in case the resistance becomes broken or in case of insufficient capacity of the resistance elements. The air gaps connected to the lines should be made small. In fact they should be just large enough to prevent discharges from being too numerous. Frequent inspections should be made of the resistance elements.

The Bennett surge arrester consists of a tank filled with water with a tube extending from the top down through the middle to a point near the bottom. An electrode extends through the cover and makes contact with the surface of the water within the tube. The line wire connects to an air gap in series with the top electrode.

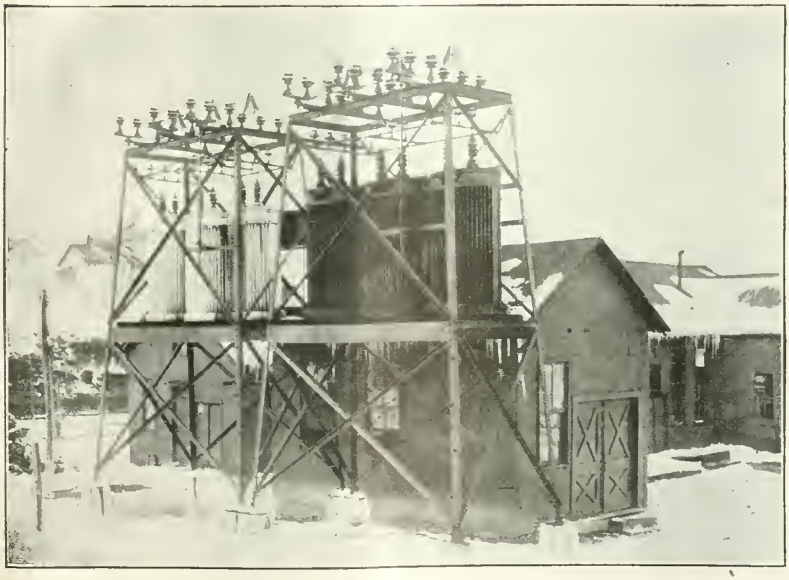
In case of high voltage on the line, due either to a switching surge or to lightning, the current jumps across the air gap and discharges into the water in the tank. As a result steam is generated, and the level of the liquid in the middle tube is forced down until the water is separated from the top electrode a sufficient distance to extinguish the arc.

Discharge is interrupted also by an arc following up the horns of the air gap connected to the line wire. The conductivity of the water should be sufficient to draw enough current to cause an arc to travel up the air gap horns a distance of three or four inches when they are "shorted" with normal line voltage. If necessary a small quantity of salt may be added to the water. The width of the horn gaps should be adjusted to the lowest value that will prevent slight surges from causing a discharge but should be made such as will allow all dangerous surges to arc over.

Provision must be made to prevent the water from freezing in cold weather, and to this end heating coils can be furnished with these arresters. It is necessary that suitable voltage be provided for the energizing of these coils. In some instances additional transformers must be installed to supply energy of the correct potential to the heating coils.

Protect Oil Circuit Breaker Bushings

At the Hutchinson central substation of the Consolidation Coal Co. much trouble has been experienced from the breakage of oil circuit breaker bushings during line disturbances on its four main circuits. When a "short" would occur on one line and the oil circuit breaker would trip out, a switching surge on the common high-tension bus would cause a bushing failure on the bus side of one of the oil circuit breakers connected



Two Banks of Transformers

Both have horn-gap lightning arresters. One bank of transformers steps the current down for use of rotary converters, the other bank reduces the voltage of the current to supply a 2,200-volt service. The transformers are of the outdoor type.

to the common bus. This would sometimes happen to the breaker that opened and sometimes to one adjoining it. After a careful study of the causes of the bushing failures, it was decided to try out Bennett surge arresters. These were connected to the common 22,000-volt bus to which the four oil circuit breakers are connected.

A short time after these arresters were installed another bushing failed on the bus side of one of the oil circuit breakers. The connections were traced out and it was found that this bushing was connected to a high-tension bus which was in turn connected to a Bennett surge arrester element having a weak salt solution. This arrester element was directly under the 22,000-volt buses, and the solution had been left weak while the arresters were being tried out, as it was feared that this element might draw such a heavy arc that it would hold on long enough to be carried into the 22,000-volt buses.

After this bushing failure the strength of the solution was increased. Since that time there have been no more bushing failures, although several highly electrical storms have occurred accompanied by heavy line disturbances. The arresters were installed Feb. 20, 1921, and the first bushing failure occurred about April 16, 1921. Although during the present trial period heavy line disturbances have been experienced, the test has not been of sufficient duration to prove that the devices installed are adequate to prevent further bushing failures. The arresters are placed inside a brick building, where there is little danger that the water will freeze. It is the intention, however, to install electric heating elements before next winter.

Oxide-film arresters consist of stacks of flat wafer-shaped elements, each of which were rated at 300 volts. Each element consists of an annular porcelain ring filled with lead oxide. A metal plate is clamped to each side of the ring, its inner surface coming in contact with the lead oxide, while its outer surface is coated with an insulating material. In series with each stack of elements is a sphere air gap connected to the line.

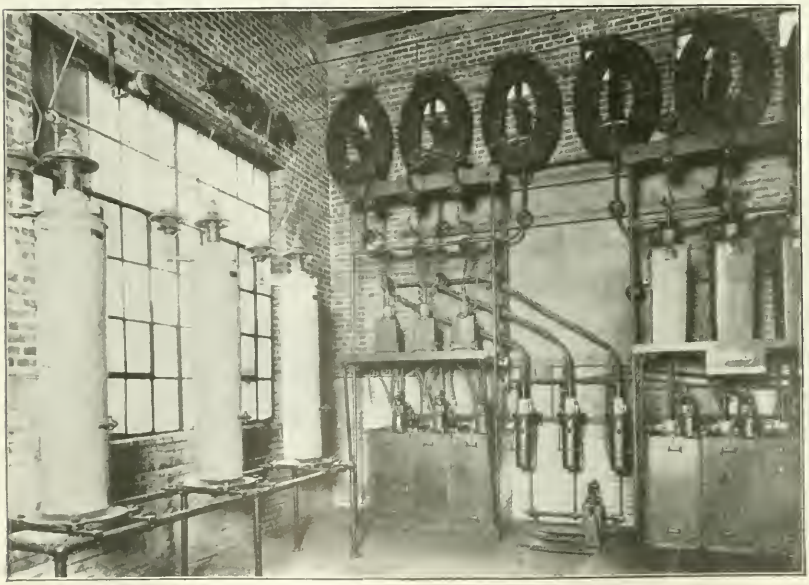
When high voltage breaks down the sphere gaps, the stacks of wafer-shaped elements have full line voltage impressed upon them. The insulating coating on the metal disks is punctured and current flows through the lead oxide. Red lead and litharge are formed and deposited on the surface of the metal plates. As red lead and litharge possess insulating qualities, the discharge is arrested by the time normal line voltage is restored. New punctures are made upon the next discharge. The arresters are fit for service so long as the surfaces of the disks have not, everywhere, been punctured.

The manufacturers state that this type of arrester has been in constant service for six years without any noticeable change in its effectiveness. It will be necessary, of course, to renew the disks in time, and a testing device is furnished with these arresters.

Relative Advantages of Four Arrester Types

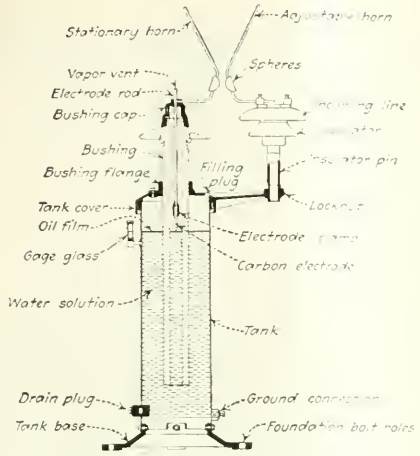
The approximate relative prices of the above-mentioned lightning arresters for 22,000-volt three-phase service, which is the standard in the Fairmont fields, are as follows: Electrolytic, 100; oxide film, 95½; Bennett liquid type, 63; air horn gap with choke coils, 12.

As the oxide-film arrester requires practically no attention it would seem that it could be used in more installations than can the electrolytic type. These, however, should be tested after each lightning season. This is a simple operation, requiring but little time. The oxide-film arrester should require less attention than the Bennett liquid type, which is subject to freezing. It is also necessary to inspect the water level of the latter type occasionally. A film of oil is kept on the surface of the water to prevent evaporation, but as steam is generated each time the arrester discharges, the water level is bound to fall even though slowly.



High-Tenston Room

On the left will be seen three Bennett Surge Arresters, manufactured by the Electro Service Co., of Marietta, Ga. The arrester farthest in the rear ground is directly under the 22,000-volt bus. Oil circuit breakers with current transformers for two outgoing circuits are to be seen in the rear of the room.



CROSS-SECTION OF BENNETT LIQUID SURGE ARRESTER

The current passing down the electrode rod to the carbon electrode reaches the water which it evaporates, thus cutting off the flow of current soon after its establishment. The condensation of the steam causes the water to return to its former level ready for any new surge of current.

As the air horn gap arrester is so much cheaper than any of the other types mentioned, it seems logical to use this variety on most installations. This arrester should be inspected at least once a week during the season of electrical storms. The Consolidation Coal Co. has one substation attendant who inspects after each lightning storm all arresters of this type installed in the substation of which he has charge. New resistance tubes are installed when necessary. The setting of the air gaps on these arresters gets out of adjustment occasionally, and the spacing of the gaps accordingly should be checked up at least once every year.

Mine Tracks Improper Ground for Arresters

Ground connections for all types of lightning arresters should receive careful attention. The ground wire should lead to the earth plate in the most direct path possible. The importance of having an adequate and permanent ground should not be overlooked. It is not considered safe to connect the ground side of a lightning arrester to mine tracks. Lightning discharges through such tracks might start serious fires.

In conclusion I wish to emphasize the importance of frequent inspections and tests of all protective devices. As stated above, it is often possible to create the conditions that the protective devices are intended to guard against. By imposing such conditions upon these devices their reliability of operation can be tested. It is much cheaper to try out the protective devices than it is to pay repair bills for electrical equipment and sustain heavy losses resulting from unnecessary shutdowns. Serious injuries to life may also be prevented by making proper inspections and adjustments to protective devices and equipment.

In practically all cases it is better for the mine electrician to occupy himself inspecting protective devices and the condition of equipment in general than to spend his time on actual repair work. By putting in the time on inspection that is usually spent in making repairs the cost of enough supplies to pay the electrician's salary can be saved. In addition to this there would be a big economy, for the equipment can be kept running.

Death Rate Per Coal-Mine Employee Lower Than Ever in Great Britain

A COMPARISON of the following table with statistics of American accidents shows that accidents in Great Britain kill a low percentage of its mine workers, but as the British produce only a small quantity of coal per person employed the blood toll of the production is higher than ours—4.11 per million short tons against 3.50.

The statistics relating to the number of coal-mine workers in the United States in 1920 and in fact in 1919 have not yet been received, but the U. S. Geological Survey estimates the number at 775,000 persons. Estimating that 21.5762 per cent were surface workers, as in 1918, there should be 167,216 surface workers and 607,784 persons engaged underground. Taking these figures, the ratio of fatal accidents from firedamp and coal dust to 1,000 underground workers would be 0.2698; the ratio from falls of ground would be 1.8543; that from shaft accidents 0.0921; that from miscellaneous underground accidents 1.1846. The number of fatal accidents per one thousand underground workers would be 3.4008. The same fatalities for surface workers would be 1.1542 and for underground and surface workers conjointly 2.9161. All these numbers exceed those in Great Britain, as may be seen by comparing them with the bottom line of the table.

BRITISH FATAL ACCIDENTS PER THOUSAND PERSONS EMPLOYED AND PER MILLION TONS MINED, AS COMPARED WITH AMERICAN FIGURES

Decennial Period or Year Average	— Death-Rate from Accidents per 1,000 Employees —								Death-rate from accidents Under and Above Ground per One Million Short Tons of Output
	——Employed Underground——					Employed Above Ground, From All Causes, Above Ground	Employed Under and Above Ground		
	By Explosions of Fire-Damp or Coal Dust	By Falls of Roof and Side	Shaft Accidents	Miscellaneous	From All Causes Underground				
1873-1882	0 65	1 12	0 32	0 47	2 57	0 92	2 24		6 63
1883 1892	0 32	1 00	0 19	0 50	2 01	0 96	1 81		5 05
1893 1902	0 18	0 76	0 13	0 45	1 52	0 83	1 39		4 20
1903 1912	0 17	0 74	0 11	0 44	1 46	0 78	1 33		4 25
1913	0 51	0 68	0 11	0 44	1 74	0 79	1 55		5 19
1914	0 03	0 65	0 07	0 43	1 19	0 61	1 08		3 90
1915	0 05	0 80	0 08	0 52	1 55	0 65	1 36		4 38
1916	0 03	0 89	0 06	0 49	1 47	0 73	1 32		4 41
1917	0 02	0 89	0 08	0 50	1 50	0 74	1 34		4 71
1918	0 20	0 86	0 06	0 48	1 61	0 58	1 39		5 23
1919	0 03	0 62	0 05	0 36	1 06	0 47	0 94		4 17
1920	0 03	0 55	0 04	0 36	0 97	0 54	0 88		4 11
United States, 1920	0 27	1 85	0 09	1 18	3 40	1 15	2 92		3 50

Took Nine Months to Find That Husband Died of Injury Incurred in Mine

GEORGE SHOTO died March 26, 1919, and nine months thereafter—that is, on Dec. 29, 1919—a claim petition was filed by his wife alleging that while the deceased was lifting a rock in a mine of the Lehigh & Wilkes-Barre Coal Co., on Feb. 25, 1919, he cut his finger, in consequence of which he subsequently died of blood poisoning.

The referee found from the uncontradicted evidence, and there has been no appeal from this finding, that at no time was there any report made to the defendant company of any injury sustained by the decedent while in the course of his employment on Feb. 25, 1919. At the hearing the medical attendant of the decedent was not called by the claimant but by the defendant company. The doctor testified that he had treated Shoto not for the company but for Shoto's own account. The testimony of this witness was that the primary cause of death was myocarditis and the secondary cause, axillary abscess and that the abscess could have come from many causes. Shoto had not complained to the witness of any cut or other injury to his finger.

Referee Beemer, of district No. 3, refused compensation to Eva Shoto, the decedent's wife, and Chairman Mackey on appeal dismissed the case, affirming the findings of fact and the conclusions of law.

Anthracoal: A New Domestic and Metallurgical Fuel Made By Coking Anthracite Fines with Coal-Tar Pitch*

Heavier, Denser, Tougher, Stronger and Slower to Burn than Coke—Is Superior to Anthracite—Can Be Made Low in Ash and Sulphur—Seventeen Per Cent of Pitch Used—Coking Period is Seventeen Hours

By Donald Markle
Hazleton, Pa.

ANTHRACOAL consists of small particles of anthracite in a matrix of practically pure carbon, derived from the distillation of coal-tar pitch or other suitable bitumen. It is a hard, dense, homogeneous mass, with a silvery luster and its color varies from silvery to grayish black. When pushed from the oven, it develops only partly the fingerlike structure of coke; but, unlike coke, it has a tendency to remain in blocky masses. When struck with a hammer or passed through crushing rolls, it breaks with an irregular fracture, similar to anthracite, but with very little fines. Due to its density, anthracoal is harder, tougher, and stronger than coke.

The results of a test made by the blast-furnace department, of the Bethlehem Steel Co., on two barrels of anthracoal are given in Table I.

Both the shatter tests and the hardness number indicate that anthracoal is an extremely tough, hard material that is eminently fitted to resist rough handling, crushing, and abrasion. Anthracoal can be made in a coke oven upon the same large scale as bituminous coke and can be produced with little greater expense; therefore it should prove a tremendous factor in utilizing the anthracite culm now going to waste. Its commercial development is the outcome of experiments, made in 1914, in the chemistry laboratory at Lehigh University. In the development of the process, the services of W. H. Blauvelt, were obtained and through him the Semet-Solvay Co. became interested in the experiments.

Inasmuch as the success of anthracoal will depend not only on the large scale upon which it is manufactured but also on its salability, the tests at Syracuse were made to duplicate, as far as possible, actual commercial conditions. Although the apparatus was not designed for this purpose and the ovens were rather obsolete, sufficient anthracoal was made on a large scale to indicate that the process is practicable and that the only difficulties are of a mechanical nature that can be remedied.

Anthracoal has demonstrated, by tests and actual

TABLE I. RESULTS OF SHATTER TESTS ON ANTHRACOAL AND COKE

Test	—Anthracoal— First Barrel	Second Barrel	Good Blast-Furnace Coke
Moisture, per cent	0 77	0 76	Under 5, variation not over 3 points
Sieve Test:			
Through 2-in. screen, per cent.	7 71	7 29	Under 40
Through 1-in. screen, per cent.	1 37	1 56	
Through ½-in. screen, per cent	0 93	1 08	Under 8
Over 2-in. screen, per cent.	92 29	92 71	Over 60
Shatter Test:			
Through 2-in. screen, per cent.	10 06	12 40	Under 16
Through 1-in. screen, per cent.	2 66	2 06	
Through ½-in. screen, per cent.	1 80	1 26	
Over 2-in. screen, per cent.	86 40	86 10	Over 81
Hardness number			
Analysis:			
Ash, per cent	16 64	16 48	Under 11
Sulphur, per cent	1 17	1 10	Under 0.95
Volatile matter, per cent	0 77	0 27	
Fixed carbon, per cent	82 59	83 25	Over 87

*Paper to be presented at Wilkes-Barre meeting of the American Institute of Mining and Metallurgical Engineers, Sept. 12.

Anthracoal

The new rival for anthracite made by coking a well-ground mixture of anthracite fines and coal-tar pitch. Exhibited here as pushed from oven. Though byproducts can be recovered they will hardly pay for the expense of recovery.

use, its excellent qualities as a domestic fuel. Several carloads of anthracoal were shipped to different retail dealers, who reported that the customers were satisfied with the product and had no difficulty in burning it. Also, anthracoal commanded the same price as the best anthracite, and the customers to whom it was sold asked for more.

TABLE II. ANALYSIS OF ANTHRACOAL IN COKE OVENS AT SYRACUSE

Oven No.	Apparent Specific Gravity	True Specific Gravity	Porosity, per Cent	Volatile Matter, per Cent	Fixed Carbon, per Cent	Ash, per Cent	Sulphur, per Cent
7	1 046	1 717	39 2	1 35	79 85	18 18	1 11
10	1 124	1 896	40 8	3 23	76 13	20 64	1 15
13	1 015	1 649	38 5	2 65	80 00	17 35	1 15
22	1 004	1 636	38 7	2 90	77 94	19 16	1 16
38	1 044	1 696	38 5	2 22	79 23	18 55	1 06

Table 2 shows the analyses of anthracoal made in different ovens from culm from the Loree breaker of the Hudson Coal Co., and are typical of the product. The apparent specific gravity is about 1.05, that of coke being about 0.84, showing that anthracoal is heavier and denser than coke. The porosity is about 39.1 per cent, while that of coke is between 50 and 55 per cent. This accounts, in a large measure, for the greater length of time that anthracoal burns, as compared to coke, unless the latter is carefully watched and burned on a bed of ashes. The fact that the domestic consumer does not know how to prevent coke from burning so quickly has prevented its competition with anthracite as a domestic fuel.

To demonstrate that the fuel may be greatly improved by reducing the ash in the culm, some culm received from the Lehigh Coal & Navigation Co., which ran 35 per cent was reduced to 9 per cent ash by the use of a Wilfley table. The anthracoal produced from it gave the following analysis given in Table III.

TABLE III. ANALYSIS OF ANTHRACOAL MADE FROM LEHIGH COAL & NAVIGATION CO. CLEANED CULM

Moisture, per cent	0 20	Sulphur, per cent	0.52
Volatile matter, per cent	1 41	Apparent specific gravity	1 101
Fixed carbon, per cent	89 99	True specific gravity	1 8
Ash, per cent	8 4	Cellular space, per cent.	38 85
		B.t.u.'s per lb	13,334
	100.00		

By cleaning the culm a product results that is superior to anthracite and more than meets every requirement of the best byproduct coke. The sulphur is reduced from 1.15 per cent to 0.52 per cent, which is materially lower than the blast-furnace limit of 0.95 per cent and the ash is considerably lowered, thus meeting requirement for byproduct coke that the ash content shall be under 11 per cent.

Tables such as the Diester-Overstrom should be used to reduce the ash and sulphur in the culm. There is no reason why the ash cannot be commercially lowered to 10 or 12 per cent. This would produce a superior grade of anthracoal, which could be sold at a premium, as the best grade of nut anthracite today rarely runs lower than 17 and 18 per cent ash, and often is as high as 22 per cent. Small particles of coal, carefully picked from the culm, contained from 2 to 3 per cent ash. Hence the inherent ash in the culm is about 2.5 per cent, showing that the limit to which the separation may be carried is about 3 per cent ash. However, while 3 per cent is the theoretical limit to which the separation may be carried, 7 or 9 per cent ash is a conservative figure and by careful preparation may be realized.

The process of manufacturing anthracoal is comparatively simple; in fact, it is practically identical with manufacturing coke, except that a binder must be added to the culm and the mixture well ground and mixed before coking. The culm is first dried and then placed in a hopper whence it runs upon a proportioning belt. Another proportioning belt, run at the same speed, carries the pitch. By the use of wires and the regulation of the openings, the amount of pitch and culm passing on to the belts are regulated to any desired proportion. The proportion, by weight, used successfully at Syracuse was 17 per cent pitch to 83 per cent culm. Both belts dump into the same bin, from which the mixture is run into a grinder where the culm and pitch are well ground and mixed but not pulverized. The mixture is then elevated from the grinding mill to the charging bins above the ovens. From this point on the process is identical with the coking of bituminous coal.

Depending on the market conditions, anthracoal is sized to egg, stove, nut, pea, and breeze. Coke for domestic trade is sized and crushed in the same manner. For blast-furnace purposes, however, run-of-oven coke is used. This would be true also of anthracoal used for metallurgical purposes. The breeze produced in crushing anthracoal is less than that produced in crushing anthracite or coke. In a properly designed crushing and sizing plant, where anthracoal will be made in the same sizes as anthracite, the breeze should not exceed 5 per cent.

Shorten Time of Coking With Anthracoal

The coking time of anthracoal, compared with soft coal, is a most important factor, as any shortening in time increases the yield and decreases the cost per ton of manufacture. In the experiment at Syracuse, ovens of anthracoal were pushed in 17 hr. against 19 hr. for bituminous coal under the same conditions. It is safe to assume that in a modern regenerative oven, where the heats are much greater, the coking time of anthracoal will be 16 hr. against 18 hr. for bituminous coal.

The percentage of binder varies somewhat with the kind of pitch used, the character of the culm, and the method of mixing and grinding the material. In the tests at Syracuse, two grades of pitch were used, one with a melting point of 265 deg. F., and one 280 deg. F.; both worked well. The amount of pitch varied between 14.8 and 25 per cent, due to the method of proportioning. Ovens that contained 15 per cent pitch and 85 per cent culm, by weight, gave an excellent anthracoal and pushed readily. Ovens that contained 25 per cent pitch and 75 per cent culm also gave an excellent anthracoal but more of a thick carbon scale was noted in the ovens than when the mixture contained less pitch; also, the anthracoal was more porous than that made from the 15 and 17 per cent mixtures. After many tests, both in the coke ovens and in the laboratory, it was found that between 16 and 17 per cent produced the best anthracoal with minimum fines and scale. Using below 16 per cent pitch, the anthracoal showed signs of attrition and not holding together, while above 17 per cent the surplus pitch flowed to the sides of the retort and produced a carbon scale that made much fine coke when pushed onto the dock.

The pitch used in the experiments, obtained from the Barrett company, was the product obtained in the byproduct coke industry after all the valuable constituents of the coal tar had been removed. It may be obtained in either lump or flake form. For these experiments, the flake form was used, as the flakes are little larger than the culm and hence could be

ground with the culm without previous preparation. Its analysis is as follows:

TABLE IV. PITCH USED FOR BINDING MATERIAL

Flake Pitch, No. 1		Flake Pitch, No. 2	
Melting point, degrees F	265	Melting point, degrees F..	240
Moisture, per cent	0 11	Fixed carbon, per cent	46 64
Fixed carbon, per cent	44 55	Volatile matter, per cent	53 08
Volatile matter, per cent	54 39	Ash, per cent	0 28
Ash, per cent	0 95		

TABLE V ANALYSES OF CULM USED IN MANUFACTURE OF ANTHRACOAL

Volatile matter, per cent..	6 96	6 51	6 52	7 42
Fixed carbon, per cent..	73 49	74 22	77 85	69 6
Ash, per cent	19 55	19 27	15 63	22 98
	100 00	100 00	100 00	100 00
Sulphur, per cent	..	.....	0 26	1 96

The average ash content of the culm used from the Loree breaker ran 18.96 per cent ash; the volatile matter ranged from 7.42 to 6.52 per cent. The sulphur varied from 1.26 to 2.5 per cent. All the culm used passed through a ¾-in. round-mesh screen and was taken from the fresh-mined side of Loree breaker, hence it was lower in ash than the regular run of culm, which contains about 35 to 40 per cent ash.

Many tests were made, both in the laboratory and in the ovens on a large scale, to learn the proper fineness of the pitch-culm mixture that would produce the best anthracoal. The first ovens pushed were made from a mixture of culm-pitch that had not been ground. That is, the culm was in the same state of fineness as when received from the mines. The anthracoal produced was hard, coarse, and had a bright silvery luster.

Each separate particle of culm could be readily seen; the anthracoal, however, had a decided tendency to scale and particles of culm would easily rub off, showing that if this material were to be shipped much fine material would result, which would prove most unsatisfactory to both dealer and consumer. By grinding the pitch and culm together, so as to reduce the larger particles of culm, a dense, homogeneous, strong anthracoal was made that gave no signs of attrition and withstood the roughest handling. Besides, the grinding gave a much better mixing of the materials than could be accomplished otherwise and resulted in a very uniform product. A screen test of the culm as received from the mines is as in Table VI.

TABLE VI. SCREEN TESTS OF CULM AND GROUND PITCH-CULM MIX

Culm Before Grinding		Pitch-Culm Mix After Grinding			
Screen	Per Cent	Screen	Per Cent	Per Cent	Per Cent
On 20-mesh	7 57	On 20-mesh ...	2 73	2 80	3 20
On 40-mesh	48 15	On 40-mesh ...	31 11	23 20	24 40
On 60-mesh	28 40	On 60-mesh...	28 76	26 93	27 06
On 80-mesh	6 15	On 80-mesh ...	7 32	10 00	9 65
On 100-mesh	3 60	On 100-mesh..	3 71	6 90	5 61
On 200-mesh	4 45	On 200-mesh...	22 04	15 10	19 23
Through 200-mesh	1 58	Through 200-mesh	4 33	15 07	10 85

A comparison of these tests shows that little grinding is required to get the mixture to the proper fineness for charging. The fineness necessary for pulverized fuel is not desired.

The weight of 1 cu.ft. of bituminous coal, prior to being charged into the oven, was 43.5 lb., the weight of 1 cu.ft. of the pitch-culm mixture containing 83 per cent culm and 17 per cent pitch prior to charging was 59 lb., or a difference of 15.5 lb. That is, the same volume of pitch-culm mixture weighs 35 per cent more than the same volume of bituminous coal; therefore, a little over 7 tons of pitch-culm mixture could be charged into the same oven as 5.3 tons of bituminous coal.

In modern coke-oven practice, the yield of coke per ton of bituminous coal charged is about 70 to 72 per cent., depending on the quality of the coal. In practice, all the volatile matter is not driven off, a certain small percentage being precipitated as free carbon, which passes into the coke, thereby increasing the weight of the coke about 2 or 3 per cent; thus, a 32 per cent volatile coal, instead of giving a yield of 68 per cent coke, would give 70 or 71 per cent.

When using the pitch-culm mixture similar results are obtained. The mixture containing 17 per cent pitch and 83 per cent culm has 15 per cent volatile matter; therefore the theoretical yield of anthracoal should be 85 per cent. But as some of the volatile matter is precipitated as carbon the actual yield is 87 per cent. An oven was charged with a mixture of 23 per cent pitch and 77 per cent culm, which contained 18 per cent volatile matter; after the oven was coked and pushed, the anthracoal was carefully weighed and showed a yield of 84 per cent.

Another mixture of 17 per cent pitch and 83 per cent culm was prepared, and weighed carefully in the laboratory, then charged into a bomb and all the volatile matter driven off; the yield of anthracoal was carefully weighed and was found to be 87 per cent exactly; so that the figures have been checked by both actual tests on a large scale and by check runs in the laboratory.

Oven Will Yield Twelve More Tons Daily

The fact that more of the pitch-culm mixture than bituminous coal can be charged into an oven is most important. For instance, the coking time of bituminous coal is 18 hr. Therefore if an oven will hold 16 tons, 21.28 tons will be charged in 24 hr. If the coal contains 30 per cent volatile matter, the yield in coke will be 72 per cent, or 15.32 tons. As the same oven can be charged with 21.12 tons of the pitch-culm mixture and as the coking time is only 16 hr., in 24 hr. 31.68 tons will be charged. As the mixture contains 15 per cent volatile matter, the yield will be 87 per cent of 31.68 tons, or 27.56 tons, a difference of 12.24 tons in favor of anthracoal.

Naturally, the byproducts resulting from the culm-pitch mixture used in making anthracoal are not present in as great quantities as in the manufacture of coke from soft coal. Also, a smaller amount of gas is given off by the mixture when heated. Bituminous coking coal contains from 28 to 35 per cent volatile matter, while a mixture of 17 per cent pitch and 83 per cent culm contains only 13.73 per cent, showing that the bituminous coal will give off more than twice as much gas and byproducts as the anthracoal mixture.

From the byproduct results obtained in the various tests made the data in Table VII as to average yields per ton of anthracoal charged have been obtained.

TABLE VII. YIELDS OF BYPRODUCTS IN COKING PROCESS

Ammonia sulphate, lb. per ton	9.9
Light oil, gal. per ton	0 6
Tar (above 170 deg. C.), gal. per ton	5.07
Gas (from oven test), cu.ft. per ton	4,080
Gas (from bomb test), cu.ft. per ton	5,910
Heating value of gas (determined), B.t.u. per cu ft	330
Heating value of gas (calculated), B.t.u. per cu ft	336
Anthracoal yield, per cent	87.0

These tests and data show that the light oil is not present in sufficient quantities to make it worth while recovering; therefore the only possible byproducts are gas, ammonium sulphate and tar. Whether or not the installation of the apparatus necessary to recover the two last is worth while is a matter for future study. At the present time, I would say that no money should be spent on a byproduct-recovery plant for making an-

TABLE VIII. ANALYSIS OF GAS FORMED IN COKING

	Per Cent		Per Cent
Carbon dioxide (CO_2)	1 0	Carbon monoxide (CO)	3 1
Benzene (C_6H_6)	0 1	Methane (CH_4)	9 0
Ethylene (C_2H_4)	0 1	Hydrogen (H_2)	73 4
Oxygen (O_2)	1 0	Nitrogen (N_2)	12 3

TABLE IX. MATERIAL USED IN BOMB TESTS

	Washed Culm, per Cent	Pitch, per Cent	Mixture 17 per Cent Pitch-83 per Cent Culm per Cent
Volatile matter	6 56	56 2	13 73
Ash	8 05	0 25	6 86

TABLE X. MATERIAL USED IN COKE OVEN

	Per Cent
Volatile matter	15 03
Ash	16 20

thracoal. I would use the non-recovery type of oven, which eliminates the byproduct-recovery apparatus and burns the gas evolved from the charge directly in the flues, which is not only less expensive, but will generate greater heat than where the byproducts are recovered. This oven should not only sustain combustion without outside heat but should be able to coke the anthracoal in less time than the recovery type of oven.

The gas results are based on two series of tests, one of which was made in the byproduct apparatus on a full oven charge and the other by the standard Semet-Solvay bomb test method. The bomb test indicated a greater yield of gas than the oven test for the following reasons:

1. The bomb tests were made on low-ash (8.05 per cent) slush prepared on a concentrating table to approximate the slush that is to be used on a commercial scale, and the oven tests were made on the high-ash (18 per cent) slush. This fact accounts for the bomb giving 11.2 per cent more gas than the oven tests show, which may be expected on a commercial scale.

2. There is some leakage in the gas apparatus at the ovens, which also makes the gas yield low on the oven test, while the bomb test allows no leakage and records all gas.

The bomb test records all the gas obtained in the charge, while the oven test does not, as some of the gas is left in the charge as unvolatilized matter.

4. The oven temperatures on the oven test were below normal.

Taking the above facts into consideration and calculating the oven-test results to low-ash slush, gives the summary of low gas yields and heating values in Table XI.

TABLE XI. TESTS OF GAS FORMED IN MANUFACTURE OF ANTHRACOAL

	Gas per Ton Cubic Feet	Heating Value B.t.u. per Cu.Ft.	Total Heating Value, B.t.u. per Ton
Bomb test	5,910	336	1,985,760
Oven test	4,570	333	1,508,100
Average	5,240	333	1,746,930

These results indicate that with a non-recovery type oven there would be sufficient gas for operation but that with a byproduct recovery oven the self-sustaining operation would be doubtful.

The basis of this conclusion is as follows:

Average gas yield from bituminous coking operation, cu.ft.	10,000
Average heating value of gas, B.t.u. per cu.ft.	500
Total heating value per ton of bituminous coal, B.t.u.	5,000,000
Average gas used for coking, per cent	50
Heating value in gas to coke 1 ton bituminous, B.t.u.	2,500,000
21 tons of anthracoal charge coked in 16 hr.	by same amount of heat
16 tons of bituminous coal coked in 18 hr.	
31.5 tons of anthracoal and	coked in 24 hr. by same amount of heat
21.6 tons of bituminous coal	
1.46 tons of anthracoal or	coked by 2,500,000 B.t.u.
1 ton bituminous coal	

1 ton of anthracoal charge would require $\frac{2,500,000}{1.46}$ = 1,712,000 B.t.u.

The bomb test results indicate an excess of gas while the oven test results indicate a deficiency; the average shows a slight excess. With a non-recovery oven, the margin would be considerably greater, as all the sensible heat in the gases, besides the byproducts, would go back into the heating of the ovens.

A direct comparison between the chestnut size of anthracoal and the same size of anthracite coal was made by an eight-day test of each in a kitchen range. The range performed the same service in each test, cooking three meals a day, heating water in the boiler, and, in fact, doing exactly the same work in each case. Observations were made as to amount of fuel fired each day, the amount of ashes produced, and the position of the draft during each run. The fire was started with wood at the beginning of each test and allowed to burn completely out at the end of the eight days. With both anthracoal and anthracite the fire was dampened at night and between meals with equal ease.

The total fuel consumption in each eight-day test was 288.5 lb. of anthracoal and 346.52 lb. of anthracite, or 20.1 per cent more anthracite than anthracoal. As exactly the same service was obtained from each fuel, the results show that in this range the chestnut anthracite was 20 per cent less efficient than the anthracoal of the same size.

TABLE XII. TESTS OF ANTHRACOAL IN DOMESTIC USE

	Chestnut Anthracoal	Chestnut Anthracite
Fuel fired, lb.	288 50	346 52
Ashes removed, lb.	59 5 (20.6 per cent)	61 9 (17.9 per cent)
Number of days burned	8	8
Number of hours burned	192	192
Fuel burned, lb. per hour	1 50	1 80
Relative efficiencies, anthracoal = 100 per cent	100	80

These tests were made on commercial anthracite prepared by the Hudson Coal Co. at Marvine colliery and should be representative of the anthracite placed on the market at the present time.

The evidence and data submitted thus far appear to point to a plant of regenerative non-recovery ovens. The reasons for preferring this are as follows:

1. If the gas is cooled first the sensible heat will be lost. 2. Removal of the byproducts will lessen the heating value of the gas. 3 The byproducts in the anthracoal gas are about one-third to one-half those in the bituminous gas, so that it is doubtful, with the uncertain and changing market, whether the recovery of the byproduct would be worth the expense of the byproduct apparatus which represents one-half the cost of the ovens. 4. A non-recovery oven of the regenerative type will burn the gas direct, have the benefit of the sensible heat in the gas as it comes off the charge, and also have the additional heat value of the byproducts which are not removed. 5. The non-recovery type ovens should prove to be self-sustaining and have ample gas for an exceptionally hot retort and quick coking. 6. A non-recovery type oven operating with anthracoal should produce 79 per cent more anthracoal in 24 hr. than the same type of recovery oven. As the cost of manufacture in each case is almost the same, with perhaps a little greater expense involved in the preparation of the anthracoal mix, the 79 per cent greater production of anthracoal than coke in 24 hr. more than offsets the loss of the byproducts. 7. A non-recovery type oven should prove more adaptable to the anthracite region. Its cost will be less to construct than the recovery type, and it will not require a skilled staff of chemists and workmen. 8. No market need be developed or additional sales force required, as would be necessary if byproducts were produced.

Problems of Operating Men

Edited by James T. Beard

Inalienable Right of the Worker

Every Worker Has the Right To Work, Which Cannot Be Taken from Him by an Unjust Law, Provided the Exercise of That Right Does Not Impair the Equal Right of Another

THERE is no doubt and, consequently, there is no room for argument that certain laws are required to forbid dangerous practices of workmen, whereby, through the ignorance, carelessness or recklessness of one, other workers would be injured or perhaps lose their lives.

On the other hand, every worker has certain rights that the law cannot take from him. An act of legislature becomes unconstitutional when it discriminates between industries or individuals in a manner that is unfair or unjust to either party.

Again, a court will always rule that a law cannot be construed in a manner to benefit an interested party to the detriment of another, or for the purpose of securing the selfish ends of a certain individual or class. It is evident that such an interpretation of the law would be unjust and, if such is possible, there is need that the law be revised.

Advantage Taken of Miners' Certificate Law in Indiana

Now, in Indiana, we have many good laws relating to coal mining, but, at times, certain requirements of the law have been employed to the unfair disadvantage of men seeking work in the mines. For that reason, I think it is time to put the foot on the soft pedal and consider the effect produced by those who abuse our laws.

For example, the Indiana mine law, Chap. 276, Sec. 9, requires every miner to hold a certificate granted him by a duly authorized examining board. Having this certificate he can generally obtain a job, provided he can get a certified miner to sign a statement that he will look after him in the mine.

To all appearances this is an excellent law, as it protects the man and his fellow workmen from the possibility of danger by reason of the new man's ignorance in respect to unsafe practices in mining. But, let us look a little further and see the unfair advantage that is taken of this requirement of the law, by the organization known as the "Miners' Union."

Suppose, for instance, the union decides that there are too many coal miners in the district and means must be taken to secure a shortage of labor, having in view a certain wage increase. Acting under the provision of this law, it is an easy matter for the union to exert its influence to produce the desired shortage of men.

How is it done? The members of the union are instructed to refuse to sign the permit of new men, except such privilege may possibly be extended in the case of a particular friend. That this method is being used, in Indiana, can be proved by investigation.

Working of the Law

Bearing these facts in mind, the question is, What remedy can be applied that will improve the situation. It would seem that here is a matter that should be corrected in our mining law, since it places in the power of the Miners' Union the means of controlling the amount of labor available in the state or district. In other words, the law makes possible a discrimination that deprives a worker of a constitutional right.

Looking further into the law, we find that every mine boss (foreman), in Indiana, must be a certified miner and, in addition, must hold a certificate of competency enabling him to act as mine boss and have charge of a mine. The law requires, Chap. 258, Sec. 21, that he shall pass an examination before the state mine inspector and prove his qualifications and fitness to take charge of a mine.

Believe me, he must show that he is a safety engineer, ventilation expert and a mechanical and electrical wizard, all combined in one. I leave it to the vote of readers to say if such a man is not qualified to judge of the ability and competency of any miner who comes to him seeking employment. Why should not our mine bosses be authorized by law to decide the qualifications of miners?

Miners Unjustly Taxed

But the worst is yet to come, the mine boss has been justly condemned for demanding a small fee when giving a man a job. The state, however, charges the man a dollar when he is given a certificate allowing him to work as a miner. Again, the union charges the poor fellow $25 before permitting him to start to work in a mine.

Truly, if we keep on a man will have to be listed in the Dun and Bradstreet Agencies before he can get a job of chunking coal. There are laws enough in the Indiana code, but what we need is more common sense in their application.

In closing, let me say it is not my claim that the world owes any man a living. I do claim, however, that every man has a constitutional right to work for his living, without being taxed at every turn.

JUSTICE.

Vincennes, Ind.

Right of Examining Board to Refuse Oral Examination

Under the Bituminous Mine Law of Pennsylvania, question is raised as to right of examining board to refuse oral examination to a candidate who has failed to answer the written questions to the satisfaction of the board

REFERRING to the reply given to the inquiry entitled "Authority of Examining Board," *Coal Age*, July 14, p. 60, allow me to take exception to the interpretation of the law set forth in this reply.

The position is taken, by the editor, that the words, "shall also undergo" an oral examination, place the obligation on the candidate and not on the examining board. It is argued that "the law does not state that the applicant shall be *given*, but shall *undergo* an oral examination."

It is further stated that the evident intention of the lawmakers was that the examining board should determine to their satisfaction the fitness of a candidate to fill the required position; and the fact is emphasized that the law "distinctly makes the written examination the principal one."

Examining Board Authorized to Make Its Own Rules

The reply concludes that when a candidate has failed to answer the written questions to the satisfaction of the board it is logical to assume that he is unfit and "nothing further is required." Attention is drawn to the fact that the law (Art. 19, Sec. 2) authorizes the examining board to "formulate rules for conducting the examination."

In my opinion, this reply very fluently tries to exonerate the examining board in its refusal to give a candidate the full written and oral examination required by law and on which his rating must be based, in accordance with the reading of Sec. 4 of the same article, which states as follows:

The questions and answers thereto, in the oral examination, shall be reported verbatim, by an expert stenographer, and

typewritten fully to assist the board in the work of rating the qualifications of the candidates.

I want to emphasize the words "to assist." The same section continues:

> Any candidate who shall make a general average of at least 90 per cent shall be deemed successful.

Mark the words "general average." My contention is that, regardless of a candidate's failing to answer the written questions to the satisfaction of the board, his rating must be a "general average" based on both the written and the oral examinations, the latter being given "to assist the board in the work of rating the qualifications of the candidate."

Let me strengthen this conclusion further, by reference to the concluding paragraph of said Sec. 4, which reads:

> The examining board shall, as soon as practical after the examination, furnish to each applicant, on printed slips of paper, a copy of all questions (oral and written) given at the examination, marked "right," "imperfect," or "wrong," as the case may be.

The question in my mind is: How can an examining board comply with this requirement of the law when it refuses to give a candidate the oral examination on the ground that he has failed to give satisfactory answers to the written questions asked him? This is a question I would like to see discussed in *Coal Age*, and learn the opinion of others.

Fredericktown, Pa. FAIRPLAY.

Large Pillars Difficult to Work

Roof control in mining, a factor determined by conditions and not to be assumed. Difficulty increases when working large pillars. Retreating system advocated.

KINDLY permit me to offer a few comments relative to the size of pillars suggested in the article of R. Dawson Hall, *Coal Age*, July 7, p. 13. The article has reference to adopting a plan of working most suitable for the use of improved machinery for handling the coal mined at the face.

We all recognize that, in view of the recent improvements in machinery for mining and loading coal, changes must be made in the old established methods of working, in order to give these machines a fair trial and derive the benefit that is possible by their use. This is the only way to show the merits of these machines and the rapid progress made in mining.

However, it is my humble opinion that the writer of the article to which I have referred, has allowed his enthusiasm to lead him too far, in an effort to adapt the working face of the coal to these improvements in mining and loading machines. I verily believe many experienced mine foremen will hesitate a long time before choosing to work a 500-ft. coal pillar, as suggested by Mr. Hall.

I fancy that such a plan would hardly work successfully in mining a soft, gassy seam of coal under heavy cover. With these conditions, the proper control of the roof is an item that cannot be assumed beforehand. Roof control depends wholly on conditions such as the nature of the roof, floor and coal, depth of cover and other things that must be accurately judged by the man in charge of the undertaking.

Proper Roof Control Determines Method of Working

Before attempting to work large coal pillars, there are two things to be considered chiefly; namely, the kind of roof and the amount of gas given off by the coal. I mention these particularly because, in my experience, they are factors that give much trouble if not carefully studied beforehand.

Assuming a compact and uniform roof overlying the coal, I would consider a 200-ft. face large enough for successful working. It is doubtful in my mind whether even this length of face will afford a proper control of the roof where slips or faults exist.

My idea would be to form a panel 1,000 ft. long by 600 ft. wide and divide this into five pillars, 200 x 600 ft. in area by driving narrow roads through the panel. I would make the middle road 10 ft. wide and use that as an intake for the air, dividing the current right and left at the face of the panel.

The coal in this panel should be worked out on the retreating plan, the pillars being stepped. This will afford a better roof control and avoid the cutter and loader working on the same pillar at the same time. It is my opinion that the retreating system of mining has not been given the attention it deserves, because of undue haste to produce coal.

In his article, Mr. Hall has well referred to the use of heading machines in driving entries. These machines not only afford a more rapid development, but avoid the necessity of paying yardage for driving the headings. The heading machine is a decided advantage in the working out of large coal areas.

Surface Damage in Illinois Mines

In Illinois, the question of surface damage in the mining of coal is an important one. In most cases, here, the matter of filling the space previously occupied by the coal is out of the question. The remedy generally prescribed, when it is necessary to avoid surface damage, is to remove only 50 per cent of the coal, which means a waste too great to be considered. Just here let me ask, would there not be a greater subsidence of roof, in the working of small pillars at a slower rate, than when larger pillars are taken out more rapidly? It is a question, in my mind, which would tend to produce the greater damage on the surface, under like conditions.

The retreating system makes it possible to work large areas and the settlement that results lessens the liability to a squeeze, which so often comes when mining coal by the advancing system. Moreover, the air current cannot be fouled by passing over old workings, in the retreating system, and the haulage roads are better protected.

In closing, let me say that every coal seam presents a separate problem that must be studied and no hard-and-fast rule can be laid down that will apply to every case. If it is possible to work a 500-ft. pillar, as suggested by Mr. Hall, it would seem that a larger car should be used; but that would be possible only in a drift mine or where the coal is hoisted in skips. In a drift mine at Rodange (Luxembourg) I have seen a full size locomotive enter the mine drift with railroad cars.

It goes without saying that the mining of coal must keep pace with improved mining equipment. What would we think of a farmer plowing his field with oxen, or reaping his wheat with a scythe, and trying to hold his own in the market? GASTON F. LIBIEZ.

Peru, Ill.

Advocating Large Pillars

Large mine pillars increase the life of a mine, reduce the expense of operation and prevent the great loss of coal that occurs when the pillars are too small to support the roof pressure.

READING the excellent article of R. Dawson Hall, entitled "Have Mining Engineers Accepted All that Developments in Machinery for Handling Coal Imply?" *Coal Age*, July 7, p. 13, I was impressed with one prominent feature in the article; namely, the advocating of large pillars for the support of the roof.

If I recall rightly, the same feature has been frequently set forth in previous articles in *Coal Age*, by Carl Scholz, F. A. Pocock and others, and the resulting advantages cannot be gainsaid. Large pillars are referred to by Mr. Hall as better adapting the method of working to the improved types of machines now being used for cutting and loading the coal.

That the successful laying out of a mine involves choosing a plan that is best adapted to the use of these improved types of mining machines cannot be doubted. It is my firm conviction that large mines will be planned in the future in this regard and, as a result, the life of the mine will be greatly increased.

Future Requirements in Mining

As time goes on, mining operations must be extended to greater depths and the workings will generally prove more gaseous. To maintain operations at a reasonable expense, under these conditions, means must be adopted by which the coal can be mined and handled at a less cost of time and labor, and this must be accomplished largely by the proper planning of the mine.

In the future, larger areas will be allotted to a single shaft opening. That being the case, greater attention must be given to maintaining good haulage roads, good ventilation and good drainage, all of which are necessary to reduce the cost of operation to a minimum.

Nothing will accomplish these ends more surely than laying out the mine with large pillars that will afford ample support of the overburden and prevent the crushing of timbers and coal and the heaving of the bottom on the roads.

There are many examples with which we are all familiar showing how expensive the operation of a mine becomes after it has been worked, say, ten years. With due consideration to the points here mentioned, however, the increase in expense of operation after twenty years should only be that due to the increased length of haulage roads and airways.

Large Pillars Lessen Loss of Coal

Another item that urges the use of large pillars is the great loss of coal that results when the pillars are made too small. Consider for a moment the heavy losses sustained by coal operators when whole sections of their mines are closed by a squeeze or creep and must be abandoned together with machines, cars, pumps, tracking, timbers, pipes and other supplies that cannot be recovered.

Frequently, the cost of recovering an expensive machine that has been caught by a heavy fall of roof will almost equal the value of the machine, to say nothing of the final abandonment of work in that section, by reason of the conditions making it unsafe for further working. All of this may result if the pillars left for the support of the roof are too small.

The remedy for these conditions is obviously the leaving of larger pillars. In other words, there must be a lesser extraction of coal in the first working, which means a larger proportion of pillar coal left for the robbing, or to be taken out when retreating.

For the most economical and efficient mining of coal, then, let the motto be, Plan the mine with a larger percentage of pillar coal. There will result a larger total extraction and the plan will afford a better opportunity for the installation of improved mining machines.

Linton, Ind. W. H. Luxton.

Shooting Coal Off the Solid

What is the meaning of the expression "Shooting off the solid?" While specifying that coal must be properly mined before it is blasted, the Pennsylvania bituminous law excepts the practice of shooting off the solid.

Recently attention has been called to that clause of the Bituminous Mine Law of Pennsylvania that specifies how coal is to be blasted. The law requires that the coal must be "undercut, centercut, topcut, or sheared by pick or machines," before shooting and states that the hole must not be laid deeper than the cutting.

In commenting on this point, *Coal Age*, July 28, p. 142, I. C. Parfitt discusses, in a practical way, whether the law is intended to prohibit the blasting of coal on a loose end. I agree fully with the conclusion of Mr. Parfitt that the law does not forbid the shooting of coal having a loose end, which is very common practice.

Incidentally, however, this question leads to another, which is of even greater importance. I refer to the matter of shooting off the solid. The question as to whether this practice is safe is "age old," as the meaning of the expression has never been clearly explained.

In the same article (Art. 4, Sec. 9), the bituminous law, after specifying that coal must be mined before it is blasted, distinctly permits shooting off the solid, in the following words: "Provided, however, that in districts in which it has been the common practice to blast coal from the solid, said practice or method may be continued, notwithstanding anything to the contrary herein contained."

As the meaning of the expression "shooting off the solid" is commonly understood to mean shooting coal that has not been mined or sidecut, it would seem that this latter clause annuls the preceding requirement of the law. The same article (Sec. 14) states, "In all mines in which coal is blasted from the solid, all holes shall be fired when all the workmen are out of the mine except the shotfirers and other persons delegated by the mine foreman to safeguard property."

This added reference makes it doubly sure that the law specifically permits the practice of shooting off the solid, in direct contradiction to the requirement that the coal must be properly mined before it is blasted.

We all know that the practice of blasting coal from the solid requires considerably more powder to perform the same work and is more dangerous to the man firing the shot, as there is every chance of a misfire or a windy or blownout shot occurring. Practically, in many cases, the effect is the same as when a hole is drilled a little deeper than the coal is mined.

From the standpoint of safety this law should be amended in a manner to prohibit the practice of shooting coal off the solid. The life of one miner is of more value than all the coal mined. With the present reading of the law, it will always happen that some careless or reckless miner will fire a shot that will be fatal to himself or another worker.

An instance of this kind happened about a year ago in one of the mines in this region. Two miners were working adjoining rooms. One of them, thinking that a charge of powder would do the work easier than mining the coal, prepared and fired a shot that blew through and killed the man in the next room. The victim was a careful and efficient man, but lost his life through the lack of thought or the recklessness of his fellow worker.

In closing, let me ask how long it will be before this provision of the bituminous law will be wiped from the statute. We should be thankful that all coal companies do not take advantage of the provision of the law allowing shooting of the coal from the solid. I hope this discussion will draw attention to these points of the law needing correction.

Johnstown, Pa. F. W. S.

Inquiries Of General Interest

Laying Out Mine Track Curve

Method by Tangent and Chord Deflections Most Practical For Laying Out Track Curves in Mines. Careful Alignment of Points Necessary To Insure Success

I AM anxious to learn the simplest and most practical way of laying out a curve in a mine, where it is desired to run in a curve or cutoff connecting two entries, and thereby avoid sharp angles in haulage roads, as for example, where a pair of cross-entries are turned off a main heading, at an angle of 90 deg. Assuming a radius of curvature of 60 ft., how is such a curve to be laid out, using 20-ft. chords for that purpose?

Another problem is how to run in a semi-circular curve between two parallel headings that are driven on 60-ft. centers. Any information you can give that will enable me to lay out such curves, will be much appreciated.

———, Pa. Mine Engineer.

The simplest way of laying out a curve in a mine is to employ the method known as "tangent and chord deflections." Referring to the accompanying figure, which illustrates a cross-entry driven at right angles to a main heading, the first step is to establish the center line in each entry. Then, starting from their intersection at O, measure off, on each center line, a distance equal to the desired radius of curvature, which in this case is 60 ft., and mark the PC and PT points on each of the two entries. The PC point (point of curve) is where the curve starts on the main heading, and the PT point (point of tangency) is where the curve ends on the cross-entry.

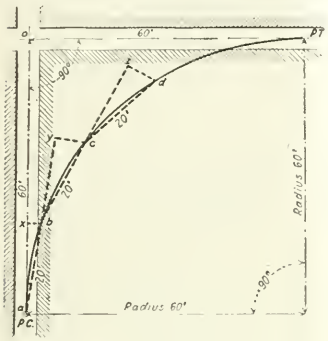
The next step is to calculate the tangent deflection (d) for any length of chord (c) and any radius (R). In this case, $c = 20$ ft. and $R = 60$ ft., and we have for the tangent deflection

$$d = \frac{c^2}{2R} = \frac{20^2}{2 \times 60} = 3\tfrac{1}{3} \text{ ft., or 40 in.}$$

This tangent deflection is the dis-

tance *bx*, in the figure, and *ab* is the 20-ft. chord. Observe that the tangent deflection *bx* is measured at right angles to the center line of the entry, *ao*.

To start the work, the end of the tape is held at *a*, the PC point, and a distance of 20 ft. is measured in the



METHOD BY TANGENT AND CHORD DEFLECTIONS

direction of the chord *ab*, *marking* the point *b* at a distance *bx* = 40 in., measured at right angles to the center line of the entry.

Having established the first point of curve *b*, extend the chord *ab* to a point *y*. Now measure the chord *bc*, 20 ft., making the chord deflection *cy* twice the tangent deflection or 80 in., measured at right angles to *by*. The chord deflection is always twice the tangent deflection.

In the same manner, having established the second point of curve *c*, proceed to establish a third point of the curve *d*, by extending the chord *bc* to a point *z* and measuring another 20-ft. chord *cd*, making the distance *dz*, or the chord deflection, 80 in., as before. Observe in extending the chord in each case, the lines *aby* and *bcz* are straight lines. Great care is required in the alignment of these points, in every case, in order to insure success.

It is important to observe that the first point on the curve is always determined by the tangent deflection, while all other points on the curve are determined by the chord deflection, which is twice the tangent deflection.

In order to run a semi-circular curve connecting the center lines of two parallel entries that are driven on 60-ft. centers, it is evident the radius of curvature will be one-half that distance or 30 ft. In that case, using a chord 14.14 ft. long, instead of a 20-ft. chord the same tangent and chord deflections can be used as before. The method of running out the curve is the same as that just explained, the length of chord used being the only difference. However, greater care, if possible, must be used in running this sharper curve, and success depends on the accurate alignment of the successive points.

Examination Questions Answered

Examination, Mine Foremen and Firebosses, Lexington, Ky., May 30, 1921

(Selected Questions)

QUESTION—*A seam having an average thickness of 4 ft. underlies a thousand acres. The specific gravity of the coal being 1.26, how many tons of the coal can be gotten out of this seam, allowing for a loss in working of 14 per cent?*

ANSWER—An acre of land contains 43,560 sq.ft. Assuming a level 4-ft. seam of coal underlying 1,000 acres, the cubic contents of the seam is 1,000 × 43,560 × 4 = 174,240,000 cu.ft. The coal having a specific gravity of 1.26, its weight per cubic foot is 1.26 × 62.5 = 78.75 lb. Then, allowing for a loss of 14 per cent in working, the available coal being 86 per cent, the weight of coal to be taken out is 0.86 (174,240,000 × 78.75) ÷ 2,000 = 5,900,202 tons.

QUESTION—*What is the area of a drift mouth with timbers 8 ft. at the top, 10 ft. at the bottom and 6 ft. high?*

ANSWER—Assuming the dimensions given represent the size of the clear sectional area inside the timbers, the area is found by multiplying the average width of the airway by its height. The average width, in this case, is half the sum of the top and bottom widths, or ½(8 + 10) = 9 ft. The sectional area is therefore 6 × 9 = 54 sq.ft.

QUESTION—*(a) How many rails, ties, spikes and fishplates will be necessary to build one mile of track, assuming rails 30 ft. long and ties spaced 2 ft., center to center? (b) How many tons of rails will be necessary, assuming 30 lb. to the yard?*

ANSWER—(a) One mile of track requires 2 × 5,280 = 10,560 ft. of rails. The rails being 30 ft. long, the number required is 10,560 ÷ 30 = 352 rails, or 176 rails on each side of the track. There are 350 joints requiring this number of pairs of fishplates. Spacing the ties 2 ft., center to center, one mile of track will require 5,280 ÷ 2 = 2,640 and one additional tie, making 2,641 ties in all. Counting four spikes to the tie, the number of spikes required in this case is 4 × 2,641 = 10,564.

(b) Using 30-lb. rails 30 ft. long, each rail will weigh 300 lb., and the total weight of the rails is, therefore, 352 × 300 ÷ 2,000 = 52.8 tons.

QUESTION—*Assuming 80 lb. is the weight of 1 cu.ft. of bituminous coal, in a seam 4 ft. thick, and butt entries turned off to the right, every 300 ft., are 2,000 ft. long, if 2 ft. of roof is taken down to make height, at $2 per yard, what is the cost per ton-yard?*

ANSWER—The meaning of this question is not entirely clear. However, assuming the entry is driven 10 ft. wide, in coal 4 ft. thick and weighing 80 lb. per cu.ft., the weight of coal in a yard of entry is 80(3 × 4 × 10) ÷ 2,000 = 4.8 tons. Then, taking down top at a price of $2 per yd., the cost per ton-yard is 200 ÷ 4.8 = 41⅔c. per ton-yard. The distance apart of the butt entries and their length do not enter the solution, but it is necessary to assume the width the entries are driven.

QUESTION—*What, in your opinion, is a miner's first duty on reaching his working place?*

ANSWER—The miner's first duty on entering his place is to carefully examine the roof as he proceeds, in order to detect any bad top. He must look for gas, fallen timbers or other dangers that may be present. Before proceeding to load coal, the miner must reset any timbers that may have been discharged by the shots of the previous shift. He must observe that there is no loose coal standing and ready to fall later when he is at work.

QUESTION — *With what material should stoppings be built in gaseous mines?*

ANSWER—All stoppings must be built of incombustible material, such as stone, shale or slate, brick or concrete.

QUESTION—*State the different methods of timbering bad roof and soft bottom, and hard top and soft bottom.*

ANSWER—When the bottom is soft, the timbers are liable to be forced into the floor by the weight resting on them. Under these conditions, it is often necessary to stand the timbers on footboards that will distribute the pressure over a greater area of the floor. When the roof is bad, particularly if the bottom is soft, the posts or timber frames require to be set closer together and lagging must often be used above the collars to give greater support and prevent the roof from falling between the timbers. In post timbering under bad roof, good cap-pieces must be used over each post.

Where the roof is hard, little timber may be required, further than an occasional crossbar hitched into the rib on each side of the road, or supported on short legs set into the solid coal. Under these conditions, better results are obtained by providing larger pillars that serve to distribute the pressure exerted by the hard roof, over a greater area of the bottom. This is more effective than any method of timbering that can be used.

Readers Views and Comments

Classification of Coal

I have read with interest Mr. de Graaf's comparison (*Coal Age*, August 11, p. 222), of analyses of tidewater pool coals with those I published in your paper some time ago. I would suggest that some differences may arise because he is basing his statements on some 200 analyses, whereas I used 17,000 in making up my tables of averages. I assume that Mr. de Graaf had few samples of coal delivered at Baltimore.

It is significant that he and I practically agree in percentage of volatile in pools 10, 11 and 14, and in percentage of ash in pools 11, 15 and 18; on percentage of sulphur in pools 10, 12, 14, 15 and 18, and in heat value in pools 10, 12 and 4. He agrees with me in regard to pool 18, that if properly prepared many mines in 18 would go into pools 10 and 11, and that many now in 9, 10 and 11, would be in pool 18, except for extraordinary care in preparation.

New York. H. M. PAYNE.
Consulting Engineer.

Dr. Ashley Makes Some Practical Suggestions on Coal Classification

The article by Mr. de Graaf in *Coal Age*, August 11 (p. 222), has brought me back again to a consideration of the classification indicated by Dr. Payne's article in your issue of March 17. Let me call your attention to a very few items as illustrating what I had in mind: For example, Pool No. 1 is quoted as showing an average B.t.u. of 15,000. As it was my privilege to sample many of the Navy accepted mines and to have access to the heat determination and analyses of the others, while I have not the figures at hand, I do not now recall one of them reaching 14,900—and as I remember, most of them ran between 14,500 and 14,800.

Comparing the analyses of Pools 1 and 2 in Dr. Payne's table, it is not evident why there should be a difference in heat value of 500 B.t.u. Indeed, comparing Pools 1, 2 and 3, the analyses do not show any real reason for their separation, unless No. 2 were pointed off because of slightly higher volatile ratio.

I have sometimes thought that since we have in this country very few coals with a fuel ratio of more than 5, it might be well in my classification (*Coal Age*, August 18, 1921, p. 267), to reduce the lower limit of what I have called Lovol A to 4.5. If that were done, Pools Nos. 1 and 3 would fall within type Lovol A, or using the numbers, in Class No. 3, while No. 2 would fall in type Lovol B, or Coal No. 4.

Again, comparing Pools 12 and 14: Pool 12 is quoted as high grade, medium volatile, and Pool 14 as medium grade, medium volatile. The difference shows in the higher percentage of ash in Pool 14, but for the life of me I cannot figure out how coal from Pool 14 with the analysis given should average over 1,200 B.t.u. higher than coal from Pool No. 12.

Indeed, Mr. de Graaf's figures for B.t.u. reverse the comparison given by Dr. Payne and are in accord with what might be expected from the analyses

My point is this: It would seem possible and desirable to draw up certain definite limits along the four lines of (1) fuel ratio; (2) ash; (3) sulphur; (4) fusing point of ash, giving definite names or numbers or anything else to these types, and then let coals fall where they will.

Along this line I have been tending to revert to the use of three letters to express the different grades of ash, sulphur and fusing point of ash rather than the decimal point, the advantage being that the letters would show at once exactly the limits within which those three elements fall. As A, B, C, etc., have been used in designating the types of coal, I would suggest the possible use of X, Y and Z—X to express the highest grade; Y the medium and Z the lowest grade. The first letter used, in all cases to express ash; the second, sulphur; and the third, fusing point of ash.

I would suggest, after a re-study, that X stand for less than 8 per cent ash; Y for 8 per cent to less than 16 per cent ash; Z for 16 per cent or more of ash. That X in the "second" place stand for less than 1 per cent sulphur; Y for 1 per cent to less than 2 per cent of sulphur; Z for 2 per cent or more of sulphur. That the "third" letter expressing the fusing point of ash be X, 2,600 deg. F. or more; Y, 2,300 deg. F. or less than 2,600 deg. F.; Z, less than 2,300 deg. F.

GEO. H. ASHLEY,
Harrisburg, Pa. State Geologist.

Poor Coal Sampling Spoils Good Laboratory Work

The recent article by Mr. de Graaf, in the Aug. 11, 1921, issue of *Coal Age*, "Public Service Co. Analyses at Variance with Dr. Payne's," is quite interesting in view of the fact that many industrial users and public utilities find the same differences in the results of their analyses and those of the coal companies.

This variance can be attributed to many causes. It may be due to the conditions under which the samples are taken; whether at the mines or in the cars or barges at the consumer's plant, or perhaps to the sample being taken after the coal has been stored for some time. In some cases the difference in the results obtained may be traced to the negligence of the man taking the sample.

It is natural to suppose that everyone interested in the analysis and sampling of coal is conversant with the best methods of taking a representative sample. As a rule the methods suggested by the Bureau of Mines are used, but more often the sample is taken by a laborer or some one who really has no conception of the importance of what he is doing and cares less.

Prior to the war I was employed by a large steel company to check up at the mines all coal that was shipped to them for by-product purposes. I was stationed at Indiana, Pa., which happened to be centrally located to the mines from which most of our coal was shipped. My duties were to take samples from each car as it was shipped and analyze them for sulphur and ash content. My assistants were stationed at the various mines and at the end of the day they would bring the various samples to the chemical laboratory for analysis.

At the steel company's yards other samples were taken when the cars arrived, and the analyses at the mines were checked. At the beginning the two tests tallied fairly well, but there were periods when the difference between the two sets of figures were startling. Investigations disclosed the difficulty to be in sampling and showed various methods which should *not* be employed in taking a sample.

For instance, we found one man who was getting tired of taking a shovelful from the cars at regular intervals and decided that it was a silly thing to do anyway, so he simply took one shovelful from the gondola and that became the sample. Another man who was supposed to have taken three samples in the yards from three different shipments found he only had two samples. Thinking he would please the chemist he proceeded to a storage pile and made up another.

In another instance a few shovelfuls of coal were taken from the top of a 600-ton barge, and that was passed through as being a representative sample.

I have had the same experiences at industrial plants and public utility power plants where the sampling was left to men who did not know what it was all about. At one time I was employed by a large public utility company as a fuel inspector. Part of my duties consisted of instructions to the men doing the unloading, in the proper method of sampling.

While some one was on the job supervising the sampling, everything was done the right way, but as soon as the men were left to themselves the samples were not always reliable. In most instances the men could not be made to realize how important it was to get a sample representative of the coal contained in the barge or shipment of cars. To many it meant merely a few pounds of coal which the boss wanted.

An example of how little it means to some of them is the following: At one plant where they were burning both anthracite and bituminous coal a sample was sent to the laboratory, marked as representing a good grade of bituminous coal. When it arrived at the laboratory it was found to contain No. 4 buckwheat. It had apparently changed from bituminous to anthracite en route. Upon investigating it was found that the man had mislaid the sample he had taken and in a hurry had gone to the anthracite storage pile and taken another sample.

Of course, these are extreme cases. I am merely trying to bring out the fact that costly laboratory equipment may mean just so much apparatus, nothing more, unless a careful supervision is maintained over the coal sampling.

This should not in any way reflect on the methods used by Dr. Payne or Mr. G. A. de Graaf. Both are authorities on fuel analyses and are combustion experts, but the difference in the results obtained by them, brought back some of my experiences as a fuel inspector.

I have always maintained that unless the sample is absolutely reliable the laboratory work is for naught. A laboratory test can be checked, but once a sample is taken there is no way of checking it, particularly if the coal is being unloaded when the sample is taken and is then dumped on the storage pile or conveyed into the hoppers in the boiler room, and mixed with other coals.

Sampling should not be left entirely to the laborers unloading the coal or to anyone who is not in some degree aware of the importance of taking a representative sample. It should be done under the supervision of a laboratory man or engineer. It is not at all necessary that such a man devote his whole time to that work. An occasional trip to the various plants and unloading places is necessary however.

Coal samples taken at the mines are often more reliable, because the laboratory man or chemist usually takes his own sample and makes certain that the quartering down to the laboratory size is done in the proper way.

The methods employed in reducing the large sample to a laboratory sample is another part of the work which can be spoiled if great care is not taken. I have often found cases of neglect in this step even after the sample was taken in accordance with approved methods.

New York. J. MEHR.

Advertising Coal

There is not a single force in the world that can do more good for the coal operators, jobbers, and retailers of the United States than national and retail advertising at the present time. You are, of course thoroughly aware of the seasonal nature of the coal mining industry. You know that thousands of miners are unemployed because of this seasonal and negative factor.

Advertising will help to straighten out the sag in the labor curve, and will give the miners, in my opinion, a steadier employment. Just as soon as the people of the United States fully realize the exact status of the coal situation, you can bet your life that they will be considerably shrewder in purchasing their coal in midsummer as well as winter. Do you think for a moment that the people of the country know that transportation and labor are the principal items of cost in the coal business? Do you think that they know that the government has guaranteed the wages of labor until February, 1922, in the coal mining industry? Do you believe that they are versed relative to the large percentage of transportation cost in every ton of coal that they buy? Not at all. Very few people know anything at all about it. When I prepared my speech for the convention of the Michigan Retail Coal Merchants' Association at Grand Rapids, I found many facts, of course, that I knew nothing about, because I am not a coal man, but an advertising man. I sold myself on the idea, however, of telling everybody I meet that they should play safe and put their coal in at the present time. Two men have already accepted my advice, and they told me they did not realize the seriousness of the coal situation. On the other hand, no distinctive line has ever been drawn between anthracite coal and bituminous coal in this country. The public has only a vague impression of the magnitude of the two industries.

If the coal operators, jobbers, and retailers would come out in the open and give the facts to the public, I do not believe that our legislative body down at Washington would get very far in enacting new laws. Personally, I believe that it is a collossal crime to let the government representative decide the pros and cons of problems in the coal industry, when he does not know as much about the industry as some of the humblest retailers in any state.

Some day the coal people will wake up. Some day some one is going to drive it into their heads that it would pay every coal man to contribute a few pennies toward imparting specific information on the coal situation to the people of the country.

I could write you several pages on this subject, but I know that you are fully versed in regard to the foregoing problems. We are facing a perilous situation, and with the termination of the wage agreement on March 31, 1922, every industry in this country may be jeopardized to some extent, and may stand a big loss in production, because of want of fuel, if the workers and mine operators do not get together on a harmonious basis. If the people of the country would face facts, and would do their part toward purchasing at a proper period in order to eliminate as much as possible the seasonal market in the coal industry, the miners would be in a position to work steadily, and would doubtless be satisfied with lower wages after March 31, 1922 (assuming, of course, that our food, clothing, etc., is being sold at reasonable prices at that time). The mine operators, jobbers, and retailers have a big problem to solve. The public at large can help them solve the problem. Advertising is the basic force which should carry the message of the operators, jobbers, and retailers to the public. Is the coal industry as big as the problems which they are now facing? If they are not big enough to solve this problem, the United States government is going to enter the arena and see what it can do. Frankly, I believe that most coal operators, jobbers, and retailers are honest. Tell the honest facts to the public, and let them do the deciding. Advertising is the solution.

Detroit. E. J. POAG,
Campbell-Ewald Co.

Railroads Report Decline in Car Loadings

A REDUCTION of 11,789 cars in the number loaded with revenue freight during the week ended Aug. 6, compared with the preceding week, is shown by reports received from the railroads by the Car Service Division of the American Railway Association. The total was 784,781 cars, which was a decrease of 150,949 cars compared with the corresponding week last year and 87,292 cars under that for the corresponding week in 1919.

The decrease was due principally to a falling off in the loading of grain and grain products, together with a reduction in the number of cars loaded with coal and merchandise and miscellaneous freight which includes manufactured products.

A reduction of 3,816 cars was reported in the number loaded with coal, compared with the week before, the total being 147,273 cars. This was 51,456 cars less than were loaded during the corresponding week last year. Loadings of merchandise and miscellaneous freight were 472,540 cars, or 2,241 cars less than were loaded during the previous week and 49,693 cars below the total for the same week in 1920.

An increase of 1,252 cars was reported in the loading of live stock, which totaled 26,610 cars while coke loadings were 4,218 cars, an increase of 107 cars over the week before. Reports showed 32,058 cars loaded with ore which was an increase within a week of 1,955 cars. A total of 43,460 cars were loaded with forest products, which was a decrease of 1,252 cars compared with the week before.

The Pocahontas and Northwestern districts were the only ones to show an increase in the loading of all commodities compared with the previous week, while the Southwestern was the only district to show an increase over the corresponding week last year.

THE SLACK IN BUYING is not due to a consumers' strike but to the growing number of people who have stopped paying more than they can afford.—*Houston Post.*

Charleston Entertains Mine Inspectors in Twelfth Annual Conclave

Addresses of Welcome by Governor Morgan and Bonner H. Hill, Manager of the City of Charleston, W. Va. Many Practical Subjects on Mining Discussed by the Inspectors. Election of Officers for the Coming Year

By James T. Beard
New York City

THE Twelfth Annual Meeting of the Mine Inspectors' Institute of America was held at Charleston, W. Va., July 12-14, 1921. The First Vice President, Charles H. Nesbitt (Alabama) in the chair. Mr. Nesbitt congratulated those present on the privilege of coming to Charleston, where they had met ten years previously (1911) and then introduced E. F. Morgan, governor of the State of West Virginia as the first speaker.

Governor Morgan opened his remarks by welcoming the visiting members of the Institute to Charleston and extending to them the freedom of the city. He then spoke of the wonderful development in mining coal, particularly in the State of West Virginia, which he was proud to say had become the second coal-producing state in the Union. He alluded to the efforts put forth by coal operators in making the mining towns and camps in the state attractive to their employees. In many cases, he stated the operators were paying for school teachers out of their own pockets. Speaking of the mines and the efforts of operators to make them safe and healthful places in which to work and the many improvements that had been made in the equipment and methods of working, the governor deplored the accident rate, which he believed was largely due to the carelessness of many miners who had come to disregard danger and were prone to neglect the simplest precautions to insure their own safety.

The chairman then introduced City Manager, Bonner H. Hill, who was formerly a chief mine inspector in the state. In his remarks, Mr. Hill assumed a reminiscent attitude comparing the past with the present and calling attention to the improvements that had been made in the methods of mining and loading the coal. In a happy way Mr. Hill alluded to the co-operation of a large class of the miners and hoped that this would continue to grow and increase as time went on, which would mean greater safety and fewer accidents.

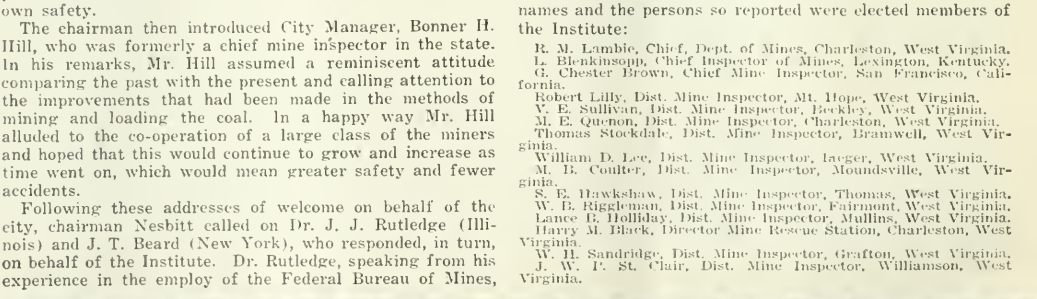
Following these addresses of welcome on behalf of the city, chairman Nesbitt called on Dr. J. J. Rutledge (Illinois) and J. T. Beard (New York), who responded, in turn, on behalf of the Institute. Dr. Rutledge, speaking from his experience in the employ of the Federal Bureau of Mines, referred to mine inspectors as standing between the coal operators, on the one hand, whose interest lay in the economical extraction of the coal, the commonwealth, including the public who were the consumers and the mine workers who produced the coal. He emphasized the fact that the first duty of the mine inspector was to safeguard life and property.

Mr. Beard referred to the work that had been accomplished by the Institute since its organization, in 1908, at Indianapolis. He spoke particularly on the continued efforts put forth each year by the Institute, in co-operation with the Federal Department of Mines and other mining organizations, to secure and establish greater uniformity in the mining laws of the several coal-producing states. He emphasized the fact that there were certain features, in the work of mining, that were common to all mining states and urged that, in respect to these features, the mining laws of all states should be uniform, in the interest of safety and the conservation of the coal.

Before adjournment was taken for the noon recess, Chairman Nesbit appointed the following as a membership committee: J. J. Rutledge (Illinois), chairman; Frank Hillman (Alabama); James Sherwood (Kansas).

When the afternoon session convened, at 2 o'clock, the Committee on Membership reported favorably the following names and the persons so reported were elected members of the Institute:

R. M. Lambie, Chief, Dept. of Mines, Charleston, West Virginia.
L. Blenkinsopp, Chief Inspector of Mines, Lexington, Kentucky.
G. Chester Brown, Chief Mine Inspector, San Francisco, California.
Robert Lilly, Dist. Mine Inspector, Mt. Hope, West Virginia.
V. E. Sullivan, Dist. Mine Inspector, Beckley, West Virginia.
M. E. Quenon, Dist. Mine Inspector, Charleston, West Virginia.
Thomas Stockdale, Dist. Mine Inspector, Bramwell, West Virginia.
William D. Lee, Dist. Mine Inspector, Iaeger, West Virginia.
M. B. Coulter, Dist. Mine Inspector, Moundsville, West Virginia.
S. E. Hawkshaw, Dist. Mine Inspector, Thomas, West Virginia.
W. B. Riggleman, Dist. Mine Inspector, Fairmont, West Virginia.
Lance B. Holliday, Dist. Mine Inspector, Mullins, West Virginia.
Harry M. Black, Director Mine Rescue Station, Charleston, West Virginia.
W. H. Sandridge, Dist. Mine Inspector, Grafton, West Virginia.
J. W. P. St. Clair, Dist. Mine Inspector, Williamson, West Virginia.



READING LEFT TO RIGHT THE PICTURE SHOWS—

Evan L. Griffiths, District Mine Inspector, Clarksburg, W. Va.
L. B. Holliday, District Mine Inspector Whitesville, W. Va.
W. B. Riggleman, District Mine Inspector, Fairmont, W. Va.
J. F. White, District Mine Inspector Logan, W. Va.
Carl Co'e.
A. W. Fluegel, Gen. Supt. Paint Creek Coal Mining Co., Gallagher, W. Va.
V. E. Sullivan, District Mine Inspector Beckley W. Va.
W. D. Lee, District Mine Inspector, Iaeger, W. Va.
Zach Evans, District Mine Inspector, Handley, W. Va.

Twelfth Annual Meeting Mine Inspect

M. B. Coulter, District Mine Inspector, Moundsville, W. Va.
Eli J. Mason, District Mine Inspector, Charleston, W. Va.
Elmer E. Rupp, Managing Editor, Coal Trade Bulletin
J. S. Rogers.
James Sherwood, Chief Inspector Kansas Department of Mines.
Oscar Carthdge, Asst. Gen. Mgr., Raleigh-Wyoming Coal Co., Charleston, W. Va.
Dr. J. J. Rutledge, United States Bureau of Mines
J. T. Beard, Associate Editor, Coal Age.

Zach Evans, Dist. Mine Inspector, Handley, West Virginia.
A. P. Burdiss, Dist. Mine Inspector, Beckley, West Virginia.
Evan L. Griffiths, Dist. Mine Inspector, Clarksburg, West Virginia.
Pete McLinden, Dist. Mine Inspector, Welch, West Virginia.
J. A. Porter, Dist. Mine Inspector, Gauley Bridge, West Virginia.
Eli J. Mason, Dist. Mine Inspector, Charleston, West Virginia.
J. F. White, Dist. Mine Inspector, Logan, West Virginia.
James Golden, Dist. Mine Inspector, Morgantown, West Virginia.
J. S. Rogers, Inspector, Associated Companies, Pittsburg, Kansas.
R. B. Cobb, Ex. Dist. Mine Inspector, Charleston, West Virginia.

A paper entitled "Interchangeable Certificates for Mine Foremen and Firebosses Between the States," was read by R. M. Lambie, chief of the Department of Mines of West Virginia, Messrs. Sherwood, Rutledge, Cartlidge, Sullivan, Beard, Paul and Vaughn leading the discussion.

Informal discussion of a paper entitled "How Best to Secure Co-operation of the Miners and Operators in a Full Compliance with the Mining Laws," by President Watson followed by Oscar Cartlidge, Hillman, Paul and Sherwood.

An informal Smoker, in the evening provided entertainment for the guests. C. E. Krebs, assistant State Geologist gave a lecture on the "Geology of the Coal Measures in the Kanawha Valley."

When the Institute convened the following morning (Wednesday, July 13) the chairman announced the appointment of the following as a committee on resolutions: J. T. Beard, chairman; R. M. Lambie and Oscar Cartlidge. The following were appointed as auditing committee; James Sherwood; Frank Hillman and V. E. Sullivan. Secretary Paul then read his report, including a statement of the financial condition of the treasury, which was referred to the auditing committee.

Next on the program was a discussion of the question "Should Flame Safety Lamps Be Discarded for Electric Lamps, Except for Testing Purposes?" The discussion was opened by Secretary Paul who was followed by Rutledge, Beard, Griffiths, Hillman, Sherwood, Sullivan, Lambie, Vaughn and Cartlidge. The views expressed in the debate of this question showed a variety of opinions and gave much food for thought. The afternoon session was devoted to the discussion of "How Accidents at the Working Face May Be Reduced." The subject had been assigned to Lawson Blenkinsopp, chief inspector of mines for the State of Kentucky, who was unable to attend the meeting, owing to illness in his family. In his absence, the discussion was opened by J. F. White, who was followed by Sherwood, Hillman, Sullivan, McLinden, St. Clair, Mason, Absalom, Stockdale and Vaughn.

The final subject for discussion was then announced as "The Technical and Practical Qualifications of an Ideal Mine Inspector," which was opened by Secretary Paul who outlined two or three essential qualities that every mine inspector should possess. He was followed by Messrs. Beard, White and Vaughn, each of whom contributed some new and important quality that marks the successful and efficient inspector of mines.

At 3:45 the meeting adjourned, for the day, to accept the invitation of the Entertainment Committee and enjoy a boat-ride on the beautiful Kanawha River. The barge "Sunbeam" had been chartered by the committee, and the mine inspectors and their friends were taken a distance of ten miles up the river, returning by 8 o'clock in the evening. Music and ample refreshments were furnished on board the boat, and the occasion was one much enjoyed by all present.

The following morning (Thursday, July 14), the Institute listened to the report of the committee appointed a year ago to consider the question of "Standardization of Mine Inspection." Owing to the death of H. M. Wilson, chairman of the committee, and the sickness of W. E. Holland, it had been necessary to re-organize the committee, which now consisted of J. J. Rutledge, chairman, James Sherwood and J. F. Rogers, who acted for Mr. Holland.

Much work had been done by the original committee and the report now presented include a tentative form of inspection routine recommended by the committee for the use of inspectors in coal mines. After a brief discussion by Sullivan, Sherwood, Paul and Carl Scholz the report was adopted tentatively, and the committee asked to continue its work and report further if it was deemed advisable.

Officers for the coming year are: C. H. Nesbitt (Alabama), president; R. M. Lambie (West Virginia), first vice president; W. E. Holland (Iowa), second vice president; James Sherwood (Kansas), third vice president; J. W. Paul (Pennsylvania), secretary; V. E. Sullivan (West Virginia), assistant secretary; J. F. Rogers (Kansas), treasurer; J. T. Beard (New York), editor in chief. Next years meeting of the Institute will be held in Chicago.

RESOLUTIONS

WHEREAS, since our last meeting at Cleveland, Ohio, God in his infinite wisdom has removed from our number a devoted and earnest fellow-worker and honored member of the Institute; therefore be it

RESOLVED that in the death of HERBERT M. WILSON, which occurred November 25, 1920, the Mine Inspectors' Institute of American has lost a valued and helpful co-worker, one who was experienced in all that pertains to the safe operation of mines and gladly gave of his best efforts to the work.

The Institute extends to the bereaved family and friends of the departed one its heartfelt sympathy.

Recognizing the need of certain essential requirements to insure greater safety in the mining of coal, and believing that these requirements apply to all coal mines alike, it is the sense of the Mine Inspectors' assembled at the Charleston (1921) meeting that these particular requirements should be incorporated in a uniform Coal-Mining Code to be submitted for endorsement by the mining departments and recommended to be incorporated in the mining laws of each several coal producing state. Be it therefore

RESOLVED, That a uniform code of mining coal may well include the following requirements looking to providing a greater degree of safety in the mines:

1. A clear and practical classification of the mines of the state, with respect to the generation of gas that makes it necessary

itute of America, Charleston, W. Va., July 12-15, 1921.

C. E. Krebs, Charleston, W. Va.
Ex-Governor Atkinson, of West Virginia.
J. W. Paul, U. S. Bureau of Mines, Secretary of Institute.
Frank Hillman, Deputy Chief Inspector Alabama Department of Mines.
R. M. Lambie, Chief of Department of Mines, Charleston, W. Va.
H. M. Black, Director of Mine Rescue Stations, Charleston, W. Va.
A. P. Burdiss, District Mine Inspector, Thurmond, W. Va.
M. E. Quenon, District Mine Inspector, Charleston, W. Va.
J. W. P. St. Clair, District Mine Inspector, Williamson, W. Va.
Pete McLinden, District Mine Inspector, Welch, W. Va.
J. A. Porter, District Mine Inspector, Gauley Bridge, W. Va.
R. B. Cobb, Charleston, W. Va.
John Douglas, Charleston, W. Va.
Robert Lilly, District Mine Inspector, Mount Hope, W. Va.
S. E. Hawkshaw, District Mine Inspector, Thomas, W. Va.
Thomas Stockdale, District Mine Inspector, Bramwell, W. Va.
W. H. Sandridge, District Mine Inspector, Grafton, W. Va.
James Golden, District Mine Inspector, Morgantown, W. Va.

to adopt precautions, in the operation of certain mines, that are not required in other mines of the state.

2. Providing for the sole use of permissible powders, in blasting the coal.

3. Providing for the employment of shotfirers, who shall examine charge and fire all holes drilled by the miners, in mines of a given class to be specified by the state law in its classification.

4. Forbidding the use of mixed lights in mines.

5. Providing for a system of ventilation based on a standard quality of air and specifying such a distribution of the air currents that shall afford a sufficient and safe velocity at the working faces.

6. Prohibiting the practice of "shooting off the solid," in the mining of coals other than anthracite, and requiring the mining or sidecutting of all shots to a depth at least equal to the depth of the hole to be fired, except in the case of a "grip shot" in an irregular face of coal, and in pillar work, or when shooting a loose end.

7. Providing for the examination and certification of all persons who are in charge of work underground, or who control and direct such work as relates to the safety of employees. This means that no uncertified superintendent shall assume control of operations in charge of the mine foreman.

WHEREAS, following a practical discussion of the relative merits of the mine safety lamp and the electric cap lamp now being introduced so largely into the mines, the Mine Inspectors attending the Charleston (1921) meeting offer the following as their conclusion and belief regarding the use of these lamps in mines generating explosive gas;

RESOLVED that the flame safety lamp, which is still in use as a working lamp in many mines, should be discarded and no longer used, except for the purpose of testing for gas; and, instead, electric lamps approved by the Federal Bureau of Mines should be installed and used as working lamps, in all mines, provided the regular and frequent inspection of the working places is made, by competent safety inspectors, by means of gauze safety lamps.

WHEREAS, realizing the value of the Mine Inspectors' Institute of America to the mining department of every state, as a means of securing needed information relating to the safety of mining; be it hereby

RESOLVED that the government of every state engaged in mining should send a suitable delegation to the annual meetings of the Institute, and make possible their attendance by providing for their necessary expenses. The information gained through such representation will pay for the time and money spent.

RESOLVED, further, that the director of the Federal Bureau of Mines, H. FOSTER BAIN, be urged by our secretary to use his good offices to bring this matter effectively before the governing authorities of all mining states, in behalf of the Institute.

Having enjoyed a most pleasing and profitable session, we, the visiting members of the Mine Inspectors' Institute of America, in attendance at its Twelfth Annual Meeting, held at Charleston and now drawing to a close, desire to express to the Mine Inspectors' Association of West Virginia, Victor E. Sullivan, president, and to R. M. Lambie, chief of the Department of Mines, and others who have lent their aid, our hearty appreciation of the generous and delightful entertainment they have afforded, and to say the occasion will long be remembered by all present.

J. T. BEARD, Chairman
OSCAR CARTLIDGE,
R. M. LAMBIE.

Iowa Shippers Offer Home Product at Low Freight To Cut Householders' Fuel Cost

By H. S. Drake
Des Moines, Ia.

DURING the war and particularly during the period when the Fuel Administration functioned so splendidly to conserve and utilize all of the potential coal supply of the country, when there were other restrictions than the Eighteenth Amendment on the "do as you please" dispositions of the people, there were many in the coal trade who predicted that the demand for shipment of soft coal from Eastern fields to and beyond other producing localities would never again be revived to a great extent, at least not for domestic use. In short, it then seemed that the consumer had learned the extravagance of going beyond his own neighborhood mines for household coal. However, the experience of the past two years indicates that many people are again following their old habits, as a result perhaps of the intensive advertising by the producers of certain coals specially prepared, and now prefer coal from a particular state or of a certain trade name, because they have come to believe that such coal is better suited to their needs.

The thought presents itself as to whether the consumer who demands such brands and trade names knows what he is getting in heat value for his money. If not, what is the producer in the areas nearer by doing to correct the mistaken belief, if there is one, and to show his product to the buyer in a true dollars and cents comparison?

Coal Cost Per Thermal Unit Is Best Test

With this in mind, Iowa suggests itself as a locality where such a campaign of education might be productive of results. Based on present market prices for Iowa and Illinois coal, in which the Iowa price at the mine is higher than Illinois, and on present freight rates, there is no Illinois coal yielding as many B.t.u. for one cent at Des Moines, Iowa, as will coal from any locality in that state. The advantage in favor of Iowa coal ranges from 200 to 8,200 B.t.u. for one cent, with an advantage over the Illinois field most favored by users of 4,550 B.t.u. per penny of cost.

A number of operators and jobbers in Iowa were asked whether they realized these facts and, if so, what was being done to inform the retail dealers and, through them, the consumers. Replies indicate that only a few are making any particular effort in this direction, some seeming content to take for granted that the public knows that the product of Iowa mines is "really about as good as that of other nearby states."

One operator and a jobber, who have studied the situation and are convinced that the general public will burn something cheap—cheap in the sense that the cost is low—to keep them warm during the coming winter, have sent letters to dealers over the state suggesting this and driving home the oft repeated message that a portion of the winter's coal must be moved during the summer. These men felt that a short snappy letter, which would attract the dealer's attention by suggesting the facts, would produce results in orders better than a longer statement involving the recitation of statistics.

One of the letters started with the statement that when the first snow covers up the chips and corn cobs in the back yards, there will be a rush for coal, and followed with the suggestion that the farmer, as well as city and small town consumer, will not buy the long haul, high freight rate stuff, but the coal he can get at the lowest price per ton.

Play Up Long Haul to Illinois' Disadvantage

Another wholesaler addressed a letter to dealers, requesting a reply, asking if it was not their opinion that the people would buy low priced coal, not high priced freight, this year. The psychology of his argument being that if he could suggest the text and induce the dealer to write the letter, he would have an opportunity to come back with a compliment on the dealer's judgment and presentation of the facts. This, it seems, would create a more lasting impression in the dealer's mind, which he would gradually impart to his customers, and thus a permanent preference would be established for the low freight rate product. That is the way the present preference for high freight, trade named coals was established; by constantly telling the dealer and his customer that such coals are better.

Both of these letters got results, orders and replies, which will multiply into more orders.

One retail dealer sold a considerable amount of summer coal through a letter with which was enclosed a copy of a cartoon by Churchill, reprinted from *Coal Scoop*, which vividly pictures the apathy of the consumer waiting for freight rates to be reduced and urges him to heed the pleas of retailers, railroads and operators to buy the winter's supply of coal during the summer months, when the retailer has it, the railroads can haul it and while prices are low. The companion picture shows the same consumer, when the first cold snap comes, now greatly agitated and crying for government regulation of the coal business, at sight of notices that "prices are higher on account of scarcity" and "no reduction in freight rates." In the accompanying letter attention is directed to the customary last-minute rush for coal, with the attendant shortage and increased price, and the suggestion that at least part of next winter's supply be put in now.

Program Could Be Used in Other Localities

Perhaps some such concrete program, more properly called educational than propaganda, might be adopted and followed by the trade in other localities, varying the argument to suit the local conditions.

In Iowa the car situation is usually not so much a problem as in most other fields. The mines have smaller individual capacities and three-day delivery is the average all over the state, allowing almost weekly return trips for cars from mines to delivery and back to be loaded again. There are not many industries in the state calling for open top cars for shipment out of the state and such cars as are routed away are usually replaced by those coming in with coal from other fields and some returning empty from points farther west and northwest, where they were shipped from Eastern markets with coal of particular kinds and grades; gas coal, for instance.

Gulf Between Digging Cost and Cost-on-Cars

The price of a ton of coal to the consumer, as compared with the contract mining rate is one subject that, it seems, should be explained more fully and frequently to the buyer. There is an attitude on the part of certain miners' union officials to discredit the operators at every opportunity by stating in interviews that increases in the price of coal to the retail trade are not justified by the increases given the diggers of the coal. The public should be made to understand what the contract rate is and that it represents only about one-half the direct cost of coal at the mines. In Iowa the diggers or contract miners represent but 48 per cent of the men employed at the mines, while in Illinois it is understood that this percentage is somewhat higher. The items making up overhead and indirect costs should also be explained and definite statement made showing why these costs cannot be eliminated from the price to the ultimate consumer. Average per ton costs showing where the money really goes might well be published frequently.

Good Results Believed to Be Inevitable

Can better use be made of the information regularly collected and tabulated by the various associations in the trade than to distribute it in an understandable form and stripped, so far as possible, of all technical terms? An educated general public will do almost as much to forestall regulation of the trade that has been threatened for more than a year, as will expensive and uncertain lobbies.

The conclusion seems almost unavoidable that only good for the trade can result from a campaign of education for the users of coal to the end that they buy the coal which will best serve their needs at the least outlay of money.

The individual who finds his winter's coal bill a hundred dollars less than last year will not be one of those condemning the whole coal trade as robbers, but it is probable that the one who has tried to keep his family warm with a last portion of high-priced freight included in his bill will not take the trouble to analyze the situation to learn why his outlay was so much more than his neighbor who was just as warm. The consumer can only measure the freight he burns by his bank account.

Operators in State of Washington Sever All Relations with Union

WASHINGTON commercial-coal operators have issued notices to the public and to their employees declaring that they will no longer run union mines and that they will pay a scale of wages proposed by the neutral member of the coal commission which is as follows: Contract miners under piece-work rates, between $7 and $14 per day; day men (underground), $6; common labor (underground), $5.25; day men (above ground), $6; common labor, (above ground), $4.50. The operators declare that these wages compare favorably with those in other industries and promise to cut prices as much as the wage reduction will permit.

The operators of commercial mines declare that the union has disregarded the principle of collective bargaining for that of dictation, that it has refused to bargain with the employees for a new wage scale or to consider any reduction of wages despite the need for a new scale as shown by the report of the joint commission appointed by the Director of Labor and Industries of the State. They add that the union has refused to permit the men employed by the idle mines a chance to vote on the question of returning to work at the wage scale just given, which, as stated, was proposed by the neutral member of the coal commission.

The operators declare that the United Mine Workers of America have admitted that the refusal to permit of a readjustment of the wage scale is actuated by a desire to protect the interests of the organization in other states which would be asked to grant reductions in those sections if decreases in wages were allowed in the State of Washington. "It has," they say, "become increasingly evident, not only in connection with the present controversy but by reason of accumulative experience over a number of years that the policy of the United Mine Workers of America is not one of consideration for the interests of the industry and of its members in this district, but one under which those interests are sacrificed to the interests of that organization in remote districts."

As stated by the operators efforts were made in January and February to induce the national and district officers of the United Mine Workers to enter into negotiations for a new wage scale. After 60 days' effort the attempt failed. In a circular dated Feb. 28 the operators proposed that the wage scale of October, 1919, be made effective, saying that the mines must be closed down if the proposition was not accepted. As no favorable action was taken the mines were closed on Mar. 15.

Miners Report Coal Situation Discouraging

In April at the request of Edward Clifford, Director of Labor and Industries of the State of Washington, the operators consented to the formation of a commission composed of two representatives of the operators and two of the mine workers and a representative of the Department of Labor and Industries. After a full investigation the commissioners submitted a unanimous report of facts which fully justified the previous contentions of the operators showing that the situation was a critical one, the mine-worker members in their communication of June 30 to Mr. Clifford saying that "our investigation has revealed a condition of affairs which we are frank to state is more discouraging than we had anticipated."

Based on this report the member of the commission representing the Department of Labor and Industries recommended a wage scale under which it would be possible to operate. The operators accepted the scale but the United Mine Workers of America for five weeks delayed its acceptance. Finally a convention by refusing to recommend the acceptance of the proposed scale and also by refusing to consider any reduction in wages whatsoever finally closed the door to any possible settlement with the organization.

The operators say that at an appropriate time and as soon as possible after resumption of operations their employees will be invited to select representatives to meet the operators and work out a plan of organization which will embody the principle of collective bargaining and assure them a voice in the discussion of mutual problems.

Repeal of Excess-Profits Tax Would Attract Capital Necessary for Industrial Rehabilitation

By Paul Wooton
Washington Correspondent

WHILE opposition of considerable proportions has arisen against the proposed repeal of the excess-profits tax, most students of tax problems, regardless of political party, agree that the repeal of this tax will do more to bring about a return of industrial prosperity than would nearly any other one thing that could be done at this time. The debate in the House brought out many facts and figures with regard to the working of the excess-profits tax, all of which tend to the conclusion that it was a war tax, justified only by the stress of the time, and in no way adapted to peace-time conditions. The revelations which have come as a result of the recent concentration of thought on this subject indicate that the tax should have been repealed long ago and supplanted by a more scientific form of taxation.

There is concrete evidence that the excess-profits tax has led to great extravagance in business and it is blamed for the period of intense speculation which followed the war. One of its good effects, however, is that in their effort to avoid having excess profits, industries have entered upon improvements and betterments such as never would have been undertaken otherwise.

Capital Driven from Industry to Tax-Free Bonds

Big business does pay a considerable portion of the money collected under the excess-profits tax, but as the tax was tending more and more to drive capital away from industry and into tax-free bonds, the public at large has suffered because of the great reduction in industry which has come from lack of capital. Witnesses before the Committee on Ways and Means declared that the excess-profits tax and the high surtaxes on individual incomes had removed every incentive for the holders of accumulated capital to continue to put their money in businesses.

It is estimated that nearly $15,000,000,000 now is invested in tax-free securities. A considerable portion of that amount now has been withdrawn from active industrial enterprises. Capital for investment is commanding almost prohibitive rates of interest. An example of the inducement to invest in tax-exempt securities is had by citing the fact that a man of large means would have to invest his money so as to earn 16.67 per cent in order to yield him the return that a 4½ per cent municipal bond would mean to him. Any business venture which would yield 16 per cent on the investment necessarily would carry with it great risks, while the municipal bond possesses no element of risk.

While there is no disputing that large organizations pay a considerable portion of the excess-profits tax, the figures show that this is due to the high earning power of certain of the great low-cost organizations, as a larger percentage of the smaller corporations make very high profits.

Discrimination Against Firms with Small Capital

Another objectionable feature to the excess-profits tax is the uncertainty as to what it will amount to at the end of the year. Since these corporations do not know how much they will have to pay out under this tax, the tendency is to overestimate probable assessments. The inequalities of the tax and its discrimination against the corporation with a small invested capital has been the source of much discontent. The abandoning of "invested capital" as a basis for computing tax deductions will simplify the corporation tax statements and will remove a prolific source of tax discrimination.

Nevertheless there are two sides to the question. The other side of the proposition was set forth with particular clearness by Representative Frear, of Wisconsin, during the debate in the House. A part of Mr. Frear's argument is as follows:

"A debt of $24,000,000,000 is a reminder of the war that must be met and explains the absolute necessity of levying unusual and sufficient taxes in peace times for years to come in order to meet unusual obligations. Unexampled business activity and enormous business profits enjoyed during and after the war under existing law contradict the argument offered for tax reduction in order to help business. Depressed business conditions are found throughout the world to-day, an aftermath of war, although Germany with a $35,000,000,000 debt and unprecedented taxes has practically resumed prewar business activities according to report. Present business conditions are not caused by taxes but are due to a variety of well-known contributing causes, including world-wide business depression and deflation.

"Everybody desires to reduce or remit taxes wherever possible to do so, and a heroic effort to please people generally has been made, but repeal of the excess-profit tax and other taxes has been opposed in the committee, first, because the excess-profits corporation tax is imposed only after 8 per cent profits and other exemptions have been deducted. It is based on taxation of excess profits on the same principle governing personal income surtaxes—ability to pay; second, if the excess-profits tax is repealed, then it ought not to occur before Jan. 1, 1922.

"The demand for its repeal has universally been based on the claim, whether real or mistaken, that the excess-profits tax is always passed on to the ultimate consumer. If true, in whole or in part, on what theory can Congress repeal a tax that will have been collected from consumers throughout the entire year of 1921 only to be retained as a gratuity from Congress? In other words, if a 1921 excess-profits tax of $450,000,000 has been passed on the consumer this year, then by repealing that law as of Jan. 1, 1921, we will make an enormous gift to the corporations, based on the actual proportion of taxes collected by them from consumers prior to passage of the bill.

"The significance of this proposal as embodied in the bill presents a political and economic liability well worth considering."

Provisions of Revenue Bill Interest Coal Men

It was expected that a vote would be taken by Saturday, Aug. 20, in the House on the revenue bill. Some of the main provisions of interest to coal producers as individuals and as corporation investors or managers, aside from the proposed repeal of the excess-profits tax, are:

Reducing the surtax on individuals to a maximum of 32 per cent upon amounts by which net income exceeds $66,000.

Increasing from $2,000 to $2,500 exemption of married persons or heads of families whose net income is below $5,000, and increasing from $200 to $400 the exemption for each dependent.

Providing for deduction of a net loss from the net income of the succeeding taxable year, and where such loss is in excess of net income for such succeeding year providing for carrying forward such excess as a credit against succeeding taxable year.

Repealing transportation tax as of Jan. 1, 1922.

Reducing time limit for determination and assessment of taxes to three years in the future.

Providing for an agreement in writing between taxpayer and revenue commissioner to have effect of final and conclusive settlement.

Clarifying provisions relating to determination of gain and loss, deductions and credits, etc.

Increasing the normal tax on corporations to 15 per cent for the calendar year 1921 and each year thereafter.

Providing for a tax simplification board which is to simplify forms and procedure of the Revenue Bureau.

600 Connellsville Miners Quit When Wages Are Cut to $3 a Day

SIX hundred mine workers laid down their tools Friday, Aug. 19, in the first strike in the Connellsville coal region since 1902, when employees of the Allison plant of the W. J. Rainey Co., Inc., refused to accept another wage reduction. The strikers called meetings at both the Mount Braddock and Rainey plants and expected to decide by Saturday night whether or not they would join in the walkout.

The new scale allows skilled miners slightly above $3 a day for ten hours. During war times these men were receiving from $8 to $10 a day for eight hours.

Officials of the company said that if the strike were prolonged they would close their plants in Fayette County, including Revere, Paull, Mount Braddock, Allison, Elm Grove and Royal, and throw 2,500 men out of work.

Wages of Two Million Workers Reduced 20 Per Cent Since Sept. 1, 1920

THE National Industrial Conference Board has recorded wage reductions in more than 500 instances from about Sept. 1, 1920, to Aug. 1, 1921. The number of commercially important plants affected is about 750, with more than 2,000,000 employees.

The average of the reductions is estimated at 20 per cent, ranging from as little as 5 per cent to as much as 30 per cent. The wave seems to have begun in the Middle West, spreading rapidly to the East and less rapidly to the West. The reductions, so far as the Board has observed them, seem to have affected all workers, skilled and unskilled, by about the same percentages.

Fairmont-Clarksburg Region Getting Ready For Future Wage Conference

WHEN the Advisory Board of the Northern West Virginia Operators' Association met at Deer Park, Md., on Aug. 9, they decided that the officials of the mine workers were so determined to maintain wage levels that it was not worth while to continue the overtures which began late in June and have been persevered in ever since. The answer in West Virginia, as in Washington State and central Pennsylvania, is: Wage reductions are against the policy of the International organization and it is useless to try in any way to induce the Indianapolis officials to concede a separate scale to suit the needs of any special section.

There is no way out save abrogation of the present contract, but there is a sentiment that what has ever been sacred to the union should be sacred to the operator. He must not break a contract even though it be one made under compulsion and to replace a contract which had not run out.

George S. Brackett, the secretary of the Northern West Virginia Operators' Association, has made a statement to the effect that a sub-committee of three men from the thick-vein district and three men from the thin-vein district has been appointed, to be known as the wage-adjustment committee, which has been instructed to prepare data and thoroughly familiarize itself with the mining conditions and wages paid in Ohio and western Pennsylvania, as well as in the non-union districts which surround and directly compete with northern West Virginia. The sub-committee consists of Tarleton (chairman), Ryan, Bischoff, Sandridge, Brady and Montgomery.

Indiana to Meet Disorder by Force of Law

UNLIKE some sections, Indiana has, at least in Sullivan County, officials who are not disposed to allow disorder to get beyond control. The Sullivan County Board Commissioners have sworn in forty special deputies who will keep the peace under the orders of Sheriff Douthitt and have announced that they will swear in more when the three men who have been arrested for rioting are brought to trial in the Circuit Court at Sullivan. The mine workers are planning to make a demonstration when the trial is held. In the disorder of the week before last, for which the three men are to be tried, several mine bosses and employees were driven out of the district.

Army of Miners Would Descend on Mingo

ASSEMBLING from Paint Creek and Cabin Creek, 600 mine workers at Marmet prepared on Aug. 20, as in ex-Governor Cornwell's administration, to march on Mingo County through Boone and Logan counties. They were reinforced on Sunday, Aug. 21, by 400 men from the Cedar Grove region, who crossed the Kanawha River and improvised rafts. Armed guards are keeping the roads leading to the point of assembly, which is a hollow about a mile below the station at Marmet, and a correspondent who passed the guard was told to leave and was accompanied by two armed guards to the station.

This march is said to be a protest against martial law and the arrest of agitators. The march two years ago was started to stop alleged murders of women and children by the mine guards, rumors having been purposely floated to foster the movement. C. F. Keeney, president of the United Mine Workers in that district, No. 17, declares he has nothing to do with the proposed invasion and that he has not even been invited to attend at the rendezvous. He refuses to concern himself and will not stop this march as he did that on the previous occasion, though he doubts if the men can march the eighty miles before them without a commissariat.

Sheriff Don Chafin, of Logan County, is said to have five hundred deputy sheriffs armed with army rifles and machine guns. He has stationed them near a divide at Sharples, Logan County, where two years ago a similar invasion was headed off.

American Wholesale Coal Association Meeting Postponed

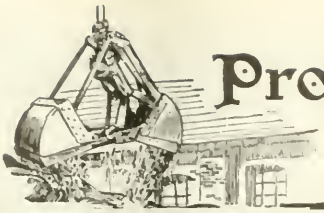
THE meeting in Chicago of the executive committee of the American Wholesale Coal Association, called for Aug. 24, has been postponed until Aug. 30 and 31. This was done so that a meeting of the board of directors could be called for the same time. Due to the increased importance being attached to the coal exchange proposition, it was decided that both bodies should meet at this time to discuss that and other important matters.

BECAUSE OF THE LIMITATIONS IN GOVERNMENT SALARIES it is understood Secretary Hoover is having difficulty in finding a capable man with proper qualifications for the position of chief of the fuel export division in the reorganized Bureau of Foreign and Domestic Commerce. It is understood that this division will cover both coal and petroleum at first but may later be subdivided.

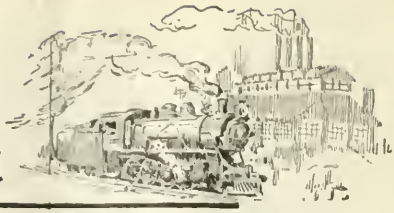
LOCHRIE ADVISED STICKING TO PRESENT WAGE.—Among the non-union operations in the central Pennsylvania field are those of the Lochrie and Berwind-White interests of Windber, Somerset County. They both pay the scale which is current in the union mines nearby. John Lochrie advises that, whether work remains slow or amends, the scale be maintained until April 1 of next year, when the agreement in the Central Competitive Field expires.

Frelinghuysen Fails to Bring Coal-Stabilization Bill Back to Life

SENATOR FRELINGHUYSEN made an ineffectual attempt on Monday, Aug. 22, to call up his coal-stabilization bill in the Senate. He insisted upon a vote, and the proposal was overwhelmingly defeated. The vote was taken without roll call.



Production and the Market



Weekly Review

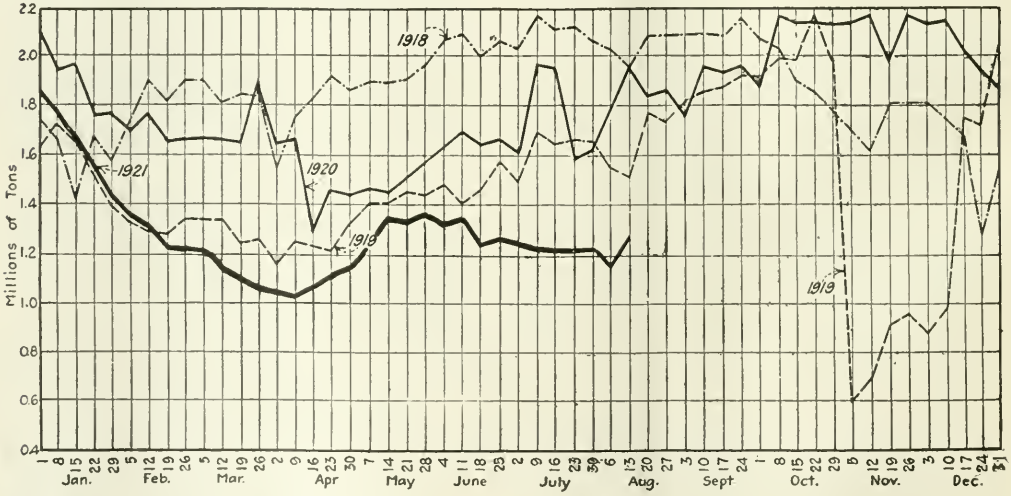
PRODUCTION of both hard and soft coal has hit the upgrade at last. Anthracite has not been in a serious slump, the let-up of early August having been but short-lived and small in proportion to the total. Without question, however, the worst of the mid-summer bituminous coal depression is over. With an output the second week of August of 7,726,000 tons, a gain of almost half a million tons over the average of the preceding five weeks, and with unmistakable evidence of quickening of inquiry and of buying, the turn may be said to have been passed. Each week hereafter may not show a greater output than the one before, but the general trend will be up from now on just as from the middle of May to the first half of August it was downward.

It is not yet possible to point definitely to each influence that is marking up demand for soft coal. Psychology, as usual, is called in to account for the attitude of buyers. Just now there is being felt the effect of the steady pressure of the advice to buy recently voiced by Secretary Hoover and the chairman of the Interstate Commerce Commission, as well as that of the large coal-carrying railroads. As September approaches and cooler weather is in prospect, thoughts are turning to coal. Railway fuel purchases are increasing and some improvement in demand from the steel industry is noted, with prospects for more. Cement mills in the East are buying more coal. Business observers are advising that conditions generally confirm the belief that genuine business improvement is under way. Caution on the part of buyers is the part of good business as matters now stand. It is being pointed out that failure to observe caution a year ago was in a large measure responsible for the collapse and that any new buying now is positive indication of better times. Increased availability of credit and marked declines in money rates not only herald betterment in fundamental conditions but make possible the purchase of storage coal by industry.

Prices Fail to Reflect Change in Sentiment

Prices do not as yet reflect the change in feeling—that is, coal is not being marked up on expectations. *Coal Age* index of spot prices of bituminous coal stood at 90 on Aug. 22, a drop of 2 points from 92 on Aug. 15. Local conditions account for this change. In New England all-rail coals from central Pennsylvania are down because of the flood of water-borne coal now available, both because the ocean freights from Hampton Roads are the lowest in years and because New England is the only market by water for coals from this port since export demand ceased. In the Midwest, where a few

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

weeks ago screenings were at a premium because in small production, demand is now waiting for the usual fall rush for domestic sizes to produce a superabundance of fine coal at bargain prices; in consequence prices are off now.

Movement off the docks at the head of the Great Lakes is gaining and all reports indicate that that territory will have abundant coal, both hard and soft, this year. New England likewise appears to be very well stocked and continues to receive somewhat better than current needs.

BITUMINOUS

As stated last week in this review, it is apparent that the low point of the mid-summer production decline has been passed. The output for the week ended Aug. 13 was 7,726,000 net tons, one-half million tons in excess of the figure for the last preceding week and the largest since the week ended June 11. The present rate of production, however, is far below that in other recent years. Even in the dull year of 1914 the August output averaged 8,700,000 tons per week. A slight decrease was reported in loadings for Monday and Tuesday of the third week in August.

Undoubtedly the depressed condition of industry is responsible for the subnormal rate of production, according to the Geological Survey. May is the latest month for which consumption data are available. Fuel consumption by railroads in that month was about 81 per cent of the 1920 average; by electric utilities, 78 per cent, and for coke manufacture, only 38 per cent. "No-market" losses are still exacting a toll of more than 50 per cent of production capacity of min operations.

Domestic demand appears to be awakening with the approach of autumn. Retailers find an increase of business, although it is still far below normal. A better line of inquiry is developing along the seaboard, which has had a tendency to stiffen prices. Cleveland reports show a more optimistic tone. Despite the decrease in Lake tonnage, production has even gained, showing that the industrial market is absorbing considerably more coal.

All-rail movement to New England continues to decline, as shown in the following table. Low marine freights are aiding shippers of water coal, who are making further inroads on the territory which for some time has been served by the all-rail central Pennsylvania coals.

CARS OF COAL FORWARDED OVER THE HUDSON TO EASTERN NEW YORK AND NEW ENGLAND

Week Ended	1921 Anthracite	1921 Bituminous	1920 Anthracite	1920 Bituminous
July 30	2,543	3,029	2,806	6,368
Aug. 6	2,609	2,780	1,863	6,732
Aug. 13	2,313	2,560	2,230	6,124

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

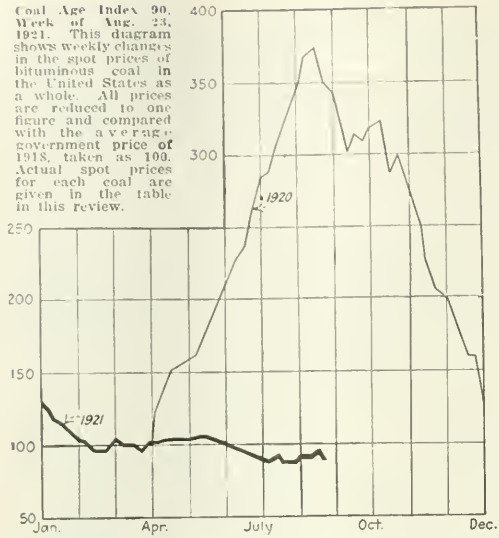
Low-Volatile, Eastern	Market Quoted	July 19, 1921	Aug. 9, 1921	Aug. 16, 1921	Aug. 23, 1921†
Pocahontas lump	Columbus	$5 65	$5 15	$5 20	**$5 00@$5 45**
Pocahontas mine run	Columbus	3 15	2 90	3 00	**3 00@3 25**
Pocahontas screenings	Columbus	2 30	2 15	2 40	2 25@2 60
Pocahontas lump	Chicago	5 00	5 00	5 25	*4 75@5 25*
Pocahontas mine run	Chicago	2 75	2 75	3 00	*2 25@3 25*
*Smokeless mine run	Boston	5 85	5 60	5 50	*5 40@5 50*
Clearfield mine run	Boston	2 00	1 90	1 90	*1 40@2 10*
Cambria mine run	Boston	2 70	2 55	2 55	*2 15@2 70*
Somerset mine run	Boston	1 80	1 70	1 70	*1 40@1 77*
Pool 1 (Navy Standard)	New York	2 90	3 15	3 15	**3 00@3 40**
Pool 1 (Navy Standard)	Philadelphia	2 80	2 95	2 85@3 00	
Pool 1 (Navy Standard)	Baltimore	2 60	2 45	2 50	2 50
Pool 9 (Super. Low Vol.)	New York	2 50	2 55	2 55	2 30@2 80
Pool 9 (Super. Low Vol.)	Philadelphia	2 40	2 35	2 35	2 25@2 40
Pool 9 (Super. Low Vol.)	Baltimore	2 35	2 20	2 25	**2 25@2 30**
Pool 10 (H. Gr. Low Vol.)	New York	2 20	2 35	2 25	**2 00@2 65**
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2 20	2 05	2 05	1 90@2 15
Pool 10 (H. Gr. Low Vol.)	Baltimore	2 00	2 00	2 10	**2 15**
Pool 11 (Low Vol.)	New York	2 00	1 95	1 95	**1 85@2 25**
Pool 11 (Low Vol.)	Philadelphia	1 90	1 75	1 75	**1 75@1 85**
Pool 11 (Low Vol.)	Baltimore	1 75	1 70	1 75	**1 85**
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1 70	1 85	1 85	**1 70@2 20**
Pool 54-64 (Gas and St.)	Philadelphia	1 75	1 65	1 65	**1 60@1 75**
Pool 54-64 (Gas and St.)	Baltimore	1 50	1 50	1 60	**1 65**
Pittsburgh seg gas	Pittsburgh	2 95	2 70	2 70	2 60@2 80
Pittsburgh mine run (St.)	Pittsburgh	2 10	2 10	2 10	2 00@2 15
Pittsburgh slack (Gas)	Pittsburgh	1 45	1 70	1 70	1 65@1 75
Kanawha lump	Columbus	3 30	3 25	3 45	3 25@3 65
Kanawha mine run	Columbus	2 00	2 15	2 10	2 00@2 25
Kanawha screenings	Columbus	1 20	1 50	1 50	**1 40@1 70**
Hocking lump	Columbus	3 25	3 15	3 15	3 00@3 25
Hocking mine run	Columbus	2 15	2 15	2 15	2 00@2 30
Hocking screenings	Columbus	1 25	1 50	1 50	**1 45@1 75**
Pitts. No. 8 lump	Cleveland	3 25	3 25	3 25	3 00@3 50
Pitts. No. 8 mine run	Cleveland	$2 20	$2 30	$2 30	$2 25@$2 35
Pitts. No. 8 screenings	Cleveland	1 25	1 80	1 80	**1 75@1 90**
Midwest					
Franklin, Ill. lump	Chicago	3 55	3 55	3 80	*3 00@4 05*
Franklin, Ill. mine run	Chicago	3 00	3 15	3 30	*2 25@3 50*
Franklin, Ill. screenings	Chicago	1 95	1 85	1 75	**1 15@2 65**
Central, Ill. lump	Chicago	2 50	2 75	2 90	*2 00@3 00*
Central, Ill. mine run	Chicago	2 40	2 20	2 15	**2 00@2 75**
Central, Ill. screenings	Chicago	1 75	1 60	1 55	**1 00@2 25**
Ind. 4th Vein lump	Chicago	2 80	3 60	3 60	*2 35@3 50*
Ind. 4th Vein mine run	Chicago	2 50	3 10	3 10	*2 25@2 75*
Ind. 4th Vein screenings	Chicago	1 85	2 15	2 15	*1 00@2 15*
Ind. 5th Vein lump	Chicago	2 75	2 90	2 90	*2 25@3 25*
Ind. 5th Vein mine run	Chicago	2 40	2 45	2 45	*2 00@2 75*
Ind. 5th Vein screenings	Chicago	1 75	1 65	1 65	**1 35@2 15**
Standard lump	St. Louis	2 25	2 20	2 65	2 50@2 75
Staodard mioe run	St. Louis	1 70	1 75	1 75	**1 75@1 90**
Staodard screenings	St. Louis	0 85	1 15	1 10	*1 00*
West. Ky. lump	Louisville	2 75	3 00	3 00	**2 75@3 75**
West Ky. mine run	Louisville	2 25	2 25	2 45	**2 25@3 00**
West Ky. screenings	Louisville	1 60	1 70	1 70	*1 00@2 25*
South and Southwest					
Big Seam lump	Birmingham	3 65	3 75	3 75	3 25@4 20
Big Seam mine run	Birmingham	2 15	2 15	2 15	2 00@2 25
Big Seam (washed)	Birmingham	2 30	2 40	2 40	2 25@2 50
S. E. Ky. lump	Louisville	3 40	3 60	3 65	3 50@3 75
S. E. Ky. mine run	Louisville	2 20	2 30	2 35	2 25@2 40
S. E. Ky. screenings	Louisville	1 50	1 65	1 70	*1 40@1 70*
Kansas lump	Kansas City	5 50	5 50	5 65	...
Kansas mine run	Kansas City	4 40	4 40	4 40	...
Kansas screenings	Kansas City	3 25	3 25	3 25	...

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advance over previous week shown in heavy type, declines in italics.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	Aug. 9, 1921 Independent	Aug. 9, 1921 Company	Aug. 16, 1921 Independent	Aug. 16, 1921 Company	Aug. 23, 1921† Independent	Aug. 23, 1921† Company
Broken	New York	$2 61	...	$7 50@$7 75	...	$7 50@$7 75	...	$7 50@$7 75
Broken	Philadelphia	2 66	$7 50@$8 20	7 65@7 85	$7 50@$8 20	7 65@7 85	$7 50@$8 20	7 65@7 85
*Broken	Chicago	5 62	12 40	12 45	12 40	12 55	12 55	**12 65**
Egg	New York	2 61	7 40@7 75	7 50@7 75	**7 30@7 75**	7 50@7 75	**7 40@7 75**	7 50@7 75
Egg	Philadelphia	2 66	7 60@8 20	7 65@7 85	7 60@8 20	7 65@7 85	7 60@8 20	7 65@7 85
*Egg	Chicago	5 62	12 40	12 45	12 40	12 55	**12 80**	**12 65**
Stove	New York	2 61	7 80@8 00	7 80@8 10	**7 80@8 25**	7 80@8 10	**7 °0@8 35**	7 80@8 10
Stove	Philadelphia	2 66	8 00@8 35	7 95@8 25	8 00@8 35	7 95@8 25	8 00@8 35	7 95@8 25
*Stove	Chicago	5 62	12 70	12 80	12 70	12 80	**13 40**	**12 90**
Chestnut	New York	2 61	7 25@7 75	7 80@8 10	**7 25@7 75**	7 80@8 10	**7 35@7 80**	7 80@8 10
Chestnut	Philadelphia	2 66	7 75@8 25	7 95@8 25	**7 75@8 00**	7 95@8 25	**7 75@8 00**	7 95@8 25
*Chestnut	Chicago	5 62	12 70	12 80	12 75	12 90	**13 10**	12 90
Pea	New York	2 47	4 50@5 25	6 05@6 45	4 50@5 25	6 05@6 45	**4 50@5 75**	6 05@6 45
Pea	Philadelphia	2 38	4 50@5 75	6 10@6 20	4 50@5 50	6 10@6 20	4 50@5 50	**6 10@6 40**
*Pea	Chicago	5 62	11 10	11 20	11 10	11 25	11 10	*11 00*
Buckwheat No. 1	New York	2 47	2 50@3 00	3 50	2 50@3 25	3 50	**2 75@3 50**	3 50
Buckwheat No. 1	Philadelphia	2 38	2 50@3 00	3 50	2 50@3 00	3 50	2 50@3 00	3 50
Rice	New York	2 47	1 50@2 00	2 50	1 50@2 25	2 50	**1 75@2 50**	2 50
Rice	Philadelphia	2 38	1 75@2 00	2 50	1 75@2 00	2 50	1 75@2 00	2 50
Barley	New York	2 47	0 75@1 25	1 50	0 90@1 25	1 50	**1 00@1 50**	1 50
Barley	Philadelphia	2 38	0 75@1 25	1 50	**0 75@1 25**	1 50	0 75@1 25	1 50
Birdseye	New York	2 47	...	2 50	...	2 50	...	2 50

*Prices and freight rates, net tons; quotations f o b. cars, Chicago.
†Advances over previous week shown in heavy type, declines in italics.


Coal Age Index 90, Week of Aug. 23, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.
400
350
300
250
200
150
100
50
1920
1921
Jan.
Apr.
July
Oct.
Dec.

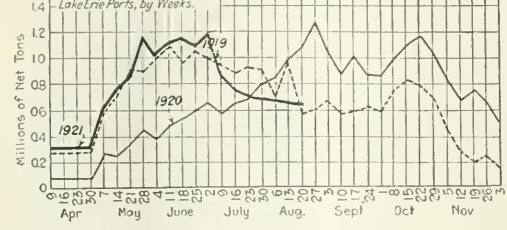
Cumulative receipts of bituminous coal in New England, totaling 8,273,000 tons for the first half year of 1921, compared less favorably with former years. In the first half of 1916, for example, 12,400,000 tons of soft coal were delivered. In 1920, a year when New England consumers had difficulty in obtaining coal, the half-year receipts were 9,428,000 tons. The decrease during the present year is principally if not entirely due to the effect of the business depression in curtailing consumption.

RECEIPTS OF BITUMINOUS COAL IN NEW ENGLAND

(In net tons)

	By Tide	All Rail	Total
April, 1921	603,917	585,797	1,189,714
May, 1921	587,684	649,914	1,237,598
June, 1921	758,960	799,156	1,558,116
Year to June 30, 1921	3,795,425	4,477,712	8,273,137
Year to June 30, 1920	4,678,490	4,749,859	9,428,349
Year to June 30, 1919	4,077,396	4,163,908	8,241,304

Lake tonnage is still on the toboggan. During the week ended Aug. 20, 634,371 net tons were dumped at the lower ports—611,927 tons cargo and 22,444 tons vessel fuel. Total dumpings for the season to date are 15,424,312 tons, as compared with 9,646,262 tons in 1920.



In regard to destination of the bituminous cargo coal shipped via the Lakes up to the end of July, 1919, is the better standard of comparison of the past two years. Up to July 31 a total of 12,889,000 tons had been forwarded, of which 20.5 per cent had gone to Canadian points and 79.5 per cent to American points, practically the same proportions as obtained in 1919. The total quantity forwarded to American destinations was 10,247,000 tons, almost exactly the same as in 1919. The most significant shift in distribution was an increase in both the tonnage and the relative proportion shipped to Lake Superior points, and a decrease in the movement to Lake Michigan. The total shipped to American ports on Lake Superior was 6,631,000 tons in 1921, an increase of 561,000 tons over 1919.

The export market is flat. Since the resumption of British mine operations oversea shipments have been dropping steadily. During the week ended Aug. 18 Hampton Roads dumpings for all accounts were 209,823 gross tons, a decline of more than 50,000 tons as compared with the preceding week. Although less coal is being consigned to Tidewater, accumulation at the piers is growing and distress lots of fuel are easily obtainable at low figures.

ANTHRACITE

Production of hard coal rose during the second week of August, when, according to the Geological Survey, 1,772,000 net tons were mined. This increase was made possible not so much by reason of any greater demand as through the resumption of work on Aug. 8 at many of the collieries closed by the recent labor disputes in the anthracite region.

Lake shipments of anthracite are still heavy. In the week ended Aug. 17 Buffalo dumpings were 172,900 tons, compared with 199,600 in the preceding week.

June receipts of anthracite coal in New England showed an increase. The total quantity received from Jan. 1 to June 30, according to the Massachusetts Fuel Administration, was 6,294,000 net tons, a million tons ahead of the same period in 1920, and a million and a half ahead of 1919. Judged by experience, therefore, the present position of New England with respect to anthracite appears favorable.

RECEIPTS OF ANTHRACITE COAL IN NEW ENGLAND

(In net tons)

	By Tide	All-rail	Total
April, 1921	305,703	598,897	904,600
May, 1921	373,976	666,702	1,040,678
June, 1921	386,845	685,600	1,072,445
Year to June 30, 1921	2,036,615	4,257,446	6,294,061
Year to June 30, 1920	1,622,991	3,579,307	5,202,298
Year to June 30, 1919	1,464,596	3,180,092	4,644,688

COKE

Beehive coke production slumped off in the week ended Aug. 13. The total output declined to 49,000 net tons from 55,000 tons. Accumulation of by-product coke is menacing the immediate production of beehive.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

(NET TONS)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date[a]
July 30[b]	7,319,000	226,648,000	9,371,000	298,562,000
Daily average	1,220,000	1,273,000	1,562,000	1,672,000
Aug. 6[b]	7,175,000	233,823,000	10,432,000	308,994,000
Daily average	1,196,000	1,270,000	1,739,000	1,674,000
Aug. 13[c]	7,726,000	241,548,000	11,813,000	320,807,000
Daily average	1,288,000	1,271,000	1,969,000	1,683,000

(a) Less 2 days' production during New Year's week to equalize number of days covered for the two years. (b) Revised from last report. (c) Subject to revision.

ANTHRACITE

Week Ended:	1921	1921 Calendar Year to Date	1920	1920 Calendar Year to Date
July 23	1,837,000	. .	1,819,000	. .
July 30	1,750,000	. .	1,912,000	. .
August 6	1,564,000	54,064,000	1,805,000	54,205,000
August 13	1,772,000	55,836,000	1,851,000	56,056,000

BEEHIVE COKE

Week Ended Aug. 13	Week Ended Aug. 6	Week Ended Aug. 14	1921 Calendar Year to Date	1920 Calendar Year to Date
1921[a]	1921[b]	1920	1920[c]	
49,000	55,000	418,000	3,666,000	13,211,000

(a) Subject to revision. (b) Revised from last report. (c) Less two days' production during New Year's week to equalize number of days covered for the last two years.

Foreign Market And Export News

Glut of Small Fuels Forces British Pits To Operate on Short-Time Basis

Production During Week Ended Aug. 6 Receded 968,000 Tons from Preceding Week—Price Reduction Fails to Move Smalls—Export Restrictions Aggravate Conditions

Many British pits have been compelled to operate on a short-time basis, owing to the rapid accumulation at the pitmouth of unsalable small fuels. Production in the week of Aug. 6, as cabled to *Coal Age* was 3,619,000 gross tons, a decrease of 968,000 from the preceding week and the smallest since the first week after work was resumed.

In spite of the fact that some of these fuels, which were disposed of at 30s. per ton at the beginning of the year, are now offered for 20s. or less, there are no customers, and the market glut is increasing. This rapid accumulation is aggravated by the prevailing restriction in export business. It is likely, in this connection, that the owners will take up with the miners the question of loading at the coal face with riddles and forks. Should this practice be reverted to, the surplus of small fuels would be greatly reduced, and the situation would rapidly become normal again.

The output of coal in Great Britain for the week ended July 30, shows an increase over the preceding week of 253,100 tons, and over the corresponding week of last year of 22,100 tons. Production in the larger districts showed consistent gains over the preceding weeks. The Durham output increased to 625,500 tons; Yorkshire, 809,600; Derby, Nottingham and Leicester, to 631,600; South Wales and Monmouth, 843,000, and Scotland, 519,400.

In spite of the fact that there are fewer pits working than before the strike the British output continues to rise. Production for the week ended July 23 is comparable with the corresponding week in 1920.

WEEKLY BRITISH PRODUCTION, IN GROSS TONS

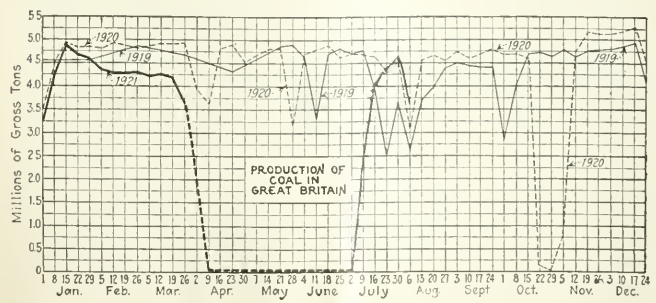
District	March 26, Tons	July 16, Tons	July 23, Tons
Northumberland	162,000	241,600	232,500
Stafford, Shropshire, Warwick and Worcester	311,100	333,100	362,600
Lancashire, Cheshire and N. Wales	336,000	416,300	427,800
Durham	477,500	523,700	571,400
Derby, Nottingham and Leicester	482,980	520,500	585,600
S. Wales and Monmouth	584,200	633,000	781,700
Yorkshire	610,300	744,600	794,600
Other English districts	78,800	82,100	96,100
Scotland	617,200	432,600	479,500
	3,660,000	3,927,500	4,331,800

The British ironmakers and coke producers have been conferring in an endeavor to fix a price for coke which would be satisfactory to all concerned. Up to now no agreement has been reached, the ironmakers stating that blast furnaces cannot possibly resume work until the price of coke is in the neighborhood of 20s. Coke producers see no immediate possibility of attaining this figure, especially since the prices of residuals have fallen so considerably since March.

British prices, as cabled to *Coal Age*, show a continued decline, with the exception of Best Steam Smalls, Cardiff, which stood firm:

CURRENT QUOTATIONS, BRITISH COALS, F.O.B. PORT, GROSS TONS

Cardiff	Aug. 13	Aug. 20
Admiralty Large	38s.	36s. @ 37s. 6d.
Steam, Smalls	19s. 6d.	19s. @ 20s.
Newcastle:		
Best Steams	32s. 6d.	27s. 6d. @ 32s. 6d.
Best Gas	36s. 3d.	31s. @ 32s. 6d.
Best Bunkers	30s.	32s. 6d.


Millions of Gross Tons
PRODUCTION OF COAL IN GREAT BRITAIN
1920
1919
1921
Jan. Feb. Mar. Apr. May June July Aug. Sept Oct. Nov. Dec.

Bunker Business Improves at Hampton Roads; Exports Barely Perceptible

Dumpings continue to decline, reflecting the stagnant export market. During the week ended Aug. 18, 209,823 gross tons were dumped over the piers, compared with 261,637 tons in the preceding week.

PIER SITUATION

	Week Ended Aug. 11, 1921	Week Ended Aug. 18, 1921
N. & W. Piers, Lamberts Point:		
Cars on hand	2,100	2,641
Tons on hand	103,655	134,502
Tons dumped	128,912	102,738
Tonnage waiting	3,600	7,300
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	2,080	1,961
Tons on hand	104,000	90,400
Tons dumped	80,812	70,094
Tonnage waiting	4,650	6,857
C. & O. Piers, Newport News:		
Cars on hand	1,889	1,961
Tons on hand	94,450	98,050
Tons dumped	51,913	36,991
Tonnage waiting	7,980	6,550

There has recently been some little increase in the demand for bunkers, but with the market depressed as it is by the absence of any appreciable export coal demand, the betterment in the bunker business trade passes almost unnoticed. Shipments to New England in August are expected to be larger than in July, as this is constituting the bulk of the traffic from Hampton Roads.

Hardly any c.i.f. business is in sight at all at the present time. But even then, there is no idea anywhere in local circles but that there must very shortly come a time when foreign countries will have to take at least certain tonnages from America.

A shipper familiar with the situation gave it as his view that the American exporter will stand the best chance with Mediterranean countries and the West Coast of South America. The expense of putting British coal in Mediterranean countries is such that the United States stands a better chance of getting business there. British capital is so greatly interested in the development of Argentina that American exporters can get only a fraction of that business. Another factor in favor of the British exporter shipping coal to the Argentine is the low freight rate due to the return movement of grain. The same handicap does not apply to the West Coast of South America, where firms in this country are thought to stand even a better chance in building up a substantial business.

Export Clearances, Week Ended Aug. 18

FROM BALTIMORE

	Tons
For France:	
Span. SS. Consuelo	5,402
For Sweden:	
Sw. SS. Astur	4,045

FROM HAMPTON ROADS

For Brazil:	
Br. SS. Ovid, for Buenos Aires	4,572
For Canal Zone:	
Am. SS. Cristobal, for Cristobal	9,611
For Cuba:	
Am. Schr. Augusta M. Snow	997
Br. SS. Berwindvale, for Havana	7,964
Br. SS. Membassa, for Havana	4,376
For Africa:	
Br. SS. Nile, for Alexandria (Egypt)	7,167
Br. SS. Boutry, for Lagos	2,039

French Railways Buy Welsh Coal—Complaints on German Coals

According to a cable to *Coal Age* from Paris, Aug. 19, the French State Railways have contracted for 20,000 tons of Welsh steam coal at approximately 30s. per ton. It is believed that this will not meet the full requirements of the railways.

Satisfactory progress is being made in the rehabilitation of the war-damaged coal mines in the Nord and Pas de Calais. Twelve companies in these fields that in the first six months of 1920 produced but 750,000 metric tons, raised 3,263,000 tons the first six months of this year, having produced 449,000 tons in June. Mines to the west of Pas de Calais, not damaged in the war, had an output of 698,000 tons in June compared with 617,000 tons in May. The total production of these two districts, January to June inclusive, this year, has been 7,344,000 tons, compared to which was an output of 3,810,000 tons the same period of 1920 and 14,946,000 tons the first half of 1913.

There is hardly any inquiry for coal in France now on account of the industrial slackness, the heat and the holidays. Prices are little changed so far, but there is no doubt that with the poor demand added to competition from abroad, prices are bound to come down. It is expected that as soon as British exporters really enter the market again, the French mines will have to cut their prices by at least 10 francs per ton.

The labor situation is very satisfactory and while it is still difficult to enforce wage reductions in the Northern districts on account of the high cost of living there, in the Central and Southern areas this has been done without any difficulty.

There are still complaints about the irregularity and insufficiency of supplies of German coals, and more attention is also given to quality which, although improved of late, is not yet satisfactory when one compares the coals shipped to France with the well-prepared and clean fuel supplied to German industry.

Pier and Bunker Prices, Gross Tons

(Foreign Bunker Quotations by Cable to Coal Age)

	Aug. 13	Aug. 20
PIERS		
Pool 9, New York	$5 70@$5 95	$5 75@$5 90
Pool 10, New York	5 35@ 5 75	5 25@ 5 60
Pool 71, New York	5.90@ 6 00	
Pool 9, Philadelphia	5 80@ 6 00	5 80@ 6 00
Pool 10, Philadelphia	5.40@ 5 70	5 40@ 5 70
Pool 71, Philadelphia	6.00@ 6 35	6 00@ 6 25
Pool 1, Hampton Roads	5.50	5 50
Pools 5-6-7, Hampton Roads	5 00	5 00
BUNKERS		
Pool 9, New York	$6 00@$6 25	$6.00@$6 20
Pool 10, New York	5 70@ 5 90	5.60@ 5 85
Pool 9, Philadelphia	6.10@ 6.30	6.10@ 6 30
Pool 10, Philadelphia	5.70@ 6.00	5.70@ 6.00
Welsh, Gibraltar	60s. f.o.b.	60s. f.o.b.
Welsh, Port Said	80s. f.o.b.	80s. f.o.b.
Welsh, Singapore	102s. 6d. f.o.b.	102s. 6d. f.o.b.
Welsh, Rio Janeiro	90s. f.o.b.	90s. f.o.b.
Welsh, Algiers	60s. f.o.b.	60s. f.o.b.
Welsh, Malta	75s. f.o.b.	67s. 6d. f.o.b.
Welsh, Lisbon	85s. f.o.b.	85s. f.o.b.
Welsh, La Plata	80s. f.o.b.	80s. f.o.b.
Welsh, Madeira	65s. f.a.s.	65s. f.a.s.
Welsh, Teneriffe	65s. f.a.a.	65s. f.a.s.
Welsh, Genoa	69s. t.i.b.	69s. t.i.b.
Durham, Newcastle	35s. @ 37s.	35s. @ 37s.
Belgian, Antwerp	.....	135 fr.

Ruhr Production Declines

A cable report to *Coal Age* on Aug. 19 shows the output of coal in the Ruhr region for the week ended Aug 6, as 1,736,182 metric tons, as compared with 1,761,000 for the last week in July.

American Coals Weaker in Holland and Italy

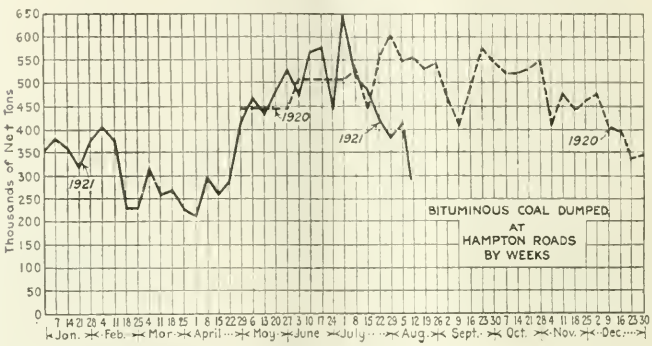
Cable quotations to *Coal Age* on Aug. 19, show that American coal is weaker on the Continent. Genoa reports American steam at 250@260 lire, on wagons, compared with 315@320 lire on Aug. 1. British supplies of Cardiff steam first are available at 270@280 lire, on wagons.

Rotterdam quotations show a decline on British steam coals to 37s. from 39s. on Aug. 12. American gas coal is firm at $7 f.a.s.

C. I. F. Prices, American Coal

(In Gross Tons)

	Aug. 13 Low Vol.	Aug. 13 High Vol.	Aug. 20 Low Vol.	Aug. 20 High Vol.
River Plate	$9 70	$9 10	$9 50	$9 00
French Atlantic				
United Kingdom				
West Italy	10 00	9 50	10 00	9 50
Scandinavia	....			
Port Said	....			
Piraeus	10.90	10 30		



Reports From the Market Centers

New England

BOSTON

Dull Market Continues—New Low Levels in Central Pennsylvania—Hampton Roads Shippers Active—Slightly Better Request for Anthracite.

Bituminous—There is no apparent let-up in the depression that affects the coal trade. All the shippers regularly represented in this market are strongly reinforced by salesmen from nearly all the producing areas east of the Mississippi Valley and the result is an utter lack of confidence among most buyers in the stability of any of the prices named. Each week sees more pressure to move coal, and many of the novices in this territory have not yet grasped the fact that within a widening zone of tidewater, the Hampton Roads coals are not to be denied.

Fair grades from central Pennsylvania are now being quoted at less than $2, with certain orphans like high-volatile slack selling down to $1.50. The railroads have shut off shipments on many contracts and at the same time are casting wistful eyes toward the lowest of the low prices so freely offering. It is a situation almost bewildering in its dullness.

Sailing vessels are easily had now at $1, Hampton Roads to Boston or Portland, and this only makes more emphatic the return of the smokeless coals to a territory where once they dominated. Not since 1914 have we had freights at $1 from Norfolk or Newport News, and so far as supply and demand are concerned there is no reason beyond the will of the vessel owners themselves why they should not go lower.

The loading terminals continue with about the same heavy surplus of coal on hand, as compared with vessels waiting and there are continual embargoes against certain shippers. The tonnage cleared for New England is now in excess of that for bunker purposes, and several of the smaller agencies who have hitherto been able to confine their business to offshore are also turning their attention to New England.

A mild sensation has been created by the expedient resorted to by one of the transatlantic lines in order to get cheaper coal than could be furnished in Boston. The liner "Winifredian" was sent to Hampton Roads from Boston for 2,700 tons of bunker coal, only to return to Boston to load general cargo for

Liverpool. Eight days were consumed in the process, although much publicity has been given the statement that the owners saved $3 per ton.

Anthracite—The proximity of another monthly advance has caused a mild renewal of interest in domestic shipments. This, however, seems to be true only of the larger retailers; the smaller distributors are now so well stocked for the most part that they are inclined first to turn some of their coal into money before purchasing more.

Tidewater—East

NEW YORK

Anthracite Steam Develops Strength—Turning Point for Bituminous Believed Near—Local Dumpings Increase.

Anthracite — Conditions show improvement. Demand is somewhat stronger, owing to the cut in production. Stove coal leads in the call and aids in the movement of egg and chestnut. Both dealers and consumers are showing more interest, which seems to be the vanguard of an active fall.

The efforts of the operators to put before the public "everything about the anthracite industry that the public as consumers of coal, want to know, and ought to know," is already being noticed by those who use anthracite. It is also expected that the retail dealers will soon begin a campaign urging consumers to lay in their coal for the winter.

The trade believes that better days are close by. With many mines closed and the West and New England taking their share of the output, demand is making big inroads on the tonnage produced.

Some of the better grades of independent stove were quoted as high as $8.50, but these instances are said to have been few, the average quotation being from 15c. to 20c. lower. Egg and chestnut were from 10c. to 45c. below company's circular.

Pea continues to move slowly, but quotations ranged $4.50@$5.75.

The feature of the trade was the strength shown in the smaller coals. While there has been little change in the situation regarding buckwheat No. 1, rice and barley developed strength and the better grades were hard to obtain.

Bituminous—There is a better feeling in the market, although the order books fail to show any greater activity. However, the trade believes that by the middle of September the turn for the better will have taken place and orders will begin to come in. On the other hand, a canvass made of more than a score of large consumers showed that most of them had contracted for their year's coal; some would not be in the market until the middle of September; others had several months' coal on hand, while some said they were using electricity or fuel oil instead of coal.

Pier statistics show that from Aug. 1 to 18, there were dumped over the local docks 876 cars of pool coal and 6,743 cars outside the pool, as compared with 361 cars of pool coal and 4,600 cars of coal outside the pool dumped from July 1 to 18. On Aug. 19, there were 144 cars in the pools and 1,313 cars outside the pools at the local piers, as compared with 328 cars in the pool and 1,581 cars outside the pools on Aug. 12.

Operators contend the outlook depends much upon the labor situation. This is particularly true in the central Pennsylvania fields where the mine workers will not consider a wage reduction. Many mines producing the lower grades are idle and therefore there is comparatively small tonnages of these coals available.

Gas slack continues strong, quotations ranging $1.75@$1.90. Quotations for coal at the local piers show comparatively small change from last week.

PHILADELPHIA

Retail Anthracite Improves — Bottom Believed Passed—Tax Question Temporarily Disposed Of — Bituminous Inactive—Prices Unchanged.

Anthracite—Better conditions are indicated from the retail standpoint. While some attribute this to the belief that the buyer is convinced coal will not be cheaper, others think it indicates an early start of the usual seasonal buying.

Retailers are also ordering from the shippers somewhat more actively, and a good deal of this is traceable to the expected increase in mine prices on Sept. 1, as it is felt that all companies will then make their final price announcements for the winter season.

It would seem that any increase in prices due to the coal tax is at least disposed of until Jan. 1. The companies have not officially announced this, but the news has gone broadcast that they expect final court decisions by that time, and should it be favorable to the state the tax will be imposed by the operators on that date, although they will not levy any retroactive impost.

There is a tendency to a more uniform price schedule among the dealers and at this time some of the so-called cut-price men are asking $13.75 for egg, $14 for stove and nut, and $11 for pea coal, which is only from 25c.@50c. less than some of the larger and more conservative dealers.

Steam coals are still unduly quiet, although the independents have been somewhat less hampered with their surplus, as with curtailed working time they have less to sell. Buckwheat is the only size being moved, but the companies still insist on $3.50 for this, although the independents will still take offers of 50c.@75c. less.

Bituminous—Nothing happens in soft coal, but if it is true that a calm always presages a storm, there is bound to be a real disturbance soon. Surely, the producers never tried harder to get the big consumers to take in coal, yet outside of the utility plants, they seem to accomplish little.

The talk about lowered contract prices persists and there are indications of some good coals being closed $2.50@$2.90, yet most producers are holding to the policy of keeping a big tonnage for the market when the real buying starts.

Probably the only scarce coal at this time is slack, as there are certain industries here who use heavy heavy tonnages, who have lately added to their working time. Quotations for gas slack are around $1.50, and not especially free at that figure.

There is no change in Tide business, the activity being confined mostly to bunkers, although a few fair-sized cargoes have departed this week for overseas.

BUFFALO

Bituminous Slightly More Active—No Real Stir Looked for—Anthracite Buying Slow—Lake Shipments Heavy.

Bituminous—Many local shippers see a slight improvement. All that the present situation seems to teach is that when business pays well the thing to do is to make the most of it. This applies especially to the shipper who was accused of being a profiteer last fall. Meanwhile, those who tried to hold prices down when they went soaring are wondering if they did the right thing.

One of the reasons for the slow movement is the failure of Canada to buy. That country is trying hard to put out enough coal of its own to meet the entire demand and as it ordinarily produces about half of its consumption it is now able to meet that much more nearly than it has in a long time. The factories are quite as inactive as ours and they do not show any disposition to start up, so it will have to be inferred that the same cause that keeps them shut here is in operation there.

Prices do not change. Quotations are $3 for Youghiogheny gas lump, $2.75 for Pittsburgh and No. 8 lump, $2.50 for Allegheny Valley mine run and $1.85@$2 for slack.

Anthracite—"Coal is too high!" That is about all the non-coal man will say in regard to the anthracite trade. It happens that hard coal is not only much higher than it used to be, but it refuses to come down, as a good many other things are doing. The worst of it is that it is not likely to come down right away.

At the same time, independent mines, which go into the open market and sell for what they can get, are about half idle, because they cannot run at a profit. A Buffalo jobber, who has contracts to sell this coal states that only one or two of the big independents are running at even half capacity and one of them is at present stocking coal.

There is a little improvement in the demand and it is expected to keep up from this time on. The fall clouds are here and coal must be had anyhow.

Lakes—Heavy shipments continue. The amount for the week ended Aug. 17 was 172,900 net tons, of which 93,100

tons cleared for Duluth and Superior, 36,900 for Milwaukee, 15,500 for Chicago, 12,400 for Fort William, 7,500 for Manitowoc, 4,500 for Green Bay and 3,000 for Hancock. Freight rates remain quiet, 65@70c. to Chicago, 60c. to Wilwaukee, 55c. to Manitowoc and Green Bay, 65c. to Hancock and 50c. to Duluth and Fort William.

Coke—Furnaces do not need much and are not willing to stock up on the present outlook. This holding back is also shown by the failure of the iron-ore movement by Lake to pick up. Prices remain at $4 for 72-hr. Connellsville foundry, $3 for 48-hr. furnace and $2.75 for stock, adding $3.64 to cover freight.

BALTIMORE

Brighter Tone to Market—Better Line of Inquiry and More Closings—Prices Inclined to Stiffen — Hard Coal Men Also Getting More Orders.

Bituminous—A brighter tone is noted in the soft coal market. A trip around the trade brought out the fact that the majority of offices are reporting not only a better line of inquiry, but more closings on both spot and contract than have been noted for some weeks past. Prices, too, while still abnormally low, are showing an inclination to stiffen.

This is particularly true of best grade steam coals and some of the more exclusive lines of ¾-in. Pennsylvania production. The trade is now quite hopeful that the month of September will see a sharp betterment in all matters relating to soft coal handling. The export situation shows the following results for the week ended Aug. 19: cargo loading, 9,447 tons; bunkers, 1,100 tons.

Anthracite—Whether purchasers are beginning to realize that they cannot expect to get fuel lower than existing rates, or whether, due to the natural inclination to buy as the colder weather approaches, the fact remains that there is now a somewhat better line of ordering reported. Some of the dealers are finding, without any rush, however, that they have enough of immediate orders on hand to make a fair delivery.

This does not mean that the trade is not far back in its seasonal delivery as a result of the mis-education of the public through the prosecution of the coal dealers, and the constant statements in the daily press that prices would be driven downward if action was taken against the Retail Coal Exchange.

Northwest

MILWAUKEE

Demand Slowly Improving—Coal and Coke Stocks Piling Up—Anthracite in for Another Raise—Lake Receipts Falling.

Demand is slowly improving. Persistent solicitation and guaranteeing of price is slowly wearing down the idea that coal is going to be cheaper. There may be an increase on anthracite of 10c. per ton Sept. 1, with possibly the addition of the amount of the Pennsylvania tax, which is put at about 25c. or 30c. Some dealers hold that it would not be advisable to add anything like that amount to the present prices under the prevailing public sentiment.

The anthracite situation is causing some apprehension because the slow demand thus far has kept the docks filled and there is no room to store necessary additional receipts before navigation closes. It is estimated that less than 50 per cent of Milwaukee's anthracite consumers have laid in their supplies.

A state agency is making an investigation of coal prices, but Gov. Blaine declines to divulge the department through which it is being conducted. Gov. Blaine, who is invited to a conference of governors in regard to coal conditions, is of the opinin that any undue charges on coal are the result of influences outside of the state.

The City of Milwaukee is preparing to market coal at cost to small consumers during the coming winter, by establishing yards in every ward.

Receipts by Lake for the first half of August are 71,921 tons of anthracite, and 156,891 tons of soft coal, making a total of 597,336 tons of the former and 1,625,859 tons of the latter. Last year the receipts to this time were 442,217 and 813,309 tons, respectively.

DULUTH

Bituminous Stocks Adequate, with Reduced Industrial Consumption—Anthracite Receipts Increase—Dock Business More Active.

Sufficient bituminous coal has arrived to take care of the winter's needs, according to an estimate made by dock men here. This means that the feared shortage of soft coal has passed and that a reduced estimate of necessary consumption has shown that the coal now on the docks will take care of the wants of that portion of the Northwest which draws from this center.

A noticeable slackening in soft coal shipments has become evident and at the same time a picking up in anthracite receipts has been recorded. Last week thirty-four cargoes arrived at the harbor, of which twelve were anthracite and twenty cargoes are reported on the way, of which six are hard coal.

Approximately 600,000 tons of hard coal are needed to fulfill the requirements as estimated. This amount should come into the docks, provided that ore shipments do not take an unexpected sag, and cause many boats to be laid up. Vessels are arriving in the harbor daily, without cargoes, because of the shortage of shipments of soft coal.

Shipments off the docks are gaining daily. August bids fair to pass the mark set in July and the trade looks for a spurt of business in September. The dealers are carrying some of the burden and the whole weight of maintaining huge stocks of coal will not fall upon the dock men. The consumer is not purchasing to any marked extent as yet.

Prices remain much the same, with a tendency toward growing firmer. Youghiogheny and Hocking steam lump are at $7, with gas $7.25. Screenings are firmer at $4 and run of pile remains the same.

MINNEAPOLIS

Industrial Consumption Low — Dock Supplies May Be Ample—Retail Demand is Stronger—All-Rail Tonnage a Big Factor.

The coal trade is watching prospects and conditions with some apprehension. There is reasonable ground for anticipating almost anything. On the one hand there is a better supply on the docks than for several years. On the other, the tonnage moved forward this year is not equal to any season's consumption.

However, the fear of a severe shortage early in the season is pretty well past. It is clear that with 6,000,000 tons of soft coal moved so far this season, there is a reasonable working basis for a fair start into the winter. The steel corporation's tonnage shows a decrease of 25 per cent, undoubtedly because its requirements will be that much reduced, if not more. This means that with soft coal tonnage more than three times what it was a year ago, there is some excess beyond the comparison of commercial coal.

But it is still a question as to whether industrials will need as much as usual. Industry is still in a state of inaction. The chances are that there will not be any sudden increase in the demands from manufacturers, but instead a gradual change. If such shall prove to be the case, the needs of the Northwest will have a reasonable supply in the tonnage now on the docks, plus whatever may still be received.

Another phase of the situation which does not receive the consideration which it should, in reviewing the needs of the Northwest, is the all-rail supply. This trade has been an energetic factor in seeking business, and has served a good portion of the more southern and central areas of the Northwest with a large tonnage. There is no reason to suppose that this will be entirely cut off.

A somewhat encouraging fact is the steady increase of retail orders. There is no doubt that consumers have held out on their strike just as long as they felt that they could. But they are reluctantly coming to the conclusion that they must buy some coal at least, at the current prices. Deliveries are increasing steadily in the Twin Cities.

One thing which has served to hold back business right along, still continues. The latest is the report that President Harding favors a reduction in the freight charges on coal to the Northwest. This recommendation should have been made three or four months

ago, when, if successful, it would have given an opportunity to move coal at the most opportune time. What the Northwest needs now is a stable situation, so people will buy coal and have it moved in an orderly manner, rather than have them thrown into an expectancy of cheaper prices by delaying, with a probability of congesting shipments with the first touch of cold weather.

Inland West

CHICAGO

Buyers Deaf to Warnings of Impending Shortage — Domestic Trade Gets Under Way—Outlook Uncertain.

No less than three of the newspapers circulating in and about Chicago have gone to the trouble of writing special articles warning the public relative to an impending coal shortage, but, as usual, the public looks upon these articles as "propaganda from the coal trust," which the newspapers are glad to publish for a price.

The market on steam coal, especially screenings, had a very bad setback early last week. One of the largest producing companies operating mines in Illinois and Indiana, had a majority of its larger contracts expire. The result was cut prices to the trade and a condition more disorganized and illogical than any we have seen in the coal market this year.

Some little coal is moving to the retailers. This is because the vacation season is nearly over and people returning from their trips through force of habit realize that the end of the summer is approaching and winter will soon be here. Consequently, purchases of domestic coal have been stimulated to some mild extent.

It is almost impossible to get a forecase from any producer or wholesaler. The better informed operators are the ones from whom it is hardest to get a prediction. They claim they have been fooled by the market so often they have given up making predictions and are awaiting developments with what patience they have. It is also worthy of note, that the percentage of pessimists has increased, and the number of optimists decreased. As we have been fooled so often, it may be now that the general tone is pessimistic, better days and better times may be nearer to us than we perhaps realize.

CLEVELAND

Retail Trade Expanding — Industrial Outlook Better — Lake Dumpings Decrease—R. R. Buying Stimulated.

Bituminous—The gradual enlargement of industrial activities which has been going on in this district for the last few weeks is beginning to be reflected in a somewhat improved demand for industrial fuel. There has been no widespread gains, but sentiment among manufacturers is distinctly more cheerful and the coal trade believes that the next few weeks should bring the start of an upturn in buying based upon autumn trade activities.

The steel industry continues to register gains and the spurt there has shown no signs of abatement.

Prices of the various grades have shown no change in the last week. The demand for slack continues strong. Considerable improvement has appeared in the domestic situation, with householders coming into the market in increasing numbers. Most consumers apparently have given up the hope held early in the summer, that prices at retail would drop. Mayor Fitzgerald, who is a candidate for re-election, has announced that a city coal yard will be established at which fuel will be sold at around $1 a ton cheaper than dealers.

Bituminous coal receipts during the week ended Aug. 13, show increases both for industries and retailers, the total being 732 cars divided; industrial 518, retail 214; as compared with 557 cars the preceding week.

Lake—Loadings at the lower ports are declining steadily, the decrease last week having been nearly 40,000 tons.

ST. LOUIS

Slight Improvement Noted in Country Demand—Domestic Orders Picking Up —Fall Rush Indicated.

There has been some little improvement in the number of domestic orders coming in. This, however, is for the middle-grade coal. Anthracite and smokeless seem to have very little call, while coke shows up better. The former users of Carterville are now going to Mt. Olive and the present consumers are those who used coke, smokeless and anthracite. The result is that Mt. Olive is beginning to move fairly well and Standard is also showing a little activity.

Steam business locally shows a little improvement here and there. Country business is picking up unusually well on domestic, especially in the western section of the state. Some business is also noted in the northern part. Country steam business is slow and the tonnage is falling considerably under that of a year ago. There is no change locally in prices.

DETROIT

Increase in Inquiries—Sales Remain of Small Volume — Anthracite Buying Slightly Better.

Bituminous—With coal available in liberal supply, consumers fail to manifest an active degree of buying interest. While incoming shipments are not large, they include a good proportion of the various sizes of steam and domestic coal.

Some of the jobbers and wholesalers say they are receiving a larger number of inquiries. There is not, however, a proportionate expansion of buying and the theory is advanced that some of those making inquiries are in search of support for controversial negotiations aiming at forcing concessions from other dealers.

Three-inch lump from Ohio is offered at $3.25; 2-in. lump, $3; egg, $2.75; mine run, $2.15, and nut and slack $1.50. Four-inch West Virginia lump is $3.25; 2-in. $3; egg, $2.75; mine run, $2.25, and nut and slack, $1.65. Kentucky coal is obtainable at about the same prices as West Virginia. Smokeless lump and egg is $5.25; mine run, $3 and nut and slack, $1.50@$2.

Anthracite—Low temperatures have imparted a slight stimulus to buying of household sizes. Retail dealers are endeavoring to encourage action by urging the public to put in at least one ton to make sure of having fuel to start the winter. Distribution is far behind previous years.

CINCINNATI

Some Market Activity — Smokeless Prices Decline — Domestic Demand Strengthens—Steam Inquiries Increase.

Greater activity has been shown in the past three or four days than for many months previous. Country buying has been better, with some inquiries being made for contracts. Further shutdown of Kentucky mines, with many in Kanawha and Logan, has had its effect in strengthening the steam sizes and likewise edging the price a little higher.

Smokeless coals have shown signs of reductions. Lump was being jobbed about at extreme figures of $4.50@$4.75 while egg from the same source was offered $4@$4.25. Larger corporations still hold to the $5.50 quotations but admit they are selling around $5 for lump. Mine run can be had around $2.75 while both Pocahontas and New River steam coal can be had $1.75@$2.25, with some Dry Fork going as low as $1.50.

Bituminous prices have been up one day and down the next. Some high-grade West Virginia gas slack sold up to $1.75 and low grade Kentucky splints commanded $1.10. Mine run from both sections is selling $1.75@$2.25. West Virginia lump is $2.75@$3 on the spot market and up to $3.50 on contract. Because of the betterment in demand, Kentucky operators have gone back to their quoted price of $3.50 for lump and block.

Retail prices show no change with the exception of slack, which had been quoted as low as $4.35 in some quarters. Dealers are now asking $4.50 a ton.

COLUMBUS

Stronger Demand for Domestic—Steam Sizes Are Weak With the Exception of Screenings — Production Shows Little Change.

Domestic trade is now attracting the bulk of the attention of producers, as that is about the only hopeful sign on the horizon. Steam business is slow and Lake trade is gradually tapering off. Retailers are buying to a limited extent as they are compelled to replenish supplies. Householders are coming in better, although quite a number are

still holding off in the belief that prices may be lower.

Retail prices are fairly steady at former levels. Hocking lump retails at $6.50, while re-screened varieties are quoted at $6.75. Splints sell at $7.50 and White Ash at $7.75. Pocahontas is fairly active around $9.50. Anthracite is quoted at $15 and coke at $11.50 for all sizes.

During the week ended Aug. 13, the H. V. docks at Toledo loaded 159,167 tons, as compared with 124,501 tons the previous week, making a total of 2,692,960 tons for the season. This is far ahead of the shipments last year, when 1,340.292 tons were loaded up to Aug. 14. During the same week the T. & O. C. docks loaded 34,677 tons, as compared with 15,144 tons the previous week, making a total of 691,721 tons for the season.

It will require a considerable awakening of industrial activity before the steam business will be affected to any great degree. Railroads are not taking much tonnage. Steam plants which are in operation generally have adequate reserves or are buying from hand to mouth. Public utilities are the best customers at this time.

West

DENVER

Lignite Price Advances — Bituminous Quiet—Production at Low Ebb.

The price of lignite is advancing. The latest increase was 50c., effective Aug. 10, making the retail price $9.25 for the best grade. A newspaper with a leased coal mine as a side venture is selling a somewhat inferior grade for $6.35 a ton.

Bituminous markets are quiet. For the week ended July 30, a total of 160,708 tons were mined of a possible full-time output of 290,714 tons, 60,000 tons less than a year ago.

The *News*, published in Denver, makes the following editorial comment: "Relief to the consumer can only come through change of basic conditions—wages and freight. The railroads can do little for us as long as they are hampered in control of their property. As to the miners, it appears obvious that a noble per diem may approximate starvation per annum. It is futile to maintain a scale that brings home no bacon through the year."

South

BIRMINGHAM

Better Line of Steam Inquiry—Domestic Unusually Quiet—Quotations Practically Unchanged.

The only encouraging feature seen in the trade the past week or so is an increase in inquiry for the steam grades and the hope that such feelers will result in the placing of some new business shortly. Consumers are continuing the policy of buying for immediate needs in the spot market and much of this coal is picked up here and there where it is under load and must be disposed of. Regular quotations are materially shaded to move it. The tonnage moving shows little, if any, increase over the record for previous weeks.

Improvement in the domestic demand depends for the most part on a reaction in the retail line, where business is now extremely quiet. Yards are stocked heavily and are not taking deliveries from the mines in accordance with contract stipulations and little new business is being taken on. Current quotations are shown in the Weekly Review.

LOUISVILLE

More Interest in Fall Tonnage—Screenings Weaker—Some Contracting Being Done.

Prices this week show little change, although screenings are a trifle weaker, as a result of industrial consumers playing for a weaker stocking market in September and October, when demand for prepared sizes results in larger production of screenings. However, the reverse may prove the case if our supply runs low, or if movement of lump is not as heavy as anticipated.

All hands figure that there will be an active demand in the next two months. Retailers are buying a little coal, and there is some movement through jobbers, and to public utilities. The cotton mills may start buying before long. Some of the iron companies, and the cement, brick and gas companies are buying better. A few fair contracts have been signed up in the past few days, but most of the trading is confined to small lots.

Inquiries as a whole are much better, and the general situation is looking more promising, although actual operations are about the same as they have been. Current prices are shown in the Weekly Review. Lump is very firm, mine run is steady, and screenings have only lost a few points.

News From the Coal Fields

Northern Appalachian

ANTHRACITE

Strikes Settled—Heavier Production—Demand Still Weak.

During the past week practically all of the strikes have been settled and the large companies have resumed full time so that this week will show increased production. On Monday, Aug. 15, there was a religious holiday which to some extent affected the production at some of the mines. The independent companies are not as yet any better off than they have been for some time.

PITTSBURGH

Distinct Increase in Inquiry, but Little in Consumption — Production Very Light.

While there is little, if any, increase in transactions, there is a noticeable increase in interest on the part of consumers, who are sounding out producers as to terms on which they can secure protection for future deliveries. Apparently consumers, while having no greater need of coal, expect their business to improve in the near future. Some of this inquiry comes from by-product coking interests. On account of price differences, the Connellsville region is more likely to get business, as prices made on the basis of production cost are above what can be done in non-union fields like Connellsville.

Mine operations are almost entirely confined to production of Lake and gas coal. Lake coal has been decreasing almost continuously since about July 1, and is now rather light, but gas coal production has been holding its own very well.

While reports from the steel industry are somewhat more favorable, there is very little increase in the actual operation of steel mills and the industry is still consuming but little coal. Prices are largely nominal.

CENTRAL PENNSYLVANIA

Optimism Felt Despite Labor Controversy—Demand Increases.

In spite of the controversy which is on between the Central Pennsylvania Coal Producers' Association and the Central Coal Association with the United Mine Workers of District No. 2, a spirit of optimism pervades part of the field and northern Cambria County operators report an increase in production with additional forces at work.

The Rich Hill mines at Hastings are operating full capacity while the Navy Smokeless mines at Logan are running full with a daily output of 700 tons. At Bakerton, there is a noticeable increase in the demand and the outlook for business is better now than for some time.

CONNELLSVILLE

Byproduct Coke Hampers Immediate Production of Connellsville Coke—Fair Business Done in Coal.

Not a few steel interests as well as byproduct coking plants are taking a larger proportion of their coal from the Connellsville region and a smaller amount from the Pittsburgh district, the change being due, of course, to the difference in production cost.

Coke operators believe they have not

felt the full effects of byproduct coke competition as yet, it being known that stocks of byproduct coke have accumulated. The Geological Survey report of coke production in July shows, for the country at large, seven tons of byproduct coke made to one of beehive, and as some of the byproduct has accumulated the competition will be felt as demand for coke increases.

The region, however, has had a better demand for coal than would otherwise have been the case, and in the past few days there has been an increase in inquiry from byproduct interests, who seem to wish to secure protection for the future on coal, instead of buying from hand to mouth. Best grades of Connellsville byproduct coal command $2 for mine run, without any difficulty, although there is much coal of one sort or another than can be had for less, even for less than $1.75.

Spot demand remains as formerly, there being a run of small orders for furnace and heating coke from miscellaneous consumers and the usual business in foundry coke. The market remains quotable as follows: Spot furnace, $2.90@$3; contract furnace, $3; spot foundry, $4@$4.50.

EASTERN OHIO

Production Increases — Better Market Tone—Lake Outlook Improving Slowly —Prices Firm.

Total output for the week ended Aug. 13, was 410,000 tons or approximately 66 per cent of rated capacity, which latter figure is placed at 625,000 tons. This is some 33,000 tons in excess of the previous week. Aggregate production of the field for the year to date is 10,753,793 tons, or 54 per cent of rated capacity.

Figures given out by the Pittsburgh Vein Operators' Association indicate that their mines worked 54 per cent of possible worktime during the week, as compared with 49 per cent the preceding week.

The main factors bolstering up operations are increased production for the railroads, which has taken on larger proportions during the past few weeks, and a continuation of Lake shipping from many of the mines. The output for railroad fuel account is running around 35 per cent of the total tonnage mined at this time.

There is greater activity in spot inquiries, especially from retail dealers and industries which have reached an improved point of convalescence in their recovery from the depression. Reports from Ohio industrial centers during the past week showed improvement in many lines and no doubt this is being reflected in a better demand for coal.

In the Lake cargo coal trade the situation is about the same as it has been for the past two weeks and it is not expected there will be much change during the balance of the month.

Boats are more plentiful than Lake cargoes and shippers say coal will not be sent forward any faster until there is a better movement from the Upper Lake docks. Volume of Lake coal at lower docks is averaging around 13,000 cars per day.

Spot prices remain about the same as reported last week, with the possible exception of slack and screenings which have stiffened slightly. Domestic consumers are beginning to lay in their winter's supply at prices lower than those existing during the past year or so.

UNIONTOWN

Only Slight Improvement Noted—Slack Coal in Good Call—Coke Market Dull.

Continued dullness is trying the faith of operators who believed that something approaching normal business would make its appearance by September. While an improvement is noted in comparison with a month ago, the change is not as great as had been expected.

With the exception of an active demand for slack coal, understood to be from the cement mills, the coal market is virtually inactive, save for spasmodic sales of odd lots which are extremely spotty in character. The slack demand is offset to a large degree by the inability to move prepared sizes and the operator accepting a slack order has his choice of shipping the ¾-in. size as steam coal or waiting for a market.

The coke market likewise is dull, although prices are firm. There are few indications of new business, although some inquiries are out for furnace coke, which however, appear to be of the bubble variety. Standard furnace coke has a firm quotation of $3 with a $2.90 figure for off-grades. Foundry has a wider range of $3.75@$4.25, with very little new business being closed.

UPPER POTOMAC

Mine Idleness Continues—Spot Market Dormant—Prices Unchanged.

There was no recovery from the prevailing mine idleness during the week ended Aug. 13, except along the upper Potomac at Thomas and Douglas. Even the better grades were not moving in any material volume and prices were at a very low level.

FAIRMONT AND PANHANDLE

Production Unimproved but Inquiries Increase—Lake Tonnage Still Dropping —Tide Slow.

Fairmont

Mine idleness increased during the latter part of the week ended Aug. 13, and production was limited to about 25 per cent of capacity. Increased interest in domestic coal was evident in local and Western markets, but little change was reported from Eastern points. Tidewater shipments were small as was the case with Lake tonnage. Domestic prices stiffened to as high as $4@$4.25, but mine run sold off $1.40@$1.65.

Northern Panhandle

Aside from a few more inquiries for domestic sizes the spot demand was negligible. Dwindling Lake shipments further cut the week's production, the output being placed at about 50,000 tons.

Middle West

MIDWEST REVIEW

Domestic Market Shows Improvement — Steam Business Still Lagging — Industrial Future Uncertain.

In the late spring, even the most pessimistic in touch with the coal market believed that conditions would be vastly improved by this time, but unfortunately this has not proved to be the case. Manufacturing continues at an exceedingly low ebb, and the general public, losing all thought of domestic coal, is going blandly on with no idea of a coal shortage this fall.

It appears, from first-hand reports from Iowa, Wisconsin, the Dakotas, and the Northwest in general, that the steam coal market is in as bad shape as it has been since the first of the year, and that is saying a great deal when one realizes that the great majority of steam coal sales since January have been at cost or below. The feeling of uncertainty as to the immediate future is more marked than it has been for some time.

The domestic trade in the Northwest has shown a little improvement, and we hear of a number of orders coming in from the agricultural section of that territory. Whether the recent cold snap has forced the public to think seriously of its coal supply, or whether the approaching fall has accomplished this, we do not know; but the fact remains that more domestic coal is moving and will probably move in greater volume from now on.

The industrial situation at the Head-of-the-Lakes is not particularly pleasant, as the iron mines are running only from six to eight days per month and having to put in storage most of the ore they produce. As the mining of iron ore and lumbering operations are the main industries in that section, it can very readily be seen that coal in these districts will only be purchased through absolute necessity.

INDIANA

Spot Buying Still Sluggish, but Inquiries Increase—Some Labor Trouble —Prices Firm.

Inquiries continue to be received, but the volume of actual orders is small. In the midst of a trying period the operators now are being confronted with much labor trouble. Most of this appears to be originating from a small group of radicals who are disgruntled at recent elections.

Prices remain unchanged. It is insignificant to note that some of the iron works which have been closed for some time are reopening, a very few at capacity production. The utility companies report less consumption than is usual at this period even under normal times.

Some of these have been building up reserves during the entire summer, but the general opinion is that they will attempt to operate on a shorter margin of coal than is usual.

Cooler weather has had some effect on the retail demand, but the summer prices have been unchanged and likely will not be until Sept. 1, or later.

WESTERN KENTUCKY

Screenings Drop as Supply Grows—Domestic Prices Stronger—Production Still Low.

Operators are having more trouble in disposing of their screenings, which have been in larger production as a result of increased domestic demand. Some screenings have been quoted at $1 during the week, but mine run and lump are somewhat better, the highest market of the year being quoted on lump at $3.75.

Production is not much better than two days a week due to the lack of demand for mine run. There is a little demand from retailers and jobbers as well as public utilities, but as a whole the market is quiet.

Fall business on prepared sizes is expected to be heavy, but this will probably result in over production of screenings, unless industrial activity shows a marked improvement. In the North and East consumption is not picking up materially, resulting in hard competition from all supplying fields in this district.

SOUTHERN ILLINOIS

Some Improvement in All Sizes Except Nut and Screenings — Car Shortage Coming—Price Condition Still Bad.

A better demand for Carterville lump and egg has developed recently. Nut and screenings are not moving in proportion to these sizes. The condition is a peculiar one. Some mines are oversold on lump and are long on everything else, while other mines are sold up on egg and screenings, being long on nut and lump.

Working time averages one to four days. The railroad tonnage shows some increase. Car shortage is beginning to make itself felt in minor ways, and the number of foreign cars throughout the field has increased.

The larger operators are maintaining a price of $4.05 on lump, egg and nut and others have cut the nut price. The market represents the independent prices, which range $3.50 and upward on lump and egg, $3 up on nut and from $1.25 up on screenings, with slow movement of the latter. Mine run is not much in demand.

The Duquoin and Jackson County fields reflect the conditions in the Carterville field, except that Jackson County shows some improvement in working time, also better prices than Duquoin.

The Mt. Olive field continues about the same. There is a little better movement of coal west and north, although steam is heavy and hard to move except on contract. The St. Louis price on domestic sizes is $3, and country figures are $3.50@$3.75.

The Standard situation shows little improvement. Screenings are still around $1; 2-in. lump is $2; 6-in lump is $2.50 up, with an average of $2.75; nut is $2.50@$2.75; steam egg is $2.40 @$2.60, and mine run $1.75@$1.90.

Working time is from one to four days. Railroad tonnage showed some improvement the past week, but there are indications of car shortage in the very near future. St. Louis tonnage is light, the principal shipments going to country.

Middle Appalachian

LOW-VOLATILE FIELDS

Low Tidewater Prices—Production Not Yet Stimulated—Fall Inquiries Increase—Lake Market Sluggish.

New River and the Gulf

Although some improvement was apparent, production in the New River field was still under 50 per cent of capacity during the week ended Aug. 13. Very little Tidewater coal was moved. Prices on prepared sizes were soft as yet, as low as $4 in some instances, mine run did not range over $2.25@$2.50 and slack averaged $1.75 @$2.25.

Lack of Tidewater and Eastern markets were not conducive to much activity in the Gulf region. Because of the slim demand, prices were very low, especially at Tide, where coal delivered at the piers was not bringing over $5.50 per gross ton.

Pocahontas and Tug River

Pocahontas production showed signs of picking up with a better demand in evidence, the output being at the rate of about 50 per cent. Tidewater markets were still slow as the price was not sufficient to justify shipment. Requests for prepared quotations were growing in volume. There was no demand for slack worth mentioning.

Production declined during the week, the output not being greater than 55,000 tons. With both Tidewater and Lakes outlets practically closed it was necessary to curtail the output, mines being reduced to about half-time operation.

HIGH-VOLATILE FIELDS

Better Line of Inquiry Develops—Production Still Low — Western Markets the Stronger—Tidewater Trading Dull.

Kanawha

There appeared to be a quickening of the spot market during the week ended Aug. 13, not only as to domestic coal but also for steam sizes and inquiries were on a larger scale. However, these did not produce much additional tonnage. Little prepared coal was being marketed and the stronger demand for slack was only because it was scarce. Most of the output was consigned to Western points, little going to Lake or Tidewater.

Logan and Thacker

A slight stiffening in demand in the Logan region did not materially change conditions and production was not improved. This was due to the fact that Logan companies which had been shipping heavily for storage had about reached the limit of those facilities.

Williamson production continued at the rate of about 40 per cent but with little coal being moved on spot orders. The N. & W. was taking a fairly large tonnage. There were no industrial disturbances during the week to retard production.

Northeastern Kentucky

There appeared to be a turn for the better during the week, inquiries being plentiful, especially among the retailers. Lake shipments were seriously curtailed by the accumulation at the lower docks.

Virginia

Production was on about the same level as during the preceding weeks, with little coal being mined except on contract orders. Companies dependent on stray spot orders were not justified in resuming operations.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Market Improving, Especially on Domestic—Steam Prices Holding.

Movement of all grades continues to improve and operators and wholesalers are confident that a turn for the better has been reached. Domestic coal, of course, is moving more readily than steam, but so far prices are not being reduced further on steam.

Prices on block remain about the same, with a firmer tone. A deal has just been closed by one of the large operators for 30,000 tons of block for prompt shipment and other large deals are pending.

West

UTAH

Demand Only Slightly Improves—Fall Rush Seen—Production at Low Ebb.

Those who thought the middle of August would see a big demand for coal have set another date for this desirable state of affairs. Dealers are storing to capacity and adding new yards to offset the certain winter rush. Prices remain firm.

Production figures for the first seven months of 1921 show that 2,007,548 tons were mined in Utah. The figures for the same period last year were 3,363,450 tons and for 1919, 2,308,592. In July 278,092 tons were produced. In July of 1920 the figures were a round half-million tons.

MINE And COMPANY NEWS

ALABAMA

A synopsis of Chief Mine Inspector Nesbitt's official report for 1920, on **coal and coke production in Alabama**, shows that the output of coal was 17,391,437 net tons, compared with 15,928,196 for 1919. A total of 2,982,472 tons of coke was made against the 1919 output of 3,397,748, thus showing an increase of 1,463,241 tons of coal and 584,724 tons of coke over the 1919 record. There were seventy-eight fatal accidents in the coal mines during the year, thirteen of which were due to a gas explosion. The tonnage per life lost was 227,867 and one for every 352 men employed. There were 295 mines in active operation for more or less of the time in 1920, against 178 in 1919.

ILLINOIS

Among the mines located in the southern part of the state which have recently resumed operations are: **The St. Clair mine**, near Belleville, Superintendent George Grainger announcing that the main shaft has been retimbered, and that the mine will operate in the neighborhood of six days per week after being idle for from five to six weeks. **The Beatty mine**, at Mascoutah, has been opened, being idle since Feb. 22. **The Peabody Coal Co.** mine, near Springfield, has also been started once more.

The new mine of the **Southern Gem Coal Co.**, of Chicago, which is being rapidly completed, will be when finished one of the best and most modern mines in Perry County. Thomas Horn, one of the officials of the company, has charge of the construction.

The plan of dredging Big Muddy River up as far as Murphysboro and thence excavating canals over into Williamson and Franklin counties is again being agitated. C. T. Russel, of Murphysboro, a coal operator, is backing the plan, and if it goes through will be one of the most beneficial projects the coal mining industry of southern Illinois has ever known. With the increased river barge traffic during the last two years, it would be easy to ship coal from the mines via barges to the Mississippi, to St. Louis, New Orleans, Alton, Quincy, and to the many industrial districts in northern Illinois and Indiana, thus avoiding the trip by rail.

INDIANA

In the suit of David Ellison against the **Lincoln Coal Co.**, filed in the Vanderburg County Circuit Court at Evansville, and taken on a change of venue to the Spencer County Circuit Court at Rockport, a verdict was returned in favor of the plaintiff. C. C. Mason was appointed receiver for the company. The defendants' attorneys have announced they will appeal the case to the Supreme Court.

Robert R. Williams, manager of the Indiana Tile Co., with headquarters in Evansville, has completed the work of taking up 1,300 acres of coal land just east of Winslow, in Pike County, situated along the Southern Ry., where Evansville capitalists, with whom he is affiliated, already own 2,000 acres of land. Williams will build a railway through the property and open one of the biggest stripping coal mines in Pike County.

MINNESOTA

The Northern States Coal Co., of Minneapolis, has been incorporated with a capital stock of $100,000 by John F. Irwin, of Minneapolis; James O. Lund, of Mankato; E. B. Plocher, of Victoria and Chester H. Carpenter.

Docks of the **Pittsburgh Coal & Dock Co.** are reported in the best condition of any at Duluth-Superior Harbor. These docks have 35 per cent of the storage space left open, owing to the fact that they were entirely cleared before spring shipments began.

A decrease in assessment values was made recently to the city council of Duluth by the **Carnegie Dock & Fuel Co.** The company contended that it had been overassessed to the amount of about $16,000, on the coal on docks. The total assessed valuation is about $64,000. The reason for the over-assessment was that coal was valued at too high a figure, the company claimed. The city council denied the request for a reduction. It is thought that court action will follow.

OHIO

The Fox Coal & Clay Co., has been chartered with a capital of $100,000, by W. B. Decker, S. H. Carrick and others. The concern will operate coal mines in the Crooksville district.

The Hartsough Mining Co., of East Palestine, has been chartered to mine coal in the Tuscarawras field. The incorporators are T. C. Hartsough, Roy T. Hartsough, Elizabeth Hartsough, Mary Hartsough and John Moon.

The Warwick Coal Co., of Coshocton, has contracted for one Marcus screen and shaker loading boom, together with refuse disposal machinery.

The Scott Coal Co., of Midvale, have contracted with Jacobsen & Schraeder, Inc., of Chicago, for tipple equipment for their mine. Jacobsen picking tables, weigh basket, loading boom and conveyors will be installed.

PENNSYLVANIA

While the coal shipments down the Monongahela River for the month of July showed a slight decrease over the month previous, there is every indication that August will see the tonnage figures again on the upgrade. Shipments of coke are now going forward regularly to the tin plate plant at Port Vue and the Monessen mills of the Pittsburgh Steel company. Six boats of the Carnegie Steel Co. are making regular trips towing byproduct coal to Clairton. The coal shipments for July were 791,345 tons, a decrease of 42,000 tons over the month previous.

The following coal companies have been granted charters by the Secretary of the Commonwealth, Harrisburg: **The Harris-Denly Coal Co.**, Exeter, capital $20,000; purpose, mining and preparing, buying and selling coal. Incorporators: Charles T. Denly, Cleveland, Ohio, treasurer; William Harris and Isabella Harris, Forty Fort. **Perry & Co.**, Scranton, $25,000; mining and preparing coal. Incorporators: Homer Nicholson, Scranton, treasurer; David R. Perry and E. M. Marshall, New York City. **The Scranton Fuel Co.**, Scranton, $10,000; mining and preparing coal. Incorporators: M. J. Murray, Jr., Dunmore, treasurer; James J. Powell, Minooka and S. C. Vesey, Scranton. **Fidelity Fuel Co.**, Philadelphia, $50,000; buying, selling and dealing in coal. Incorporators: Robert S. Feeney, Orange, N. J., treasurer; Samuel K. White, Narberth, and Sara G. Scanlan, Philadelphia. **Crescent Coal & Supply Co.**, Philadelphia, $25,000; buying, selling and dealing in coal, feed, lime and cement. Incorporators: Francis J. Kelly, Philadelphia, treasurer; Thomas F. Slattery, Philadelphia, and John S. Roberts, Franklinville, N. J.

Two tracts of coal land in Green County have been sold to the **Piedmont Coal Co.**, of Pittsburgh for $295,586.50 by Miss Maria Livengood and her sister, Mrs. Rachel Lynch.

A settling of the surface fourteen feet in diameter and about eight or nine feet deep occurred over workings of the **Gibbons Coal Co.**, in Scranton, recently.

UTAH

The partnership existing between W. D. MacLean and T. G. Mays, as coal brokers, under the firm name of **MacLean & Mays**, has been dissolved. Mr. MacLean has been appointed general sales agent for the **Standard Coal Co.** Mr. Mays will be the Idaho representative of the company.

The Utah State Securities Commission is taking steps to extradite W. A. Williams, reported to be in Nevada, who is accused of misappropriation of funds in connection with the sale of stock of the **Mutual Coal Co.** Williams was first authorized to sell stock last April and he is charged with not remitting money collected.

WEST VIRGINIA

Bloomington, Md. and Piedmont, W. Va., or the territory adjacent thereto, are to be the seats of operation of the **R. J. Ross Coal Mines, Inc.**, this company being capitalized at $100,000. Interested in the new company are R. J. Ross, Sheridan Evans, Joseph P. Guy, of Westernport, Md; L. R. Kight of Piedmont, W. Va.; Grant Harshbarger of Bloomington, Md.

A new conveyor, 800 feet in length, is to be installed by the **Pond Creek By-Product Co.**, of Williamson. This company is served by the Norfolk & Western, the fuel from its mines being used to coal N. & W. locomotives.

Production has commenced at the plant of the **Belle Coal & Land Co.**, in the vicinity of Belle, recently completed, this operation being served by the K. & M. Ry.

Among improvements being made at the Sharon plant of the **Wyatt Coal Co.** during the summer season is the construction of a new tipple, which is now nearing completion.

Since the **Kanawha White Ash Collieries Co.**, headed by E. M. Burns, of Ebensburg, Pa., was organized and took over a plant at Dorfee in Clay County, it has begun to make numerous improvements and will be able to materially increase the present capacity of 400 tons a day, much new equipment now being installed.

Announcement is made that the **Goodman Manufacturing Co.** will open a general repair shop in Charleston and it is stated that L. H. Harrison will act as the representative of the company in West Virginia.

W. P. Tams, Jr. and associates have purchased the holdings of J. T. Morris of the Morris Smokeless Coal Co. and have changed the name to the **Covel Smokeless Coal Co.** The post office of this company will be known as Morco, W. Va.

The Northern Pan Handle of West Virginia will be the seat of operations of the newly organized **Wills-St. Claire Coal Co.**, with general offices at Wheeling, this company having a capital stock of $50,000. Having an active part in the formation of this company were: Wright Hugus, P. B. Lantz, George Cameron, Mabel E. Cameron and H. B. Scott, all of Wheeling.

The Richland-Marshall Coal Co. is driving a slope entry on a 25 degree grade (called the Mound slope) to connect up with the old workings of the Mound shaft mine at Moundsville. A six car trip rope-haulage system with a six car rotary dump will be installed to handle 4,000 tons per day.

For a consideration of $1,500,000 the **Penn American Coal Co.** has purchased 7,000 acres of coal in Brooke and Ohio counties, from James A. Paisley, of Cleveland, according to announcement by the West Penn Power Co. The Penn American company is owned jointly by the West Penn system and the American Gas & Electric Co., of West Virginia. The coal will be used to supply the power company's Windsor plant.

The Virginia Big Vein Coal Co. is the name of a new concern organized under the laws of the State of West Virginia, although the company, for the time being at least, will have its headquarters at Cumberland. This company has a capitalization of $50,000. Principals are W. S. Davenport, S. B. Jeffries, C. A. McDowell, all of Thomas; W. S. Cunningham and C. E. Hetzer, of Cumberland, Md.

The Nordlaw Coal Co. has been organized with a capital of $25,000, with a view to operating in Harrison County, Clarksburg to be the general office of the company. Active in effecting the preliminary organization of this company were: Charles Waldron, Jr.; J. H. Starr, O. V. Oliver, J. S. Reid, Guy H. Burnside, all of Clarksburg.

Traffic News

In the Indiana rate case, the commission says the evidence on further hearing does not warrant modification of its previous order involving rates on coal intrastate in Indiana for distances of less than 30 miles.

Officials of the Chesapeake & Ohio, Big Four and **Baltimore & Ohio** railroads have been inspecting branch lines in the Louisville district.

The Interstate Commerce Commission has decided that the increased interstate rates on coal shall apply to the State of Kansas, in deciding the Kansas rate case in which the Kansas authorities refused to apply the increased interstat rates to State hauls. In consideration of the case the following coal companies appeared: **Pittsburgh & Midway Coal Co., Clemmons Coal Co., Sheridan Coal Co., Domestic Fuel Co., Perry Coal Co., U. S. Coal Co., Western Coal & Mining Co., the Weir Coal Co.** and **the Southwestern Interstate Coal Operators' Association.** The Kansas Court of Industrial Relations allowed the following increases in coal rates: 15c. a ton where the rate was not above $1, 20c. where the rate was from $1.01 to $1.50, 25c. where the rate was from $1.51 to $2, 30c. where the rate was from $2.01 to $2.50, 35c where the rate was from $2.51 to $3 and 40c. where the rate was $3.01 or higher, instead of the flat percentage increase authorized by the Interstate Commerce Commission. In its decision, the Commission says that one of the most serious instances of disparity in rates is found in coal which is produced in southwestern Missouri and southeastern Kansas. Some years ago there was a slight differential in favor of the Kansas mines, which in 1915 was increased by failure of the Kansas authorities to grant the same increases as the I. C. C. had granted, but since 1918 mines on both sides of the State line have been treated as a unit from a rate standpoint; that is, to a given point in Kansas, the same rate applied from Kansas mines as from Missouri mines but since the 1920 I. C. C. rate increase Kansas operators have had a rate advantage of 12.5c@75c. a ton, dependent upon destination, due to failure of the State to apply the increased rates. On coal from Pittsburgh to Hutchinson, Kan., the Commission says there is an intrastate rate of $2.40 a ton, yielding 11.1 mills per ton mile, which is cited in comparison with the rate of $2.16 from Henrietta, Okla., to Neodesha, Kan., 230 miles, yielding 9.4 mills per ton mile. A rate of $1.85 per ton on coal from Springfield to Chicago, 185 miles, yielding 10 mills per ton mile is compared with the rate of $2.05 per ton for a similar haul from Pittsburgh to Wichita, yielding 10.7 mills per ton mile.

Announcement was made on July 29 following a two-day meeting of traffic executives of Eastern roads, that a reduction of 5c. per hundred pounds would be made by Eastern railroads in export rates for wheat, corn and rye from Buffalo, Erie and Fairport to Eastern export points. A reduction of 3c. per hundred in export rates on barley and oats was agreed upon at the same time. The reduction in wheat, corn and rye rates amounts to about 25 per cent. Present export rates from Lake points to New York are: wheat, 20.17c.; corn and rye, 19.79c.; oats, 19.63c.; barley, 20.08c. per hundred pounds. The roads will preserve the usual port differentials.

In the complaint of the **Slogo Coal Corporation** and the **Perry County Coal Corporation,** involving rates on coal from Johnson City and O'Fallon City, Ill., to Illinois and other destinations, the I. C. C. has authorized the Central Illinois Coal Traffic Bureau to intervene.

Personals

A business visitor in the Pittsburgh field during the latter part of the month was **George Rodgers,** of the Mon-Scott Fuel Co.

Stephen F. Elkins, of the Elkins Fuel Co., with headquarters at Morgantown, made Pittsburgh and Uniontown, Pa., his Mecca during the latter part of July.

Alex G. Bonnyman, president of the Blue Diamond Coal Co., of Tennessee, has left for a two months' vacation in Europe.

Kentucky visitors to the Cincinnati market recently were: **T. C. Hughes,** Kentucky Collieries Co., Pineville; **C. L. Logan,** of the Four Seams Block Coal Co., Hazard, and **T. G. Jack,** of the Defiance Coal Co., Defiance.

A visitor in the Huntington market during the first part of August was **W. K. Thurmond,** president of the Logan Coal Operators' Association, Mr. Thurmond giving his attention to association affairs while at Huntington.

J. W. White, sales manager of the Cleveland Cliff Iron Co., has returned to his office at Cleveland, Mr White having been in the Logan field during the latter part of July visiting the mines of this company at Ethel.

The Twin States Fuel Co. was represented in the Carolinas during the latter part of July by **Tom Holtzman,** assistant sales manager of the company.

R. P. Maloney, general manager of the Davis Coal & Coke Co., was in Charleston, W. Va., recently.

J. R. Evans is now representing the American Export and Inland Coal Corporation of Huntington. Mr. Evans was formerly an operator on Coal River.

Roy H. Cunningham, general sales agent of the Twin States Fuel Co., has been in Western markets for several weeks.

Boyd Smith, of Elkins, traveling representative of the West Virginia Coal & Coke Co., has been confined to a Battle Creek sanitarium for several weeks, suffering with nervous trouble.

C. M. Loeser, traffic manager of the Elkhorn-Piney Coal Mining Co., with headquarters at Huntington, was a recent visitor in the Cincinnati market.

Everett Drennen, president of the West Virginia Coal & Coke Co., spent part of the second week of July at White Sulphur, enjoying the golf links there.

C. C. Beury, one of the prominent operators of the New River field, with headquarters in Charleston, was at White Sulphur Springs, attending a meeting of the Smokeless Coal Association of West Virginia.

C. E. Cowan, chief engineer of the Jamison Coal & Coke Co., with headquarters at Greensburg, Pa., was a visitor in the Fairmont region on July 19, spending the day there looking over the mines operated as a part of the West Virginia division of the company.

J. R. Blackburn, who has an important executive post with W. H. Bradford & Co., spent several days in the Somerset field toward the end of July.

Industrial News

Boston, Mass.—The Cochrane Steam Specialty Co. has been organized to represent in New England a number of well-known manufacturers of power plant equipment. The office, which is in charge of Elliott Greene, is located at 1045 Oliver Building.

Cincinnati, Ohio—The Harlan Coal Co., headquarters at Louisville, has opened a local office in the Union Central Building.

Cincinnati, Ohio—J. M. Humphrey, who was with the Walter Bledsoe Co. of Indianapolis, as manager of the Cincinnati office, has branched out for himself under the firm style of J. M. Humphrey Coal Co., with offices at 2511 Union Central Building.

Cleveland, Ohio—The office of the Sullivan Machinery Co. has been moved to Room 824, Kirby Building. Ralph T. Stone is manager.

Milwaukee, Wis.—An Industrial Advertising Conference is planned at the annual meeting of the Associated Clubs in Milwaukee in 1922. The Engineering Advertisers' Association of Chicago, led by Keith J. Evans, of the Jos. T. Ryerson Sons Co., has already adopted resolutions and outlined a tentative program and W. A. Wolff, of the Western Electric Co., president of the Technical Publicity Association of New York, also plans to call a special meeting soon for the purpose of taking action on the conference idea. Both organizations have a large membership representing the leading industrial advertisers and associated interests in their respective cities. Leaders in other large cities are also taking an active interest, and it is probable that additional groups will be organized in the near future.

Pittsburgh, Pa.—Luria Brothers Co., with main office in Reading, Pa., has added a rail department to the Pittsburgh branch, under management of E. Davidson.

Terre Haute, Ind.—The Sullivan Machinery Co. announces the establishment of a supply depot and service station for coal mining machinery supplies and repair parts at 7th Ave. and 13th St., with H. T. Wiley, formerly of the Engineering Department at the Claremont, New Hampshire Works, in immediate charge.

Obituary

J. Frank Brown died in Altoona, on Aug. 5, 1921. Mr. Brown was a brother of Henry G. and Medford J. Brown, of the Maryland Coal & Coke Co. and was in charge of the company's field work in Pennsylvania and of mining operations in Clearfield County.

John L. Cochrane, statistician, for many years of the United States Bureau of Mines, died in Cleveland, Aug. 3. Mr. Cochrane's death came suddenly, following his gradual apparent recuperation from a paralytic stroke which occurred in January. The deceased had been in the Federal service in Washington for about fourteen years, first with the Technologic Branch of the United States Geological Survey, and later with the Bureau of Mines.

James B. Corrigan, prominent and widely known coal man, died recently at his home in Chicago. At the time of his death he was with the Reeves Coal and Dock Co., but had worked for the last nine years with the W. P. Rend Co., of Chicago.

Coming Meetings

The Huntington Coal and Industrial Exposition will be held in the Chamber of Commerce Building, Huntington, W. Va., Sept. 19 to 24 inclusive. Chairman of committee, Thomas A. Palmer, Huntington Chamber of Commerce, Huntington.

American Institute of Mining and Metallurgical Engineers will meet at Wilkes-Barre, Pa., Sept. 12 to 15. Secretary F. F. Sharpless, 29 West 39th St., New York City.

National Association of Cost Accountants will hold its annual convention at Cleveland, Ohio, Sept. 14, 15 and 16. Secretary, S. C. McLeod, 130 West 42d St., New York.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The twenty-fourth annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers will hold its annual meeting at Huntington, W. Va., on Sept. 20 to 23. Secretary-treasurer, Herbert Smith, Huntington W. Va.

New York State Coal Merchants' Association, Inc., will hold its annual convention at Richfield Springs, N. Y., on Sept. 8, 9 and 10. Executive secretary, G. W. F. Woodside, 250 Arkay Bldg., Albany, N. Y.

Canadian Institute of Mining and Metallurgy will hold its annual Western meeting at Edmonton, Alberta, Canada Sept. 14, 15 and 16. Convention secretary, T. B. Williams, 10,610 83d Ave., Edmonton, Canada.

American Manufacturers Export Association will hold its twelfth annual convention at the Waldorf-Astoria, New York City, Oct. 5 and 6. Secretary A. W. Willmann, 160 Broadway, New York City.

National Safety Council will hold its annual congress at the State House, Boston, Mass., Sept. 26 to Sept. 30 inclusive. Secretary, S. J. Williams, Chicago, Ill.

The Coal Mining Institute of America will hold its annual meeting at Pittsburgh, Pa., Dec. 7, 8, and 9 Secretary H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

An Industrial Relations Conference for all industries in the State of Pennsylvania has been arranged for October 24 to 27 at Harrisburg, Pa. by the Commissioner of Labor and Industry, C. B. Connelly.

The sixth annual convention of the **National Association of Purchasing Agents** will be held Oct. 10-13 at Indianapolis, Ind.

International First-Aid and Mine Rescue Meet. Sixth annual event will be held at St Louis, Mo., Sept. 1, 2, and 3, under the auspices of the U. S. Bureau of Mines and the Red Cross.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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Coal Industry Lags in Merchandising Knowledge

TRADE in bituminous coal and the steam sizes of anthracite is highly competitive. As between mines there is the interminable variety of grades and kinds of coal and the wide spread in costs of production which, coupled with different ideas as to margin and profit, permit, even encourage and generally reward intense selling efforts. Each shipper of coal, whether producer or wholesaler, with a few years of past has a back log of permanent business represented by a limited number of consumers, usually among the larger users, on whose trade year in and year out there is a measure of certainty. Every shipper is looking for more of just such customers as few there are who thus have their total output spoken for. Railroad and public utilities represent the classes of business of this character in which there is the largest element of permanence and for which there is keen competition.

As between fields the competition for business is as marked as between individuals and is more easily observable. For instance, in 1920, while the Eastern fields were engaged in trying to fill Europe with coal and were temporarily neglectful of their trade in the West and Northwest, shippers in Illinois and Indiana rose to the occasion and filled many a bin in that far country that had never before held coal save that had come by way of the Lakes. There is no let-up in the rivalry of the East and the West for the Northwestern market and in like degree the all-rail and water-borne coals contend for the lion's share of the business in New England. From the time boat rates rose to unheard-of heights in 1917 until quite recently all-rail coal had the advantage in New England over that from Hampton Roads, but now that other outlets for sea-borne coal from the Southern fields are constricted and water rates are again low, even though not yet to pre-war levels, shippers of central Pennsylvania and Fairmont coal are meeting opposition of stern sort.

The story of the distribution of coal is a series of such illustrations of the general truism that of steam and general-purpose coal this country has abundance and that many seek a share of the trade. Alabama competes with western Kentucky on the one side and with eastern Kentucky and Virginia on the other. The coal producers of Iowa, Missouri, Kansas, Oklahoma and Arkansas compete in their sales with producers of coal in Wyoming, Texas, Illinois and even eastern Kentucky and find in addition that the fuel-oil companies are actively engaged in the markets of the same field. Southern West Virginia coal, carrying a higher freight rate and more heat units, is offered in lower Michigan against Ohio coal and the steam sizes of anthracite have hard sledding when the price of bituminous coal is low.

That the quantity of coal consumed each season is fixed by factors beyond the control of the sellers of coal is accepted by the trade almost as axiomatic. This is not entirely true inasmuch as a plethora of dirty coal such as was had in the war years called forth a greater tonnage than would otherwise have been required, and it is more than likely that lack of confidence in the present price level is backing up consumption of coal even more than of any other commodity. Nevertheless it is not far amiss to say that the consumption of coal is inelastic. It is for this very reason that many mines make for much competition and why the field is open for advanced methods of selling and marketing coal—of meeting competition, in other words.

Whether seeking to invade new markets or to repel invaders, whether protecting business built up near home or going after more tonnage in a recognized market territory, shippers in general, but more particularly in the East, have built up and now maintain their permanent trade in the good old-fashioned way of older business—personal relationships. The producer-distributor can give assurances of uniform quality and steady supply, the wholesaler-distributor stresses the factor of service in meeting the changing requirements of the consumer and of being able to obtain coal in periods of emergency. But in reaching for new business they both have depended on the shopworn argument of the "best coal at the best price," and have found no different way of reaching the buyer than the spoken word. What chance has one such when he is greeted by the sign "No Coal Salesmen Interviewed Today," such as hung in certain offices this summer?

John Lloyd, a successful merchant of coal and other things and for three years the president of the retailers' national association, has said that no real effort has ever been made to create a market or to show the consumer how to burn coal. Coals for which there is now no taker can be sold if the "operators are willing to use modern, up-to-date merchandising methods, but so far nothing practical has been done." Exceptions to these generalizations but prove their worth. In the mechanics and engineering of mining we are at the top of the list but in marketing and merchandising we have as yet just begun to learn.

An International Issue

IN these days of self-determination we suppose that every nation should design its coal tipples as it will. So elementary a right must in no way be denied. Equally there must be a right of free speech, and we hope that we may not be censured if we come out boldly and express a somewhat narrow preference for what is now the accepted United States way of handling cars at the surface when hoisting coal from a shaft.

True the anthracite region with its shafts located so often far from the breaker which they serve adheres to the past in this respect, rarely using self-dumping cages unless there is a chance to discharge their con-

tents directly into the breaker. But in this, as in many other ways, the antracite region is a law unto itself.

Almost universally cars at the shafts in the United States are automatically discharged by self-dumping cages as soon as they reach the surface, except where they do not come at all to the daylight but discharge their contents into bins at the bottom, to be brought to the surface in self-dumping skips.

So far are we committed to confining the service of cars to the underground that at three mines at least where the seam is shallow the coal is dumped into a bin, fed to an apron conveyor and brought to the surface by that instrumentality.

On the whole the mining public of the United States believes in the self-dumping cage, the self-dumping skip or the apron conveyor—so much so that the argument is now regarded as beyond controversy. It holds firmly that this method makes it possible to increase the capacity of a mine by speedy transportation in the one place where cars must be handled in units or not at all, that it relieves congestion at the foot of the shaft, that it lessens the number of men employed so as to make a shaft as economical as a drift or slope, that it saves much expense in the erecting of surface work, that it eases the workman of much hard labor and that it transfers the function of speeding up operations to the engineer, who naturally takes delight in letting the steam or the electric current do all that its power or its controls will allow it to do.

It believes in these principles as surely as it does in the Bill of Rights, as a matter without argument to which all must agree. It wonders that the Gordian Knot of large production—for so the mining public regards it—has not long ere this been cut in Great Britain and Canada. Engineers will declare that with self-dumping cages, a plant costing as much as the Jubilee bankhead, described in an article in this issue, could handle, if its cars were larger and its underground workings well developed, not merely 2,000 but 5,000 tons per eight-hour day, and will add that by not handling the cars on the surface by hand one great objection to large and cumbersome cars is removed. To the engineers of the United States no need would appear for the long, high steel trestle that the Jubilee bankhead contains.

Mining in Nova Scotia is beset with many difficulties, among which are the steepness of the measures and the long distances between shaft and workings which are the outcome of submarine mining and the operation of old mines. For these reasons the mines should, it would seem, be worked by large equipment. Just as our great transcontinental hauls and those of Canada demand big railroad cars and large locomotives so the Nova Scotia conditions require, if economy is to be attained, large mine cars and heavy hoists capable of moving lengthy trips. The solution of problems such as these is found in the mammoth equipment—at least it would be by such means that the engineers of the United States would seek to solve them, wherever like, or even less severe, conditions are to be met in this country.

The thickness of Novia Scotia coal is favorable to large units and would not stand in the way of such changes. The operating concerns have shown themselves progressive in the many years of their operation, for it must not be forgotten that their mines predate ours by many, many years. They have been willing to modify much of their practice as time has passed and invention has offered new opportunities. Consequently before long they will scrap the small car and the decaging headframe, at least it seems so to mining engineers across the international line.

But this is a United States view of a Canadian problem—a long-distance view, it is true. Doubtless if we knew the Canadian situation as well as we know our own we would be less positive that the best methods have not been chosen. For our part with our conditions of operation we believe that the adoption of the self-dumping cage and still more of the skip is one of the greatest advances made in the art of coal handling. Long experience and great technical ability have equipped the engineers of Great Britain and Canada to meet their problems, and for this reason it may be surmised that they have good reason for standing staunchly to methods which in our case have proved less advantageous than those by which they have been superseded.

Curing Coal for Market

MUCH interest has been developed in the spontaneous combustion of coal, but no consideration has been taken of the question of curing it so that it will not fire in storage. The process might be performed as follows: Store the coal in piles of a height calculated to heat it to, say, 160 deg. F., more or less, as proves best, and when it reaches that temperature and has consequently become extensively oxidized, cool it by moving it to another place. It is quite possible that having taken up at the high temperature a large percentage of the oxygen needed for saturation it will not heat again but will continue its process of oxidation slowly and without danger till it reaches a fully saturated state.

This rehandling, however, would be expensive, and the price of coal is so low that it seems impractical to put it through any such process merely to obtain the advantage of having a coal that can be stocked. Yet it is being found profitable to stock small sizes in the summer so as to continue the production of domestic coal when steam coal is in small demand. In such an event it could be piled so as to generate the required temperature naturally so that when it would be loaded it would be already cured and the loading might cool it enough that it would be free of the possibility of further heating.

Perhaps stocking at the mines affords a degree of safety from heating that coal that has not been stocked does not possess. Especially would that be the case if the coal were moved in cool weather or in the winter. Interesting questions might be propounded: Is prestocked coal safer than coal that is stocked for the first time? and how long should coal be stocked and how, to give thereafter the needed immunity from dangerous heating?

The same question arises with regard to powdered coal. Will coal powdered at the mine, exposed to the air for a few hours in a bin and then loaded into a tank car and again loaded into a tank motor truck and further dumped into the purchaser's bin be, by that time, so far oxidized as to be less likely to heat spontaneously than coal which is pulverized at a power plant and dumped directly into a bin to heat for some hours undisturbed?

The coal might be moved even more often and so given even further opportunities to oxidize and cool off. These are mere surmises. Experimentation may develop that the immunity given by these processes would be inconsiderable and hence valueless.

Jubilee Steel Bankhead at Sydney Mines Will Introduce Many Innovations in That Type of Structure*

Each Seam Will Have Separate Hoist—Slack Will Be Loaded Mechanically Into Box Cars—Will Build Around Present Bankhead and Replace Backstay by Tension Members—Each Cage Carries Two Cars

By A. Dawes†
Sydney Mines, N. S.

THE Jubilee Colliery has two shafts, one being used for the hoisting of men and material and the other for the hoisting of coal. The former, locally known as Jubilee "A," was sunk some years ago, to tap two beds of coal approximately 560 and 740 ft. below the surface. The latter, known as Jubilee "B," was sunk between 1914 and 1916.

Installed at the "A" shaft is a large ventilating fan and a man-hoisting engine, both electrically-driven. The ducts and housings of the fan are of concrete, and the hoisting engine and fan motor are contained in a substantial concrete building. A steel headframe surmounts the shaft.

In contrast, the surface plant erected at the "B" shaft on its completion consisted of a wooden headframe and bankhead building, with dump, screen and picking belts, taken from the discard of various other collieries, some boilers, second-hand hoisting engines and an antiquated box-car loader. A few shacks were scattered here and there at random as shelters for the balance of the various pieces of equipment required for operating a colliery.

All this was hardly in keeping with the equipment at the "A" shaft or commensurate with the importance of the "sinking" then just completed. This entire equipment, however, was assembled merely to serve until such time as the coal mined from the colliery would warrant a larger monetary investment for better equipment.

Increasing development of the mine underground made necessary in 1918 the purchase of a 3,000-cu.ft. electrically-driven air compressor. This was erected and housed in a temporary building and placed in such position that the engine house of the future would contain both the compressor and the coal hoist. This machine is the only redeeming feature of the surface equipment at the "B" shaft.

Output Is Now Seven Hundred Tons Daily

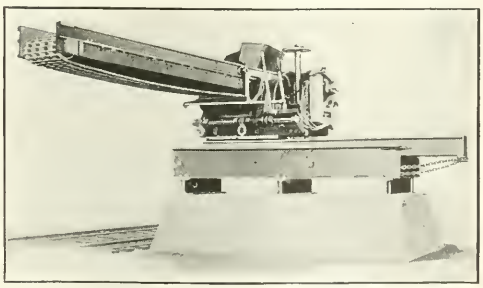
The output at this mine has steadily increased until it now averages 700 tons per day, and the bankhead, hoisting facilities and mechanical equipment are all being severely taxed in handling this quantity of coal. Every part requires constant attention and continual repairs to keep it in running condition. The number of men employed in the various operations involved in handling the coal from the pit bank to railroad cars is excessive and the all-round mechanical efficiency is extremely low. These conditions make the cost of producing coal unduly high.

Provision of a new bankhead with adequate coal-hoisting facilities was considered early last year, the inadequacy of the existing equipment then beginning to be seriously felt. When, later, large contracts for coal from this colliery were obtained, which it would be impossible to fill unless additional equipment was installed, the company authorized the investment necessary for this purpose.

The new surface plant, now under construction, includes two electrically-driven hoisting engines (one for each seam) housed in a substantial building, a structural-steel headframe 90 ft. high, a steel and concrete bankhead, consisting of connecting bridges, an auxiliary dump building, and a main dump screen and picking-belt building provided with the necessary machines, electric motors, and other appliances which make up a surface equipment of this nature. It also involves the construction of a railway assembling and distributing yard, a blacksmith and car-repair shop, a warehouse and an office.

When Complete Will Handle 2,000 Tons a Day

In the consideration of the general scheme, the size of hoisting engines, of all other machinery and of the various structures had to be based on not only immediate prospects but on future possibilities. For this purpose the future maximum output of the colliery was assumed as being 2,000 tons, or 1,000 tons from each bed. The attainment of this output, either from a mine-development or a market standpoint, probably is a matter of a few years' time, whereas a maximum of 1,000 tons is expected in the immediate future. The hoisting engines and house over them, the pit headframe and other elements had, therefore, to be arranged accordingly and equipment of sufficient size obtained to accommodate the larger output. In order to cut down initial cost, however, only half of the eventual main tipple, screen and picking-belt building, and half the



FOUR TRACKS TO BE GIVEN UP TO BOX CAR LOADERS

Two conveyor-belt loaders of the type shown have been installed by the Ottumwa Box Car Loader Co. One loads run-of-mine or screened coal and has a steel conveying belt, and the other, loading slack, has a rubber belt for that purpose.

*Article entitled "The New Coal Raising and Screening Arrangements at Jubilee Colliery, Sydney Mines, N. S." read before the Mining Society of Nova Scotia, Halifax, April, 1921.

†Divisional engineer, Nova Scotia Steel & Coal Co.

eventual equipment, or enough to handle only 1,000 tons per day, is now being constructed. Arrangements, however, are such that duplication of the present half can be readily accomplished when required.

The hoisting and bankhead facilities have been designed so as to provide, as far as possible, the best of equipment for handling the coal from pit bottom to bank, its classification and cleaning, and, of especial importance, its loading as desired into either hopper or box cars. Provision also has been made for the mechanical loading of slack into box cars, and facilities have been provided for readily bunkering the company's locomotives, supplying coal from bins for local purposes, and the disposal of "stone" or "material other than coal" from the mine and from the picking belts.

Work Now in Progress to Cost $385,000

From this it follows that the new hoisting, screening, cleaning and loading plant, when completed, probably will have cost more money than usually is expended on similar equipment of the same capacity. Emphasis is laid on this consideration, inasmuch as the larger monetary outlay necessitated by the adoption of these special features may be criticised. In order to be prepared to sell all the coal produced from this colliery, however, whether screened sizes, run-of-mine or slack, and to dispose of it readily, either loading it into box or hopper cars, it was essential to provide present facilities as flexible as possible, so as to be ready for the time when these might become indispensable.

Work at present in progress involves an estimated expenditure of $385,000. Excavations for foundations were commenced in October last. It was expected that the bankhead and other structures would be completed by April, but owing to various causes, such as promised deliveries not being fulfilled, the completion of the work has been unavoidably delayed.

The work of building is being carried on while the present bankhead is in operation. It is hoped that no stoppage of the colliery or reduction of coal output will occur while construction is proceeding. The change over from old to new equipment will be made during a week-end.

Production Cost to Be Lowered One-Fourth

When in operation the new equipment will allow of the number of men employed being reduced by twenty as compared with the present force. It will overcome existing expensive upkeep of the old equipment and will considerably reduce the operating power cost. The present cost for labor, repairs, supplies and power in handling the coal from pit bottom to coal car should be reduced 25 per cent by the new equipment. This, it is estimated, will save $36,000 per year.

Furthermore, as the number of men required for operating the new bankhead for an output up to 1,000 tons will be no more than are necessary for 700 tons, and as the electric-power charge for operating at the greater output obviously will not increase proportionately, the cost per ton of coal with 1,000 tons of output should be reduced by an amount equal to 35 per cent of the present cost of handling the coal from pit bottom to railroad car.

In order that this saving, or reduction in cost, may become a reality it is essential that every mine official conscientiously strive to carry out the intentions of the designers and dispense with any unnecessary labor, not merely transferring the workman to some other point, except it be to the working face.

The various elements making up this installation can be classed under three heads, namely: The coal-hoisting equipment and building, the structural-steel headframe, and the bankhead, which includes the bank around the headframe, the connecting bridges, auxiliary dump building, and the main tipple, screen and picking-belt building, together with the equipment contained therein.

Half the Coal to Come From Each Seam

The coal-hoisting equipment consists of two single-geared hoists built by the Vulcan Iron Works, of Wilkes-Barre, Pa., each designed so as to be capable of raising 1,000 tons of coal per day from its respective seam. These machines are duplicates except as to the size of the motors and as to the gear ratios, and the fact that one is arranged right- and the other left-hand. Each is driven by Westinghouse alternating-current motors of the wound-rotor type, built for hoist service, working from a 2,200-volt three-phase 60-cycle electric-power supply. The sizes of the motors serving the lower and upper seams are 550 hp. and 350 hp. respectively. The gears are machine-cut, of the herringbone type, and as they work in an oil bath, they will be practically noiseless. The drums are cylindro-conical, having a small diameter of 7 ft. and a large diameter of 10 ft.

In addition to a powerful main brake of the post type, each hoist is provided with an auxiliary band brake operating on the motor-pinion shaft. The function of this device is to absorb the inertia of the rotating parts of the motor and relieve the gears of unnecessary stresses. The two devices are so interconnected that when the main brake is applied, the one on the pinion shaft comes into action also. The latter is arranged for independent application as well.

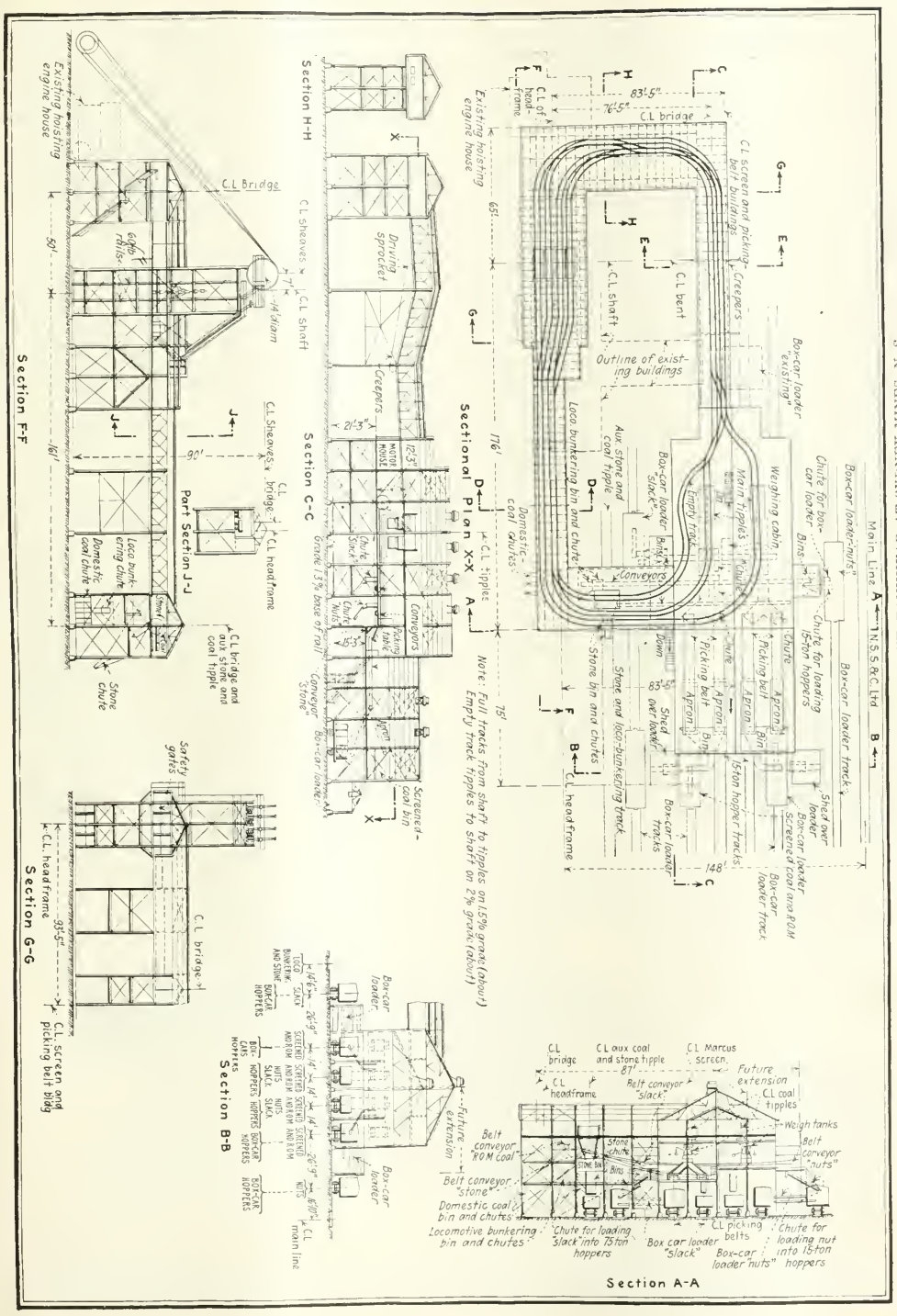
Release of Air Causes Setting of Brakes

Upon the release of air within the cylinder of an auxiliary engine the main brakes are applied through the action of weights. The force with which these brakes operate is proportional to the degree of exhaustion of the air. The auxiliary engine also is provided with a device which automatically applies the brake in case of power failure, overspeed or overwind.

Speed of the hoist motor is controlled by varying the resistance in the rotor circuit. This is accomplished by the operation of a small master controller mounted on the hoist platform. The master controller actuates the motor through magnetic contactors, which are governed by suitable current-limit relays. Automatic acceleration is thus provided, which to a certain extent is independent of the hoisting engineer.

The safety features of these machines are such that the hoist cannot start the wrong way or overtravel in either direction. The brake will not be suddenly applied on power failure, but it will allow a full application of braking effect if required, when limits of travel are reached. The brake cannot fail because of worn shoes or the failure of the air supply to the auxiliary engine, or on account of grounded control circuits; the men will be hoisted or lowered at reduced speed.

As there are few levers to handle, an inexperienced operator cannot injure the hoist by improper manipulation, neither is it necessary for him to call for assist-



PLAN AND ELEVATIONS OF THE JUBILEE BANKHEAD AT SYDNEY MINES, N. S.

ance or leave his station to reset the safety devices. These details tend to give the operator complete confidence in the hoist under his control and to afford a maximum of safety to the men being hoisted or lowered and to the winding apparatus. It will thus more than fulfill any mine law yet enacted covering such equipment.

Compressor and Hoist Under One Roof

The brick building in which this apparatus is being installed is 97 ft. 6 in. long and 39 ft. wide. It has been made sufficiently large to accommodate not only the present electrically-driven air compressor of 3,000-cu.ft. capacity but a future unit of the same size. The building is of substantial construction, well lighted and not unpleasing in appearance. Considering that this whole construction program was carried out in winter, the result attained is highly satisfactory. An overhead traveling crane is being built for erection purposes and for the handling of heavy machine parts when this becomes necessary.

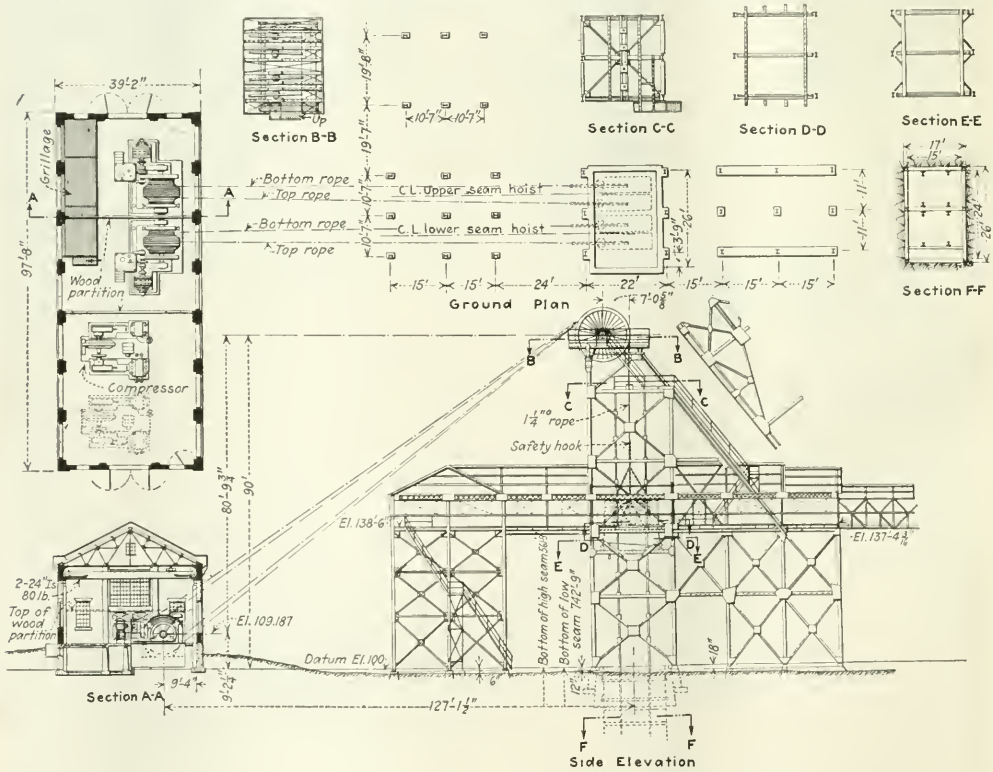
The structural-steel headframe consists essentially of six built-up plate and angle columns, the tops of which support a platform whereon are mounted the four head pulleys. The columns are so placed about the mouth of the shaft as to form together with their framing and connecting bracings enclosures that are virtually continuations of the upper- and lower-seam shaft compartments, in which the coal cages are guided and hoisted to the banking floor.

In the design of headframes the main difficulty is not to determine the strength of columns, struts and stays for resisting the bending, compression and tensile stresses, but to obtain the necessary stiffness and rigidity as well as the requisite stability of the whole structure with the least weight of material which will withstand the heavy loads suddenly applied, and as suddenly removed. All these considerations are affected by the loads, rapidity of acceleration and the height of structure.

Tensile Members Replace Backstays

It is the common practice in building headframes to embody backstays to resist the pull of the ropes between the drum and head sheave. In the headframe under construction, however, "front" stays take their place. The lower portion of these members serve as building columns of the bankhead structure, and are anchored to solid concrete foundations. As a result the weight of this portion of the bank structure reduces to some extent the quantity of concrete in the anchorage needed to afford the necessary stability.

This departure from type was made in order not only to afford an uninterrupted passageway for the empty pit cars returning to the bank, but also to avoid complications arising from the fact that one of the present



PLAN AND ELEVATION WITH SECTIONS OF POWER HOUSE AND SHAFT HOUSE AT JUBILEE BANKHEAD

This headframe does not have a backstay but depends on tension to resist the pull of the hoist. It will be noted that the trestle is about 38 ft. above the ground. Only by providing runways at that elevation can sufficient height be obtained for dumping, screening and loading purposes. The headframe is 90 ft. high.

steam-driven hoisting engines was in such position as to preclude placing the backstay feet at the most advantageous point. This form of construction made it possible to reduce the total height of headframe, and, as tension members obviously may be made lighter in construction than compression members, it also made it feasible to reduce appreciably the weight and cost of the steelwork.

A system of beams has been installed for supporting the "safety" detaching hooks against overwind. Another set of beams also has been provided for the chairs or keps supporting the cages at the banking floor. A substantial stairway will be built leading from this floor to the upper platform which supports the head pulleys.

Build Steel Structure Round Timber Frame

As the new steel structure is being built around the present timber headframe and bankhead, erection will be none too easy. To facilitate construction each column is being made in sections. The total height of the headframe from surface to center line of head sheaves is 90 ft. and the estimated weight of the steelwork, including front stays, is 110 tons.

On being hoisted to the banking floor, which is 40 ft. above the ground, the two loaded coal cars contained in the cage move by gravity along a connecting bridge and through the "auxiliary dump building" to the "main dump house." The coal is here discharged by means of an automatic power-driven revolving tipple into two weigh tanks situated below the floor. The empties then continue their journey, moving down grade into a dip, from which a creeper, or car hoist, hauls them up a grade sufficiently high to allow of their return by gravity to the bank, thus making a complete circuit.

The weigh tanks into which the coal is dumped are each equipped with gates operated by air cylinders. After being weighed the coal is fed onto a horizontal screen of the reciprocating-conveyor type. This is supported on rollers and receives a slow forward and a rapid return motion by means of a special driving gear.

This screen is built with three decks. The plates of the upper deck are provided with perforations of sufficient size to allow the nut and slack coal to fall through to the middle deck. This in turn is fitted with plates similarly perforated, except that the holes are smaller, allowing the slack coal to fall through to the lower deck.

Screened, Nut and Slack Coal Are Made

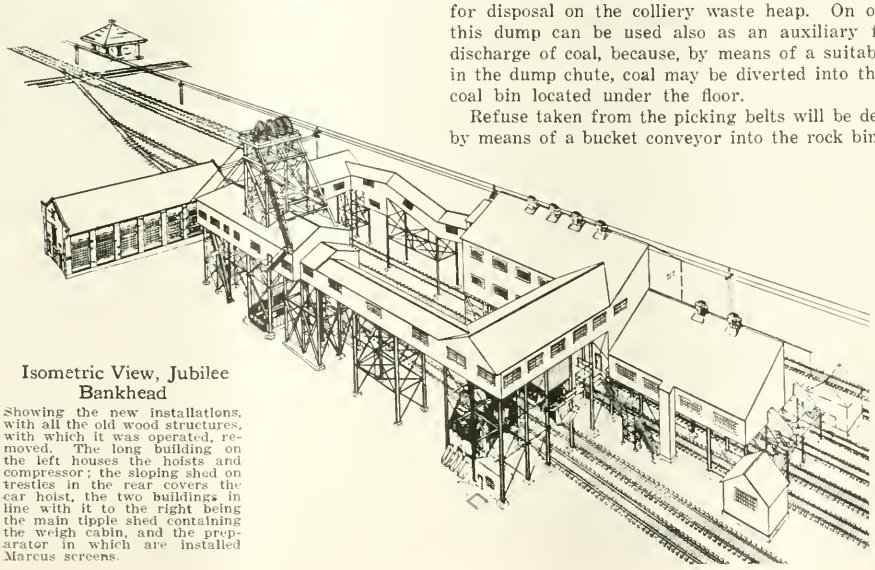
Thus the coal is classified into "screened" on the upper, "nuts" on the middle, and slack on the bottom deck. The screen is provided with the usual dead plates for run-of-mine coal and with suitable gates so that slack and nut may be diverted onto conveying belts or into chutes, as desired, thus giving flexibility in disposal of the products.

At the outer end of the screen a breeches chute diverts the run-of-mine or screened coal onto two picking belts equipped with the usual movable jibs. These are so arranged that when in the "up" position they discharge into a bin preparatory to their being loaded into box cars by means of a mechanical loader, and when "down," into hopper cars. Slack coal for loading into box cars, for which a mechanical loader is provided, is conveyed from under the screen on a rubber belt to a feeding bin. This is so arranged that hopper cars can be loaded when necessary.

As a market for nut coal is more or less a matter for the future, the conveying belt provided for this eventual purpose, for the present will serve for conveying small-size lump, nut or slack into a large bin located under the auxiliary tipple floor. Thence it can be drawn off for locomotive bunkering or for domestic and local use.

The revolving dump, located in the auxiliary building, is primarily intended for the disposal of rock from the mine, which is brought up the shaft in coal cars. This rock will be dumped into a special bin under the floor, whence it will be discharged into hopper cars for disposal on the colliery waste heap. On occasion this dump can be used also as an auxiliary for the discharge of coal, because, by means of a suitable gate in the dump chute, coal may be diverted into the large coal bin located under the floor.

Refuse taken from the picking belts will be delivered by means of a bucket conveyor into the rock bin under



Isometric View, Jubilee Bankhead

Showing the new installations, with all the old wood structures, with which it was operated, removed. The long building on the left houses the hoists and compressor; the sloping shed on trestles in the rear covers the car hoist, the two buildings in line with it to the right being the main tipple shed containing the weigh cabin, and the preparator in which are installed Marcus screens.

the auxiliary dump-house floor. Except the picking belts, which will both be driven by one motor, all parts of the mechanical equipment are to have their own individual drives. The motor actuating the screen mechanism is of 25 hp., that for the two picking belts 25 hp., each conveyor being driven by a 5-hp. motor. The countershafting is being arranged so that when the other half of the equipment is added, the picking belts and screen of the present half may be driven by the motor of the other.

For the mechanical loading of coal into box cars, two conveyor-belt loaders have been purchased from the Ottumwa Box Car Loader Co. These machines are practically identical except that the one for loading run-of-mine or screened coal is equipped with a steel conveying belt, whereas the other for slack coal is being furnished with a rubber belt. These two machines will each be operated by a 25-hp. alternating-current slip-ring motor.

Point of Loading Can Be Changed at Will

All these machines will be operated entirely by mechanism. They will permit of the loading of the coal near the center of the car, or out toward the extreme ends, and because they are able to deliver either close to the floor or high above it, coal may be placed in any desired position within the car. All the motions are power-actuated, only one man being necessary for loading the cars. These machines are each guaranteed to load at the rate of 150 long tons per hour.

The structural steelwork of the bankhead and headframe is being fabricated by the Canadian Bridge Co. All columns, of plate and angle section, are supported on substantial concrete foundations. The floor system is composed of I-beams or channels. The trusses, purlins, bracing and girts are of angles, no thickness of metal being less than ⅜-in. The total weight of the steelwork will be approximately 450 tons.

The floors are to be of reinforced concrete with a minimum thickness of 4 in., triangular-mesh reinforcement being used. That portion of the floor under the driving mechanism of the screen will be about 14 in. thick, in order to present a solid mass against the inertia of the reciprocating parts.

Plenty of Ventilation Will Be Provided

The buildings will be covered on roofs and sides with 20- and 22-gage galvanized corrugated sheeting. Plenty of windows are to be provided, which as a rule will be made to slide back so as to give a full or part window opening at will. In addition to this, in those portions of the buildings where most coal dust is encountered—that is, over the main dump and the picking belts—Robertson patent roof ventilators will be fixed. Thus good ventilation is expected during the summer weather.

As the bankhead is built entirely of steel and concrete, and is therefore fireproof, no insurance on either buildings or equipment will be needed. This not only means a considerable saving in yearly premiums but insures against that loss in output which invariably takes place when a fire occurs on a bankhead constructed of wood.

It goes without saying that colliery bankheads are not usually pleasing sights. They may, however, be so made as not to be unsightly. Ruskin asserted that man has no more right to disfigure landscapes with unsightly buildings than he has to pollute the atmosphere with obnoxious smells.

Bearing this well-known pronouncement duly in mind, as well as the fact that Jubilee colliery is situated in the middle of the town of Sydney Mines, it has been the aim to erect an equipment that will be the equal of the best of its kind, not unsightly in appearance, and one in which both town and the owning company may, with reason, entertain pride.

Trapper Who Fell Asleep and Was Hit by Passing Car Must Be Compensated

AN APPEAL by the company from an award of compensation in the case of John Saydock, of Wilkes-Barre, Pa., against the Delaware, Lackawanna & Western R.R. Co. has been dismissed in an opinion by Commissioner Paul W. Houck. The award was made by Referee Lewis, District No. 9, and his findings of fact and conclusions of law have been affirmed. The claimant in this case was a door tender. On Dec. 1, 1919, he opened the doors for a trip of cars, and after closing them he lay down near the tracks and fell asleep. Half an hour later the cars passed that way again and an oil box of one of the cars struck the claimant and injured him.

The basis of the appeal was that the claimant was not in the course of his employment at the time of the accident. The board holds, however, that the referee did not err in awarding compensation. The Compensation Act, it is pointed out, defines the term "injury by an accident in the course of his employment" to include any injury sustained while the employee is actually engaged in the furtherance of the business or affairs of the employer, or, even though the employee is not so engaged, any injury caused by the operation of the employer's business on the premises when the injury happens upon the premises occupied by the employer, the employee's presence thereon being required by the nature of his employment.

"Under this definition," the opinion concludes, "the claimant is entitled to compensation because it is not disputed that he was injured on the premises of the employer, and the injury was caused by the operation of the employer's business thereon and the employee's presence on the premises was required by the nature of his employment. It was the duty of the employee to remain at the place where he was injured to open and shut the door and the act of falling asleep was nothing more than an act of negligence on the part of the employee, which, by the very terms of the act does not defeat his right to compensation."

Want Breaker Silt Collected to Save Park

WILKES-BARRE is complaining about the damage to trees and vegetation caused by the culm which is deposited on it at high water by Mill Creek into which flows the waste from the breakers of the Hudson Coal Co., the Lehigh Valley Coal Co., the individual coal firms known as the Healey Coal Co. and the Wolf Collieries Co., and an individual operator, John Conlon.

R. H. Buchanan, district superintendent of the Hudson Coal Co., suggests that the stream be straightened to wash away the culm, but this the city does not want to do as it would mar the beauty of the park and destroy many improvements. Urged that the washeries close during the floods, he said that this would not remedy the situation much for the low lands above the park were full of culm and the flooding of these lands would bring this culm down stream. Silt retention is as important a problem as silt utilization, and the silt may have to be prepared for market as the cheapest means of getting rid of it.

HAULING UNUSUALLY HEAVILY BUILT-UP CARS TO THE WEIGH SCALES AT AN OHIO MINE

Bureau of Standards Is Testing Scales at Mines*

More Are Found to Give Overweight than Underweight—Testing Squad Has Automobiles Each with One Ton of 50-lb. Standard Weights—Duty of Government to Fix Standards of Weight Involves Duty to Inspect Them

By L. A. Fisher†
Washington, D. C.

THE U. S. Bureau of Standards commenced to investigate mine scales in August, 1917, in response to a request from the authorities in Maryland who were confronted with the prospect of an immediate general strike as a result of a dispute as to the correctness of certain mine scales. The nation, at that time, had great need for all the coal that could be mined and the local authorities were naturally alarmed at the possibility of a prolonged shut-down of the mines. It appeared that the miners had lost all faith in the ability of the State to correct conditions existing and insisted upon tests by the Federal Government which they held would be free from local influences and fair to both sides in the controversy. In this emergency the State authorities turned to the Bureau of Standards. While there were no funds available for this special purpose, the case was of sufficient importance to warrant the use of our reserve funds, and one of the best men in Bureau was detailed to the work.

The result of this particular investigation made with a ton of 50-lb. test weights showed that the miners had just cause for their complaints, as many of the scales gave readings which were too low. However, as soon as the scales were declared by the Bureau to be in order, and operating correctly, the miners forgot their grievances, those who had ceased work returned to the mines, and the incident was closed.

Subsequently complaints were received from other sections of the soft-coal regions and to meet these demands the Bureau asked for and received from Congress an appropriation of $15,000 to carry on mine-scale investigations.

As soon as the funds were available, the Bureau purchased two motor trucks equipped with special features necessary for the sure and rapid transportation of the field party, test weights, and other apparatus. The trucks were obtained from the War Department, and were built on a contract for the Aviation Service. They are of the so-called "Light Aviation" type, now commonly seen in the Public Roads Service, as Congress has since then authorized the transfer of a large number of these trucks to this service. They are designed and built to obtain a combination of speed, power, and endurance. Special features embodied are a two-ton Continental Motor, on a one-ton G. M. C. chassis, solid disk front and rear wheels, double pneumatic tires on each rear wheel and special hubs and extra wheels designed to minimize road delays on account of tire trouble. Bodies were built to afford convenient means of hauling and handling 2,400 lb. of test weights in 50-lb. units, sealers' kit, other necessary testing appa-

*Abstract of paper presented at Weights and Measures Conference held at the Bureau of Standards this spring and entitled "Mine Scale Work of the Bureau of Standards."

†Former Chief of Weights and Measures Division, Bureau of Standards, recently deceased.

BUREAU OF STANDARDS MINE-SCALE TESTING CAR

Car carries two men, one the engineer in charge and the other a driver and mechanician who assists in the testing work. Room is provided for weights, sealers' kits and other testing apparatus with the baggage of the two men.

ratus, and the baggage of the field party who make the truck their chief means of transportation.

The field party of two consists of an inspector or engineer in charge, and an assistant who acts as driver-mechanician, assists in the testing work, and performs other duties in his spare time. The inspector selects territory, arranges and directs details of tests, makes adjustments when practicable, and advises regarding weighing conditions and features of installation. He must play a ticklish role in a situation fraught with continual discontent.

The method of test is not widely different from that of testing an ordinary platform or wagon scale. Coal tipple scales are usually of 3, 5 or 10 tons capacity. A test to capacity by applying test weights is impracticable, as it is impossible to transport and handle more than one ton of test weights with efficiency. Loads of one-fourth, one-half, and one ton are applied and the errors and multiplication at those loads determined. The actual weight of an empty car is determined by the method of substitution and the weights then loaded into this car.

This gives a test load usually in the neighborhood of two tons, depending of course upon the weight of the car. A car full of coal is then applied and weighed at each end and in the center of the deck to develop sectional errors. Sufficient test weights, usually 500 or 1,000 lb., are added to determine the multiplication, from which the actual weight of the car of coal is computed and compared with the weight indicated by the normal operation. The car is then dumped and weighed empty. The weight of coal thus obtained is compared with the weight which would normally be credited to the miner on the tipple sheet.

The procedure is similar for a hopper scale, except, of course, the necessary manipulation to determine the weight of empty cars. By simply passing the coal into the hopper a test load can be built up by the method of substitution to any desired value.

Up to April 1 of the present year, about 450 scales had been tested at different coal tipples in Maryland, West Virginia, Ohio, Kentucky, Tennessee, and Georgia. Of this number about 63 per cent failed to pass a tolerance of 0.40 per cent of the applied load of 4 lb. per thousand, which will be recognized as being twice the tolerance applied to railroad-track scales and other commercial scales. Seven per cent had errors of 50 lb., 48 per cent had errors in excess and 52 per cent had errors in deficiency, from which it appears that on the whole little or no attempt is made to short-weigh. Since April 1 our trucks have been working in the State of Indiana.

As a result of the accumulation of information, the Bureau has drawn up tentative specifications for coal-tipple scales and their installation, but they are not yet ready for publication.

The purpose of the Bureau in this as in all testing work is to improve the accuracy of the scales, their installation and general weighing condition. It desires to do this for the benefit of the operator and the miner. The Government should not permit false weights, be they intentional or accidental, any more than it should permit the counterfeiting of money. False weights should be penalized by laws comparable in their severity to those relating to coinage. Nothing could conceivably give the thousands of foreigners working in the mines who cannot speak English so false an impression of our institutions as to find themselves at the mercy of some dishonest mine superintendent.

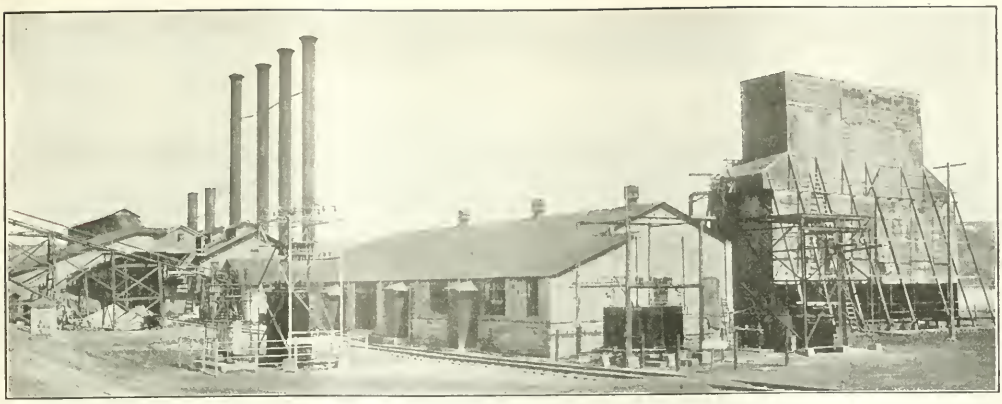
In the mining industry where the wages are directly determined by weighing the output of the miners, all doubt as to their correctness should be removed. With this source of misunderstanding and suspicion removed, there are still enough sources of misunderstanding left to satisfy the most contentious individual.

The annual appropriation for this work is $15,000. The number of employees is not definitely fixed but varies from time to time as the exigencies of the work and of the funds warrant.

There can hardly be any difference of opinion as to the advisability and desirability of the Federal Government taking up duties prescribed to it by the Constitution of the United States, which gives it authority to fix the standard of weights and measures. This makes it the solemn duty of the Government not only to adopt standards but to see that the adopted standards are used in trade. Nothing less than this could constitute fixing the standards. But this does not mean that the Federal Government should be the exclusive agency in enforcing the use of the standards.

TRACK CURVES IN CROSSING MINE SCALES

Conditions such as these, as also unsteady foundations, are not conductive to satisfactory weighing.



BOILER HOUSE, TURBINE ROOM, COOLING TOWER AND STEP-UP TRANSFORMERS AT ROCK SPRINGS, WYO.

Union Pacific Coal Co. Discards Many of Its Local Power Plants for a Central Station at Rock Springs, Wyo.*

Electric Energy Has Been Used in Mining in This District for Almost Thirty Years—Generating Equipment Has Steadily Increased in Capacity Until the Main Power Plant Is Now Practically a Central Station

By D. C. McKeehan†
Rock Springs, Wyo.

ELECTRIC power was introduced into the Rock Springs field in the year 1892. The initial installation was an engine-driven generator and a 9-ton haulage locomotive using 500-volt direct current. Reference to this locomotive, which is still in use, was made in the issue of *Coal Age* for Feb. 24, 1921. Taking into consideration the size of the field the conversion to electric operation has been notably complete, there being no compressed-air machines in primary service and but one steam-driven hoist, that at No. 10 Mine. This machine is located within 50 ft. of the boiler room of the present power plant.

Two 8-ton haulage locomotives were installed in 1896. They are still in use. These mines used the pioneer types of electric cutting and drilling machines. The extensive use of electric power began in 1900, when four 400-kw. 500-volt direct-current engine-driven generators were installed. These were cross-compound machines and operated non-condensing.

By 1910 the mines had developed main haulage entries several miles in length, and the working territory had increased to about six square miles in area. In order to transmit adequate power to the working face it was necessary in various parts of the mine to supply energy from motor-generator sets which supplemented the power furnished by the engine-driven generators. Power for these motor-generator sets was supplied by a 300-kw. high-pressure non-condensing turbo-generator delivering 2,300-volt 60-cycle three-phase current. This marks the beginning of the use of alternating current for mining purposes.

In 1913 new mines were being developed in Reliance, seven miles distant. Accordingly the main power plant was enlarged to accommodate a 750-kw. low-pressure condensing turbine, utilizing the exhaust steam from the cross-compound engines and the 300-kw. turbine. Transformers were installed for supplying Reliance with power at 13,200 volts.

In the course of time the old engines began to dismantle themselves—by throwing various pieces, such as cylinder heads, about the building, damaging walls and switchboards, thus creating a general feeling of unrest among those who were engaged in power production. The limitations of the old engines, which had given admirable service for ten years, were therefore recognized.

With these engines removed it became questionable whether enough exhaust steam could be obtained, and in 1915 a 1,000-kw. high-pressure condensing turbine was installed in order that more general use might be made of motor-generator sets for the direct-current supply. The plant at that time contained units of 1,000 kw., 750 kw. and 300 kw., in alternating current, supplemented by three of the 400-kw. engine-driven generators (one having been scrapped). This was considered sufficient capacity for some time to come.

At Superior, twenty miles from Rock Springs, five mines were opened about 1910. The power was supplied from a local plant containing four 300-kw. 2,300-volt alternating-current generators and two 300-kw. 250-volt direct-current generators. By 1917 this plant was still adequate to carry the load, but bad water caused an excessive expense in the boiler room, and it was decided to abandon the Superior plant and transmit power from Rock Springs.

*Article entitled "Growth of the Electric Power System of the Union Pacific Coal Co., Rock Springs, Wyo.," presented at the June 30 session of the Rocky Mountain Coal Mining Institute.

†Chief engineer, Union Pacific Coal Co.

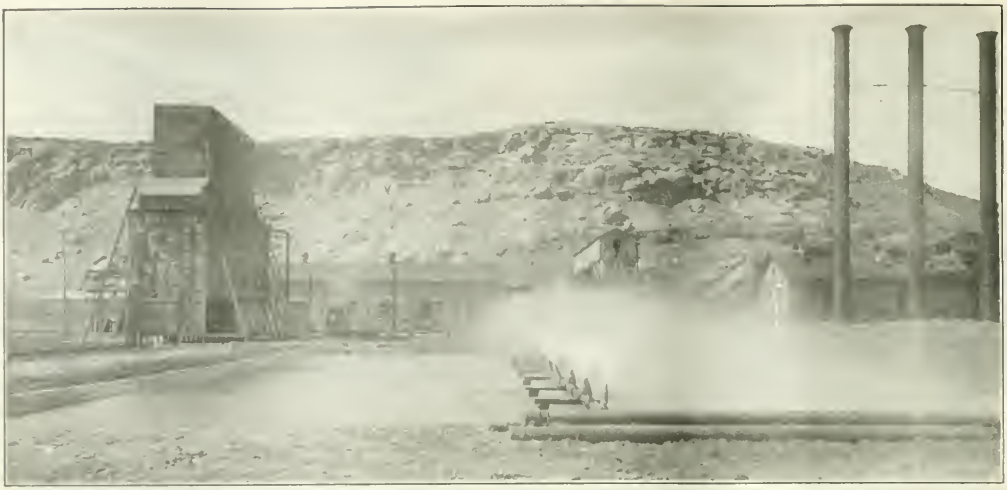


FIG. 1. COOLING TOWER, TURBINE ROOM, NO. 10 TIPPLE AND BOILER HOUSE OF UNION PACIFIC COAL CO.
In the foreground are the sprays for the condensing water, for the reception of which a concrete reservoir has been provided. The cooling tower was built many years ago. The climate being extremely dry, as can be imagined from the absence of vegetation, there should be rapid evaporation with speedy and efficient cooling of the water

To take care of this additional load a 2,500-kw. turbine had to be installed at the latter point. This machine was installed in 1918, its installation making necessary a revamping of the whole plant. The old engines and generators were junked, the 300-kw. turbine was transferred to the Cumberland mines, and the 750-kw. turbine was sold. The old frame building was razed, and one of steel and hollow tile erected.

Fig. 1 is an exterior view showing the present turbine plant, concrete spray pond, cooling tower, boiler room and No. 10 mine tipple. Fig. 2 is an interior view, showing turbines and switchboard. Alteration of certain machines to electric drive and an increasing load soon required another 2,500-kw. turbine, so that today the plant contains the following turbo-generators: One 1,000-kw. unit installed in 1915, one of 2,500 kw. installed in 1918 and one of 2,500 kw. installed in 1920. The above generators are 2,300-volt 3-phase 60-cycle machines, and the entire plant is rated at 7,500 kva.

Jet condensers are employed in conjunction with steam-driven reciprocating vacuum pumps. Two of the circulating-water pumps are driven by 2,300-volt synchronous motors and one pump by a 2,300-volt induction motor. One of the 2,500-kw. machines is fitted with a direct-connected exciter for starting, two 40-kw. 2,300-volt synchronous motor-generator exciters serving for normal running. A General Electric type F-8 regulator keeps the voltage constant.

Aluminum-cell lightning arresters are connected directly to the buses. A 12-volt storage battery provides emergency lighting. The connected load is 16,000 hp. The largest hoists at these mines are a 600-hp., a 500-hp., a 400-hp. and a 250-hp. machine. In addition to these are eight hoists ranging from 100 to 150 hp.

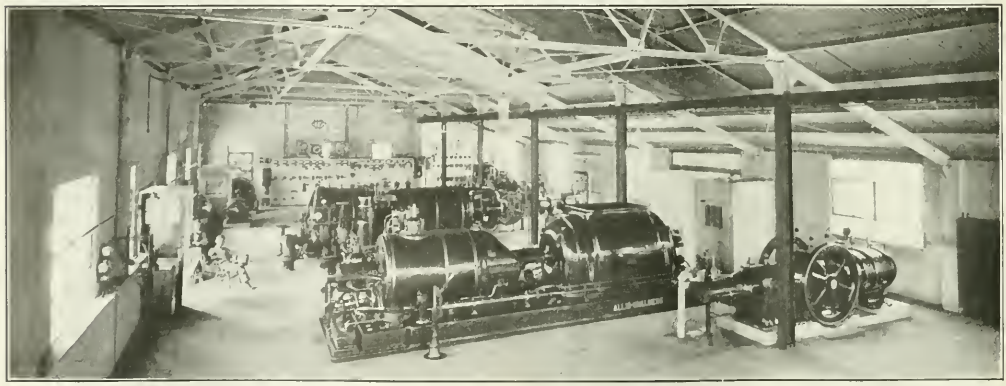


FIG. 2. INTERIOR OF TURBINE ROOM SHOWING TURBINES AND SWITCHBOARD
One 1,000-kw. and two 2,500-kw. turbo-generators are installed in this plant. They generate 2,300-volt 3-phase 60-cycle current. The entire plant is rated at 7,500 kva. One of the 2,500-kw. machines is fitted with a direct-connected exciter for starting. Two 40-kw. 2,300-volt synchronous motors serve as exciters for normal running.

From this list it may be seen that the plant is subject to severe demands for short intervals. Two of the 250-hp. hoists operate cages in vertical shafts, all the others serving on slopes. The larger hoists are operated under either contactor or liquid-rheostat control.

In all seventeen mines are supplied with energy. The sustained peakload on the plant is 5,000 kw.; the hourly output for the day load varies from 3,400 to 3,900 kw.-hr. For the past year this load has been carried by the 2,500-kw. and the 1,000-kw. generators. Besides carrying a 50-per cent overload on peaks, the machines at times deliver more kilowatt-hours per hour than their nominal rating. They can do this because the power factor of the plant is kept close to unity. Many of the motor-generator sets are driven by synchronous motors, carrying leading current at light load and so adjusted that they receive current at unity power factor at full load.

Current for local distribution as well as that for mines in the vicinity of the plant is supplied at 2,300 volts. One 13,200-volt line serves Reliance, E. Plane, and a remote part of Rock Springs mines as well as the development at Gunn. A 33,000-volt line supplies Dines, Winton and Superior. At the mines the distribution beyond the step-down transformers is at 2,300 volts.

The boiler room contains twelve Babcock & Wilcox boilers with a total rated capacity of 3,384 hp., fitted with chain-grate and type E stokers and induced-draft fans. Before long all the boilers will be supplied with superheaters providing 100 deg. of super-heat. Slack coal is burned exclusively, a conveyor delivering the coal from No. 10 mine tipple direct to storage bins in the boiler room.

Fans are both motor- and steam-driven. One turbine-driven and one motor-driven centrifugal pump, supplemented by duplex machines held in reserve, supply the feed water. Boiler feed and in fact all water for operating the plant is secured from a series of wells, located about one mile from the plant. An air lift is used to raise the water about 200 ft. to the surface, after which it is forced into tanks by motor-driven plunger pumps.

This well water is quite "hard," but the mud and scale it forms in the boilers is easily removed without the use of compound. Feed water is taken from the cooling pond and introduced into the boilers without softening treatment. Usually the "make-up" water for the system is introduced into the condensers in order to obtain the slight benefit of its lower temperature.

Five turbo-generators have been installed in a period of ten years and it is doubtful if even yet the plant has sufficient capacity to take care of the field's requirements for more than another year. This installation has furnished the necessary power to mine 4,000,000 tons of coal in one year.

Steel Mine Car Designed to Suit Anthracite Conditions

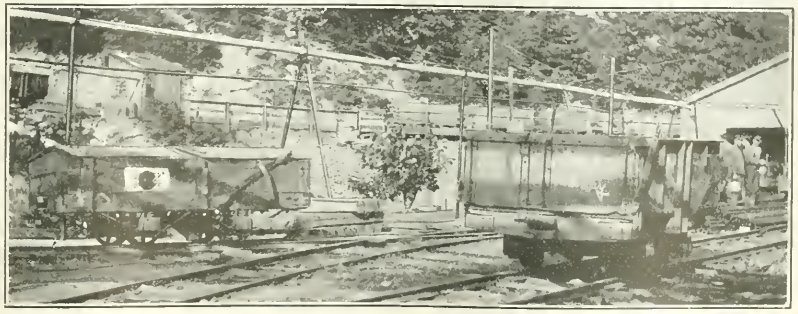
Mine Car May Be Loaded Underground by Hand or By Chutes or on the Surface by a Shovel—Such a Car Must Be Unusually Strong and of Large Capacity

By Dever C. Ashmead
Kingston, Pa.

CONDITIONS under which a mine car must work should determine its size and details of construction. In the anthracite field these governing factors vary widely from those encountered in the bituminous region and as a result the general conformation of cars used in the two localities shows equal divergence. The anthracite car is as a rule higher than that found in the bituminous fields, as the beds in which it is called upon to operate are comparatively thick. The capacity is, of course, other things being equal, proportional to the height.

Conditions of loading in the two regions may be entirely different, for in the anthracite field if steep-pitching beds are being worked the cars may be run under chutes. In the bituminous fields as a gener rule mine cars are loaded only by hand and are not subjected to heavy loading stresses. As much stripping is being done in the anthracite region mine cars are frequently employed above ground either for removing coal from the strip pit or in hauling away spoil. In either case they may be loaded by steam shovel which is, of course, much more severe on the car than hand loading.

At the Locust Mountain Coal Co.'s operation near Shenandoah, Pa., conditions vary so much that the cars are loaded by hand in certain portions of the mine and

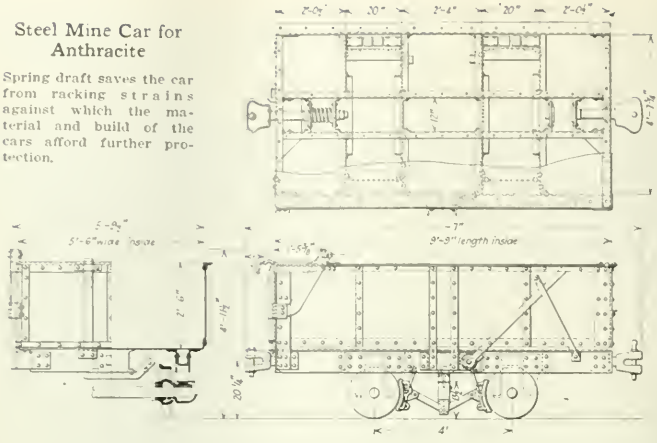


Mine and Powder Car

Used at operations of the Locust Mountain Coal Co. Mine car will hold 134 cu.ft., level full, though gage is only 36 in. Its height is only a trifle under 5 ft.

Steel Mine Car for Anthracite

Spring draft saves the car from racking strains against which the material and build of the cars afford further protection.



in others are filled from chutes. This company also operates extensive strippings. It would, of course, be inconvenient to provide a different type of car for each variety of service and it is necessary as a result to build the cars of such a design that they will meet all conditions encountered. But though there is room in the underground workings for a high car, yet it must not be so high as to render hand loading difficult. It must be strong enough to withstand the shock of coal falling from a chute, as well as the rough usage to which it is subjected in the strip pits when loaded by steam shovel.

In order that it may possess the necessary strength such a car is unavoidably heavy and as a result must be so designed that it will not readily leave the track. Furthermore, rolling friction must be reduced as far as possible. To lessen wear and tear also, it is advisable to provide such a car with brakes instead of depending upon spragging as is customary in many anthracite collieries.

At the operation above mentioned the car employed has a capacity, level full, of 134 cu.ft. The inside dimensions are:—Length, 9 ft. 9 in.; width, 5 ft. 6 in., and depth, 2 ft. 6 in. The over-all dimensions are: Length, outside to outside of bumpers, 11 ft. 7 in.; width, 6 ft. 2 in.; height, 4 ft. 11½ in. The height of the top of the side boards is, however, only 4 ft. 6 in. The wheel base is 4 ft. and the track gage is 36 in.

Drawheads Are Furnished With Springs

In external appearance this car is strongly suggestive of railroad equipment of the gondola type. The framework is entirely of steel, the sides and bottom being strengthened and braced with angle iron. The drawheads are spring-mounted, stress upon the body of the car being thus reduced. Springs also are employed above the journal box to reduce the jolting which rough track will cause and the stresses incident thereto. The springs on the drawhead and journal boxes, as well as the long wheel base render the car not only easy riding but enable it to hold the track much better than if these springs were omitted and the wheel base made short.

Brakes are rather unusual in the anthracite field, but their employment on a car of this size and weight renders the wear and tear much less than it would be if sprags only were employed. Furthermore, sprags tend to cause flat wheels and excessive wear upon the flanges so that in time a wheel thus worn will tend to climb the rail, and consequently the car that it supports is liable to derailment.

Two different types of trucks are employed. These use the Hyatt-Fleming and the American Car & Foundry roller-bearing wheels, respectively. Both types have given excellent satisfaction. The use of either reduces rolling friction which is highly necessary in a car of this size and weight. The cars themselves were built by the American Car & Foundry Co.

An extremely simple yet effective device is employed for holding the car door closed. This consists of a steel locking bar working vertically along the endgate and fitting into a suitable hole in the bumper. To open the door it is only necessary to raise this bar about two inches. The dump in the breaker is so arranged that a hook on the end of the vertical locking bar engages a crane, which in this case is merely a horizontal bar, and as the car tilts forward to discharge its contents the endgate is first unlocked and then raised.

All in all this car satisfies the conditions imposed by the operation where it is used. It is of rugged construction, and consequently the repairs are low. It may be used effectively in any one of the many diverse workings, so that several distinct types of car are not required. Rolling friction and consequently draw-bar pull is reduced to a minimum. Its large capacity lessens the number of car loads necessary to transport a given output. It is exceptionally easy riding and consequently holds the track much better than the ordinary rigid or semi-rigid car. And, lastly, the brakes obviate the wear to which cars are subjected when sprags are used exclusively.

Thirty Millions in Compensation Paid Workmen in Pennsylvania

SINCE the Workmen's Compensation Board has been in operation in Pennsylvania, a period of five years, $28,712,768 of compensation has been paid out, according to figures just tabulated by the board. During a portion of 1916 and the year 1917, $7,247,196 was paid through the board; in 1918, the payments were $4,412,881; in 1919, $6,039,076; in 1920, $7,001,197, and during the first six months of 1921, $4,012,412.

During the five-year period the awards of compensation for fatal injuries have aggregated $30,075,765. The amount actually paid out for such compensation has been $8,448,859 and the disability compensation paid, $20,263,903.

The total amount awarded for permanent injuries during the five years was $9,154,075 and the amount already paid, $5,314,880. During this period the board has awarded for the loss of legs, $936,576; the loss of arms, $745,345; loss of hands, $2,071,955; loss of feet, $976,227; loss of eyes, $3,983,868 and miscellaneous, $440,104. These awards are for the loss of 501 legs, 386 arms, 1,286 hands, 671 feet, 3,210 eyes and there were 112 miscellaneous accidents.

There were 15,212 fatal accidents reported, 3,067 of permanent disability, 1,048,119 of temporary disability, making a total of 1,066,398 accidents. Agreements were approved in 11,824 fatal cases, 6,009 of permanent disability, 337,478 of temporary disability, or a total of 355,311.

Gallup-American Is Erecting Plant with A Skip Hoist and Overturning Cages

MUCH progress has been made in the construction of the new mine of the Gallup-American Coal Co., located near Gallup, McKinley County, N. M. On Aug. 1 the main shaft had been sunk to a depth of approximately 500 ft. This shaft is concrete-lined, rectangular in section and measures approximately 9 x 20 ft. 8 in. The coal at this shaft is 764 ft. from the surface.

The auxiliary shaft has been sunk to practically the same depth, is concrete-lined throughout, is rectangular in section and measures approximately 10 ft. 6 in. x 25 ft. 3 in. The main shaft will be equipped for skip hoisting and two overturning cages in balance will be used at the auxiliary shaft during the development period and for the hoisting of men and material at all times.

The main-shaft tipple is equipped with pendulum-hung shaker screens, loading booms, picking tables, etc., and all small coal will be sent by belt conveyor to a bin for loading in railroad cars or into hoppers of the power plant. The hoists at both shafts are to be electrically-operated by power furnished from the new power plant now under construction, as shown in the foreground of the illustration.

The steel for the auxiliary tipple has been erected and that for the main tipple is being fabricated, and the schedule provides for its erection in the early autumn. All the buildings are fireproof, of brick and concrete, with steel sash and steel trusses, purlins, etc., in the roof. The brick work has been completed on the shop building, and brick are now being laid for the wash and hoist houses.

Four 400-hp. Heine water-tube boilers which will generate the steam for the engines have been delivered. Alternating current at 2,300 volts will be generated to furnish power for the new as well as the existing operations, and small coal and crushed refuse will be burned under the boilers on Harrington-type stokers. The smokestack, now under construction, will be of concrete, 259 ft. high above foundations and 10 ft. in diameter.

A spur has been constructed to the Santa Fe at Gallup, and work is progressing on storage tracks. A number of the cottages, rooming houses, etc., for the new town site, shown in the upper left-hand corner of the picture, have been completed and others are under way.

The plant has been designed throughout by the Allen & Garcia Co., engineers, Chicago, for an expected output of approximately 5,000 tons per 8-hour day. It is hoped that coal can be hoisted from the auxiliary shaft before Jan. 1 of next year, and the schedule provides that the entire surface installation and bottom loading stations will be completed in the spring of 1922.

Fish Warden Wants Mine Water Purified

MINE drainage into the tributaries of the Susquehanna River is blamed for the killing of fish, according to J. P. Albert, chief warden of the State Department of Fisheries of Pennsylvania. He has just completed an investigation of the river and its tributaries from Harrisburg northward, and filed a report with N. R. Buller, State Fish Commissioner.

Oil and tar were discovered coming from sewers at Williamsport, and industrial plants both at that city and at Lock Haven discharge pollution into the stream, but much of the waste heretofore poured into the river by powder plants at Emporium and by tanneries is now filtered. Streams along which mines were opened during the past few years were found to be filled with sulphur water and the warden says that many fish have been killed in consequence.

The report regrets that the department does not have the advantage of stronger legislation against the pollution of streams. According to court decisions, the department has no control over mine water, Mr. Albert adds, and in conclusion he says that unless some method is found to eliminate drainage of mine water direct into the streams, little progress in the saving of fish can be expected. Most of the pollution comes from bituminous mines along the West Branch.

FALLING PROP CAUSED CANCER AND COMPENSATION IS GRANTED.—Commissioner Jarrett in the appeal by the defendant from an award in the case of John Grobuskie against the Shipman Coal Co., Shamokin, awards the claimant $12 a week from April 29, 1920, to June 7, 1920, with an additional award for medicine and hospital services. The claimant in this case on April 10, 1920, was employed by the defendant at its Colbert Colliery, Coal Run, Pa., at timbering. A prop fell over and struck him on the face. A cancer quickly developed and this was later removed at a hospital.

New Gallup-American Plant

Now under construction. On the left is the village and in the center rear-ground the wash house and shop building, the auxiliary-shaft head-frame with overturning cages and the hoist house for this shaft. In the foreground is the power house, conveyor to boiler bins, tipple and main-shaft headframe and its hoist house. On the right in the foreground is the pond for the condensing water.

Problems of Operating Men

Edited by James T. Beard

Applying New Methods in the Mining of Coal

New Systems of Mining Involve Great Financial Risk and Must Be Viewed from Every Possible Angle. Slabbing of Long Rooms While Adapted to Improved Machinery Presents Difficulties in the Extraction of Pillars

HAVING read with much interest the article by Carl Scholz, *Coal Age*, Apr. 14, p. 661, and the letter discussing its merits, by W. H. Luxton, June 16, p. 1083, I desire to add a few thoughts that they suggest.

The aim in each of these articles is to provide long working faces, while affording ample protection to the men, maximum recovery of coal and facilities for handling cars and machines at the working face. In addition to these items, also, there must be considered ventilation, drainage and practical grades for handling cars and hauling coal.

We all recognize the value of a system that will attain the objects just mentioned. Coal men are often accused, however, of being over-conservative in the matter of adopting new systems and methods of mining. In their defense, it should be remembered that the trial of most new methods involves a certain financial risk that must be assumed by the operator who makes the attempt.

Trying Out New Schemes Apt to Prove Expensive

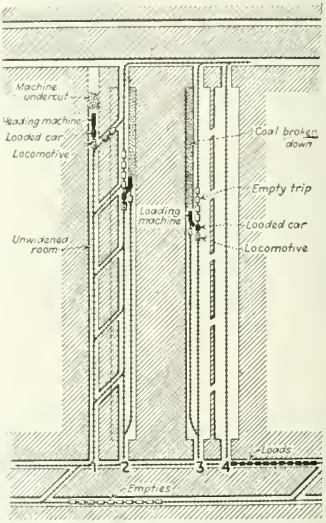
Untried methods and systems must be viewed from every angle before they can be put to the practical test in the mine, or the tryout may be a costly one. It is for this reason that I am taking the liberty of offering a few comments on the methods suggested in the articles mentioned.

First, referring to the plan proposed by Mr. Scholz, it is apparent that the method of slabbing the coal from the ribs of long rooms 500 ft. in length is at least limited to seams of moderate depth and affording a fair height of coal.

While ventilation and drainage may offer no particular drawback, in this method, there is more doubt regarding the protection afforded against roof falls, which may prove a serious problem. While Mr. Scholz has given no dimensions further than to state the size of the panel, 500 x 1,200 ft., with rooms driven 12 ft. wide, I may assume the slabbing is done in widths of 6 to 6½ ft.

Let us suppose that, after slabbing each side of a 12-ft. room, the width of the room is increased to 25 ft. Ordinarily I would consider this a safer width than to take another slab cut of 6 ft., which would increase the width to 31 ft.

It is stated that these 12-ft. rooms are driven in pairs and on such centers that when a slab cut is taken from each size of the pillar between them



SHOWING TWO PAIRS OF ROOMS IN PROCESS OF SLABBING

the latter will be almost cut through. Judging from this description, we have as a result of two slab cuts, one in each room, say, a series of two parallel rooms driven in pairs, 500 ft. long, the rooms in each pair being separated by a chain pillar 6 or 8 ft. wide. We will assume that these rooms are separated by larger pillars, perhaps 60 ft. wide.

Let me ask here, How is it proposed to recover these narrow pillars? We have a 1,200-ft. panel from which, perhaps, 40 per cent of the coal has been recovered in the entire panel, the remaining 60 per cent of the panel is now standing on 60-ft. pillars.

For the purpose of utilizing the improved machines for which this method is designed, these pillars must be attacked by splitting them with additional 12-ft. rooms and slabbing these as before. It is evident to the practical mind that we will soon reach a condition where the pillars will not support the overburden, as we have not provided a sufficient area to break the roof and relieve the pressure on the pillars. The result is that these remaining narrow pillars will be crushed and a large portion of the coal rendered unminable.

Practical Working of the System

While possibly being mistaken in my conclusions, I fail to see how this system will work out satisfactorily, but would be glad to have it shown under actual working conditions. It will be readily appreciated that the trackwork presents numerous difficulties and, though these are not insurmountable, they increase the expense of operation.

For convenience of explanation, I have marked the rooms shown in the accompanying figure as No. 1, 2, 3 and 4. Having taking a right-slab cut in No. 1 room and a left-slab cut in No. 2 room, we will be compelled to shift two switches on the heading to where they can be used when the larger 60-ft. pillar is split in the manner previously mentioned.

It may be that the plan contemplates removing the remaining 6- or 8-ft. pillars by the pick. Otherwise it would be necessary to shift the line of track in one room to where the machine could mine this pillar, but that would be a questionable undertaking to say the least.

Slabbing the Coal Face in a Panel

Turning now to the plan suggested by Mr. Luxton, which appears to be a more practical suggestion, it does not appear from the figure accompanying his letter how the loads are to be hauled away and the empties supplied to the loader as they are needed. In the Scholz plan there is a double-track system for that purpose.

The Luxton plan (p. 1083) does not show any track system. The text mentions, however, a double row of chocks at the working face, and it is possible the empty track is intended to be laid between these two rows of chocks, which would be all that is required to serve the loading machines successfully.

Allow me to suggest that where the grades are not excessive two longwall faces could be established in each panel,

working away from each other and toward each of the flanking haulage roads.

In the development of these panels, the problem of getting air to the face may involve difficulties, in a gaseous mine, particularly in blocking out the 200-ft. square barrier pillars mentioned. It will be necessary to either split these pillars or make use of small blowers to ventilate the place until through connection can be established.

In closing, permit me to say that the discussion of new methods of mining is extremely interesting and should lead to valuable advances in the industry. I hope this will continue. Mining men realize the limitations of the older methods of mining and, despite the frequent charges made that they are bound to precedent, I believe every proposition that promises real advancement will receive favorable consideration at their hands. A proposed system, however, must be reasonably sure of success to justify its undertaking.

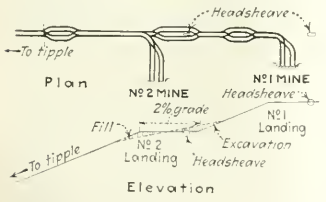
M. L. O'Neale,
Consulting Mining Engineer.
Morgantown, W. Va.

Suggestions in Gravity-Plane Haulage

To serve two mines at different elevations output of upper mine lowered in two stages. Another suggests use of two ropes winding on a double drum having diameters proportioned to the length of haul.

IF NOT too late, I want to add a suggestion to those that have already appeared in *Coal Age*, July 14, p. 58 and Aug. 11, p. 219, relative to adapting a single gravity plane to serve two mines at different elevations.

My suggestion is to construct a suitable landing at the lower-mine level, by excavation and fill, as indicated in



PLAN AND ELEVATION OF GRAVITY PLANE

the accompanying figure, showing a plan and elevation of the upper portion of the plane.

While this plan will require some alteration of the present incline, it will afford practical satisfaction in handling the output from each mine. The coal from the upper mine will be lowered in two stages, making the system what I would call a "tandem gravity plane." There must be room provided on the lower landing to hold a trip from the upper mine, the switch for the lower mine connecting with the incline just above the knuckle.

This arrangement will naturally steepen the grade of the incline somewhat just above and below this landing. The track on the landing should have a 2 per cent grade, as indicated in the figure, to facilitate the movement of cars on reaching this landing. Also, a second headsheave will be required at the landing.

Both Mines Operated Independently or Jointly, As Desired

This system permits independent operation from either mine, or trips may be lowered from both mines simultaneously. If desired to serve the upper mine only, at a time when the lower mine is not running, the end of the lower rope can be coupled to that of the upper rope, making one continuous rope reaching from the upper level to the tipple.

When both mines are running, as I said, the output from the upper mine is lowered in two stages, the cars reaching the lower level in the first stage and waiting there to be lowered to the tipple in the second stage. In each stage, a corresponding number of empties is drawn up the incline. To save tracking, passing tracks are constructed at the middle point on each respective portion of the incline.

This description, together with the accompanying figure, will, I believe, make the operation of the system clear. It is understood, of course, that suitable brakes must be provided on each headsheave in order to control the movement of the trips on the incline. The plane should also be equipped with the usual safety devices and a good signal system provided to insure successful operation.

Stephen Davies.
Midlandvale, Alta., Canada.

ANOTHER LETTER

NOT having been able to offer a suggestion that occurred to me at the time the gravity plane for serving two mines at different elevations was discussed in *Coal Age*, I may be permitted to do so now, as it seems to me to be worthy of consideration.

My idea is to use a double drum, instead of a single headsheave, at the landing of the upper mine. This drum should be in two parts, having different diameters but mounted on the same shaft and firmly connected together. The diameter of each half of the drum must correspond to the length of haul, which is 1,100 ft. to the upper mine and 1,000 ft. to the lower mine. In other words, the ratio of the diameter of the two halves of the drums should be, in this case, 11:10.

Separate Rope for Each Mine

For example, if the diameter of the larger half of the drum, which serves the upper mine is 5½ ft., that of the smaller half serving the lower mine should be 5 ft. The idea is to have a separate rope for each mine, these ropes winding on the same drum.

Each mine will use one track of the incline altogether, the same track serving for the descending loads and the ascending empties. The loaded trip, descending from the upper mine, will pull the empty trip up to the landing at the lower mine; and, *vice versa*, the loaded trip from the lower mine will pull the empty trip up to the landing at the upper mine.

Of course, each respective half of the drum, having a different diameter, presents a different leverage and, to preserve the balance in the operation of the claim, either the capacity of the cars or the number of cars lowered in a trip from the upper mine, as compared with the same items for the lower mine, must be in the inverse ratio of the diameters of the drums, or as 10:11, assuming the weights of the cars for each mine are equal.

The system, however, assumes the same ratio of output for the two mines and their continuous operation simultaneously.

H. H. Cameron.
Thorburn, Pictoo County, N. S.

THIRD LETTER

REFERRING to the question of adapting a gravity incline to the service of two mines, one a hundred feet below the other, my plan would be to convert this incline into an engine plane, by placing an engine at the top and using a single rope to lower the loaded and hoist the empty cars.

This plan would do away with any trouble caused by having two ropes, or branches of the same rope, as in the gravity system. There would be but a single track on the entire incline.

On each landing and on the tipple at the foot of the plane, there will be the usual loaded and empty tracks connected by an automatic spring switch that would be always set for the empty track and require no attention.

At the lower landing the switch connecting with the incline must turn up the plane, after the manner of a backswitch. The empties for this mine, being hoisted to a point where they can be dropped in onto the landing. The rope is then changed and the loads drawn out and lowered on the plane.

Throw Switch on Incline

This backswitch at the lower landing is the only switch on the incline and must be thrown when cars are to be run in or out at this landing. It cannot be automatic like the switches on the two landings and the tipple.

If desired the engine can be located at the foot of the plane, or at any convenient point on the incline, and the rope carried up to and over a bullwheel at the head of the plane. In that case, however, the switches connecting both landings with the plane would need to be backswitches; and the rope leading from the engine up to the bullwheel should be carried on the offside of the plane, so as not to interfere with the switches.

In the operation of the plane, assuming the mine cars hold 30 cwt. of coal and ten-car trips are run, it will be possible to make a round trip in 10 minutes, thus handling 60 cars or 90 tons of coal per hour, making the output of the two mines 720 tons.

Forty Fort, Pa. Foreman.

Certification of All Mine Officials Needed

The law an injustice to certified mine foremen inflicted by the provision permitting employment of uncertified men. Its effect on young men, is to take away their ambition to study.

LIKE many others, I have followed with interest the discussion regarding the change that was made in the Pennsylvania mining law, which permits the employment of uncertified men as foremen, assistant foremen and firebosses. My opinion is that this provision of the law inflicts a great injustice on certified men seeking these positions.

It is no wonder, of course, that the large majority of coal companies manifest little desire to employ men who hold no certificates, recognizing that the health and safety of their employees are at stake, and they assume a great responsibility when taking on a man who has not prepared himself by study and training to assume the duties involved.

How Revised Law Affects the Selection of Men

Notwithstanding all this, the change in the mining law has its bearing on the employment of men in an official capacity in the mine. In the selection of men to act as assistants or as firebosses, a mine foreman is inclined to consider the expense of hiring a certified man and will often decide to run the risk of appointing a miner whom he may think is capable of filling the place, regardless of what knowledge the man has of the principles of mining.

Not long since I saw, with much regret, a first-grade mine foreman removed in order that the superintendent might give his place to a relative. There was absolutely no reason, other than favoritism, for making this change. The foreman he removed was both practical and had a good education. In that case, as in many others, the relative must be given work, though there may be serious doubt as to whether he can handle the job.

In this particular case, the man proved a failure and, after a few months, was asked to resign and given another job. Instances of replacing good men with incompetent relatives or friends are numerous but, almost without exception, the trial is of short duration as the increase in the cost-sheet quickly proves the incompetency of the man.

Certify Mine Superintendents

In my opinion, our mining laws should require not only the certification of mine foremen, assistant foremen and firebosses, but mine superintendents should also be compelled to pass an examination. Indeed, all men holding official positions and in charge of underground work involving the safety of men should be subject to the rule.

Too often it happens that, while a company requires the services of certified underofficials, the mine superintendent is an office clerk or store manager and a mere figurehead in reference to operations in the mine. When that is the case the daily tonnage and cost-sheet are matters of the first consideration with the company, and needed supplies are lacking to make the mine sanitary and safe.

In additon to what has been said, one cannot fail to observe the effect that this change in the mining law is having on young men who are losnig their desire for study. A like effect is observed in certified foremen who should be studying to fit themselves for the position of superintendent of mines. The result has been a general lowering of the standard of competency in all official mine positions. Men in seeking these positions now trust more to friendship and favor than to their ability and fitness for the places they desire to fill. SAMUEL A. JONES.

Colver, Pa.

Inquiries Of General Interest

Remedying Troubles in Concrete Foundations

Boltholes Forming Encasements for Anchor Bolts, in Concrete Foundations, May Cause Cracks from Freezing. Trouble Remedied by Grouting. How Oil Stains May Be Removed or Effaced

WE have experienced trouble, from time to time, by the cracking of small foundations supporting a trestle, or forming the base of a small machine. The cause for this is not apparent, but perhaps can be explained and its remedy given. The concrete was well mixed and given ample opportunity to set before being subjected to its load.

The cracking of these foundations was mostly observed under trestle bents supporting the tipple where it has proved a considerable annoyance, owing to the need of replacing them from time to time to insure the safety of the structure.

Another difficulty is frequently manifested in the unsightly appearance of the concrete foundations of engines and other machinery, caused by the oil used for lubrication. In the hope of effacing the stain on the surface of the concrete we have painted these foundations, but when the paint dried the stain would appear as badly as ever. If *Coal Age* or its readers can suggest the proper remedies for these troubles, the information will be greatly appreciated. FOREMAN.

Wilkes-Barre, Pa.

Replying to the first inquiry, we would suggest that the cracking of concrete machine foundations, or those used for the support of a trestle, may often be due to the freezing of water accumulated in the encasement of the anchor bolts used to secure the machine or superstructure to the foundation on which it rests.

The bolthole or encasement for the bolt is generally made a little larger than the bolt, in order to admit of some adjustment of the baseplate of the machine or superstructure. When the bolt is in place it should be thoroughly grouted with cement or melted pitch, to prevent water finding its way into the hole and freezing. When it is possible for this to occur to such extent as to crack the foundation the work has been improperly done.

All anchor-bolts in such foundations should be fixed in position by the use of an accurate templet corresponding to the baseplate that is to set on the foundation. Before the baseplate is added, each anchor-bolt is firmly fixed in position with melted sulphur, cement or other material. A thin layer of cement is then applied and the baseplate imbedded in it, which affords a solid bearing that distributes the weight evenly over the foundation.

When this work has been properly executed any cracks observed in a concrete foundation are generally the result of uneven settlement in the subsoil, insufficient size of strength of the foundation, or improper design of the superstructure in making no allowance for cross-strains due to expansion of the members.

To avoid cracking, all concrete foundations must stand on a hardpan or good bed of dry sand below the frost line and well drained. The concrete must be allowed to stand a month before applying the load and care must be taken to avoid possible cross-strains due to expansion in the superstructure.

Removing Stains from Concrete

Regarding the stain mentioned as appearing on engine foundations and ascribed to the oil or grease used for lubrication, it is probable that the coloration arises either through the disintegration of the oil and deposit of a fine sediment that impregnates the surface of the concrete, or to chemical action taking place between an acid lubricant and one or more of the ingredients of the concrete, chiefly iron oxide.

To efface this stain the surface should be thoroughly cleansed and scraped. The new surface thus exposed must

then be washed with gasoline, a scrub-brush being used for the purpose. The gasoline is intended to dissolve and remove the oily impregnation. It may happen that the oil has penetrated the concrete to a considerable extent, in which case it will be necessary to employ hammer and chisel to cut out the discolored surface, after which fresh concrete must be applied to form a new surface. This, however, should only be done after repeated trials have been made to wash out the stain with gasoline.

Before a concrete surface is painted it should be thoroughly dried out, to enable the paint to take a firm hold on the surface through its absorption into the pores of the concrete. Otherwise the paint will peal off when dry.

Examination Questions Answered

Examination. Mine Foremen and Firebosses, Lexington. Ky.. May 30. 1921

(Selected Questions)

QUESTION—*(a) What is the principle of the underground ventilating furnace, in the ventilation of a coal mine? (b) Which is the most economical, furnace or fan, in a deep shaft?*

ANSWER—(a) The principle of a mine ventilating furnace is to heat the air in the upcast shaft, near the bottom of which the furnace is located. This rarefies the air in that shaft and makes it lighter than the outside air entering the downcast shaft. The greater weight of the downcast column overbalances that of the upcast column and causes the ventilating pressure that produces the circulation of air through the mine airways.

(b) In a very deep shaft, in a mine generating no gas, a mine furnace may prove more ecenomical though less reliable than a ventilating fan. The reason is that, in furnace ventilation, the ventilating pressure increases with the depth of the shaft; and a comparatively slight difference in the temperatures of the downcast and upcast columns is sufficient to produce a good circulation throughout the mine.

QUESTION—*Describe what system of ventilation and general management you would adopt in a gaseous mine, in order to keep the mine in safe condition, both as to explosion and other causes.*

ANSWER—An exhaust system of ventilation should be provided by means of a centrifugal fan properly designed and proportioned to its work. In a very gassy mine, duplicate fans should be provided to guard against possible accident and stoppage of the circulation of the mine. The mine should be divided into separate ventilating districts, each district being ventilated by a separate air split. The quantity of air passing in each split should be proportioned to its need, and the velocity of the air at the working face should not exceed 6 or 8 ft. per second.

In the management of the mine, strict rules and regulations should be enforced to prevent any accumulations of gas or dust in the working places and on the roads and travelingways. No mixed lights should be allowed. The mine may be preferably equipped with electric cap lamps. Safety inspectors, shotfirers and firebosses should carry, besides, an approved type of safety lamp, for testing for gas. The safety inspectors should visit every working place in the mine, at frequent intervals, while the men are at work.

QUESTION—*(a) For what purpose are regulators used? (b) How is a regulator constructed and where should it be located?*

ANSWER—(a) Regulators are used for the purpose of dividing the air, in any desired proportion, between the several splits in the mine, according to the conditions that exist in each split.

(b) There are two types of regulators in use known as the box regulator and the door regulator. These are shown in the accompany figure. The box regulator, shown on the left, is constructed by building a partition or brattice across the airway and arranging a slide opening with an adjustable shutter, by which the amount of air passing is regulated or controlled. This form of regulator is generally placed near the mouth of the back entry where it will not interfere with the hauling of the coal.

The door regulator, shown on the right of the figure, consists of a large door swung in such a manner, at the mouth of an entry, as to divide the air entering any split, in the desired proportion. The door is provided with a set-lock or stop that determines its position at the mouth of the entry.

QUESTION—*What is the weight of 100 cu.ft. of air when the barometer stands at 29 in. and the thermometer marks 10 deg. C?*

ANSWER—A temperature of 10 deg. C. corresponds to $10 \times 9/5 + 32 = 50$ deg. F. Then, assuming a barometer, $B = 29$ in., and an absolute temperature, $T = 460 + 50 = 510$ deg., the weight of 100 cu.ft. of pure dry air is calculated thus:

$$W = 100 \left(\frac{1.3273 \times 29}{510} \right) = 7.547 \text{ lb.}$$

QUESTION—*The pressure producing ventilation is 8.7 lb. per sq.ft., what is the water gage?*

ANSWER—Each inch of water gage corresponds to a pressure of 5.2 lb. per sq.ft. Therefore, the water gage corresponding to a pressure of 8.7 lb. per sq.ft. is $8.7 \div 5.2 = 1.67$ in.

QUESTION—*An air current of 10,000 cu.ft. per min., is passing along an airway of 20 ft area and having a total rubbing surface of 24,000 sq ft; what would be the water gage in this case?*

ANSWER—An air volume of 10,000 cu.ft. per min., passing through an area of 20 sq.ft. gives a velocity of $10{,}000 \div 20 = 500$ ft. per min. The water gage corresponding to this velocity in the given airway is

$$\frac{0.00000002 \times 24{,}000 \times 500^2}{5.2 \times 20} = 1.15+ \text{ in.}$$

QUESTION—*We have 250,000 cu.ft. of air per minute passing with a water gage of 3 in; what is the horsepower represented?*

ANSWER—A water gage of 3 in. corresponds to a pressure of $3 \times 5.2 = 15.6$ lb. per sq.ft. The horsepower producing this circulation is found by multiplying the air volume (cu.ft. per min.) by the unit pressure (lb. per sq.ft.) and dividing by 33,000; thus

$$H = \frac{250{,}000 \times 15.6}{33{,}000} = 118+ \text{ hp.}$$

QUESTION—*Two shafts, are each 500 yd deep and 16 ft in diameter; what is the extent of rubbing surfaces exposed to the air in each shaft?*

ANSWER—The perimeter of each shaft is $3.1416 \times 16 = 50.2656$ ft. The rubbing surface in each shaft is, therefore, $3 \times 500 \times 50.2656 = 75{,}398.4$ sq.ft.

QUESTION—*With a one-inch water gage, we have 100,000 cu.ft. of air produced; what will be the quantity if we have a two-inch water gage?*

ANSWER—For the same airway, the quantity of air in circulation varies as the square root of the pressure or water gage. In this case, the gage being doubled, the volume of air is increased as the square root of 2, or 1.414 times, which gives $100{,}000 \times 1.414 = 141{,}400$ cu.ft. per min.

QUESTION—*What are the principal causes of mine explosions?*

ANSWER—A mine explosion is caused by the ignition of gas or dust accumulated in the mine or fouling the air current to an extent that the air is inflammable or explosive. Anything that may cause the ignition of gas or dust in a mine, as for example, the use of open lights where gas is generated, or the careless use of a safety lamp; a defective lamp in presence of gas, or the flame of a blownout shot in the presence of dust or gas, or the sparking of electric wires will give rise to an explosion, in mines generating gas and dust.

Million and a Quarter Persons Produce Coal in Great Britain

INCLUDING the persons who work on spur tracks to the mines and handle railroad cars at the tipple (or "heapstead") and those who are employed at the washeries the number of persons who were employed at the mines of Great Britain in 1920, inside and outside, was 1,248,224, just slightly under a million and a quarter persons. This includes 956 persons who work in the Irish mines. The Yorkshire and North Midland district is the biggest single region. It has 286,858 employees at work. South Wales comes next with 271,516 persons. The number employed in the mines of the United States is about 775,000 according to the estimate of the U. S. Bureau of Mines for 1920.

NUMBER OF MINE WORKERS IN GREAT BRITAIN

		Under Ground	Above Ground	Total Under and Above Ground	Total in 1919	Number of Mines at Work, 1920	Number in 1919
1	Scotland	121,650	32,843	154,493	147,039	518	512
2	Northern	200,316	57,927	258,243	246,201	469	439
3.	York and North Midland	225,149	61,709	286,858	275,058	475	483
4	Lancashire and North Wales	108,001	27,956	135,957	129,357	296	299
	Ireland	748	208	956	886	13	16
5.	South Wales	226,214	45,302	271,516	257,613	614	576
6.	Midland and South'n	108,281	31,920	140,201	135,159	466	518
	Totals	990,359	257,865	1,248,224	1,191,313	2,851	2,843

Below ground 53,893 boys below the age of 16 were employed; and above ground, 4,677 boys under 14, 18,436 boys from 14 to 16, 15 females under 14, 443 females from 14 to 16 and 7,860 females above 16.

The relative unimportance of other mining operations is shown by the following facts: In mines under the Metalliferous Mines Act there were 21,323 persons employed in 1920—12,291 below and 9,032 above ground. There were 498 mines at work, as against 495 in 1919, when 21,661 persons were employed. Under the Quarries Act 67,750 persons were employed, as compared with 57,076 in 1919. The number of quarries at work was 5,479 as against 5,135 in 1919.

Brophy and Operators Exchange Hot Letters

PRESIDENT BROPHY, of District No. 2, of the United Mine Workers of America, replied recently to the letter of the Central Coal Producers' Association declaring that its "statements are so worded as to convey the impression that slack work is a local condition for which the wage scale is to blame." He declares that "Government reports on the contrary make it very plain that slack work is, at present, a national condition, affecting both union and non-union fields." He then quotes the U. S. Geological Survey reports for the week ending July 16, when "central Pennsylvania was producing at the rate of 35 per cent, Westmoreland was producing at the rate of 43 per cent and Somerset at the rate of 31 per cent", and he contends that it does not appear from these figures that the trade in central Pennsylvania has been any worse than in the two non-union areas—Westmoreland County and Somerset County.

He overlooks the fact that it is a phenomenon for Westmoreland to be producing so much as 43 per cent with the ovens shut down which have been, for years, the background of the greater part of its industry. In 1917, 45 per cent of the Westmoreland coal was made into coke and now with its coke business flat it is remarkable that Westmoreland should run 43 per cent strong. It is getting new business from somewhere. The central Pennsylvania operators contend it is taking it away from that region.

Brophy has nothing to say as to the records of the Winding Gulf region of 50.4 per cent; the Tug River, of 60.5 per cent, the Logan of 55.3 per cent; the Hazard, of 55.6 per cent; the Harlan, of 55.2 per cent and the Alabama, of 63.2 per cent. The non-union regions are distinctly busier than the union districts and are on a better economic basis.

In their reply the operators say that the non-union mines are busier now than when "everybody had business and was loading to capacity." They add, "The lower volatile coals of central Pennsylvania are now practically out of the market except in a few cases where they are being used for railroad fuel, while the higher grades of low-volatile coal are now feeling the full effect of the competitive advantage enjoyed by the Quemahoning coal of Somerset County, where wages were reduced on Aug. 1."

Charleston Section, A. I. M. E., Issues Invitation for Meeting, Sept. 6 and 7

A SECTION of the American Institute of Mining and Metallurgical Engineers, embracing all members in West Virginia and the Big Sandy Branch of the Chesapeake & Ohio in Kentucky but not the Fairmont-Clarksburg Field of northwestern West Virginia, will hold a meeting at Charleston Sept. 6 and 7, at which members and non-members of the institute are alike invited to be present. At least one representative of each coal company should participate in the session.

On Sept. 6 technical discussions will be held and on the following day visits will be made to the government plant and the glass works. It is hoped that Herbert Hoover and Will Hays will be present.

REPORTS REACHING WASHINGTON are to the effect that a number of the larger railroads have adopted the policy of expending the amount saved by the 12 per cent wage reduction to employ more shop men and concentrate them on the repair of equipment. Preference is being given to open-top equipment in an effort to have as much of that type of rolling stock available as is possible, since it is believed that the coal movement this fall will increase to the point that there will be loading available for all open-top cars.

Bituminous Coal Loaded Into Vessels at Lake Erie Ports During Season to End of July*

(In Net Tons)

Ports	Railroads	1921 Cargo	1921 Fuel	1921 Total	1920 Cargo	1920 Fuel	1920 Total	1919 Cargo	1919 Fuel	1919 Total
	Hocking Valley	2,349,553	61,521	2,411,074	982,138	17,619	999,757	2,405,550	71,532	2,477,082
Toledo	Toledo & Ohio Central	646,417	18,206	664,623	475,130	25,843	500,973	730,336	21,761	752,097
	Baltimore & Ohio	1,365,697	38,589	1,404,286	298,523	11,733	310,256	1,347,207	30,452	1,377,659
Sandusky	Pennsylvania	800,265	22,079	822,344	400,166	4,802	404,968	731,157	20,742	751,899
Huron	Wheeling & Lake Erie	1,020,112	26,182	1,046,294	806,672	50,894	857,566	942,322	30,797	973,119
Lorain	Baltimore & Ohio	1,594,796	58,398	1,653,194	1,125,146	99,181	1,224,327	1,711,704	88,591	1,800,295
Cleveland	Pennsylvania	1,312,504	44,878	1,357,382	170,644	57,028	227,672	1,276,761	134,220	1,410,981
	Erie	276,161	8,448	284,609	19,903	1,955	21,858	97,188	3,114	100,302
Fairport	Baltimore & Ohio							16,692	12,954	29,646
	New York Central	817,040	33,595	850,635	392,526	108,069	500,595	1,038,634	78,680	1,117,314
Ashtabula	Pennsylvania	1,529,437	48,159	1,577,596	405,559	40,375	445,934	1,044,607	46,356	1,090,963
Conneaut	Bessemer & Lake Erie	592,120	7,443	599,563	1,104,633	17,936	1,122,569	712,094	3,492	715,586
Erie	Pennsylvania—West	600,592	20,136	620,728	40,219	2,579	42,798	429,929	20,272	450,201
	Pennsylvania—East	110,968	15,523	126,491	32,479	37,157	69,636	133,104	7,275	140,379
Totals		13,015,662	403,157	13,418,819	6,253,738	475,171	6,728,909	12,617,285	570,738	13,188,023

* Compiled by Ore & Coal Exchange, Cleveland, Ohio; H. M. Griggs, Manager.

American Coals Helped British Gas Plants to Operate Despite Shutdown of Collieries During Strike

AT THE outset of the recent British strike many industries using gas coals were forced to purchase their supply in foreign markets, much of it at inflated prices. Interesting particulars showing how the gas industry met and survived the stoppage through the use of foreign gas coals are shown in this article.

Many consumers reported satisfactory results from the use of American coal, although others were quick to condemn it for poor quality. This gives rise to the thought that in some instances inferior coals were "put over," as was the case last year during the period of strong demand. Nearly every purchaser bewailed the high cost of American fuel, indicating that it is not easily salable in Great Britain except in an emergency, for quality consumption, or where some special concession is made.

The Gas Light & Coke Co. got through the trouble partly by using oil gas and partly by purchasing foreign coal. From America it obtained 72,000 tons, from France 109,000 tons, and from Belgium 4,000 tons. The supply from France included what is known as "Reparation" coal. The total loss sustained by the company, including that due to the inferiority of foreign coal, was about £480,000.

The South Metropolitan Gas Co., with the prolongation of the stoppage, was forced to purchase coal from abroad. Considerable quantities were obtained from France, the United States and Canada. The American coal proved excellent in quality, but the French coal varied very much.

The Tottenham District Light, Heat & Power Co. set about augmenting coal stocks by ordering samples from collieries all over the country. Supplies were obtained from about sixty different collieries, in quantities of from 200 to 300 tons from each, and in nearly all cases the coal was of the best quality that the collieries could supply. Although no additional supplies had yet been used, 4,000 tons of American coal were ordered at the end of June.

Finds American Coal Better Than Continental

The Cambridge Gas Co. brought Belgian coal by barge from King's Lynn. This coal, fairly good at first, later became poorer in quality, and the company ceased buying it when other supplies were assured. The company had Belgian, German Reparation, French and American coal, and it varied considerably in quality. A noticeable feature of the Continental coals was the low sulphur content. American coal was a decided improvement on Continental coal. It tested, volatile matter 32 per cent and ash 7 per cent, and gave 9,000 cu.ft. of gas. The coke was of fair quality, giving an immediate improvement in the furnaces.

The South Suburban Gas Co. purchased some French coal which was indifferent in quality, but the coal procured from Germany was very good and came out well—except as to price, which was higher than it should have been.

Arrangements were made by the Maidstone Gas Co. to bring French and Reparation coals from Dunkirk by sailing barges. Saar Valley coal was used later, but this was found to be very dirty.

During June the gas supplied by the Hastings & St. Leonards Gas Co. was practically entirely maintained with foreign coal in conjunction with oil. The worst coal was the most expensive, and this was the Reparation coal, which by itself probably would have resulted in a failure of supply, but other coal arriving was much better, especially the American.

Early in June the stocks of coal at the Birmingham Corporation Gas Department had diminished to such an extent that it became necessary to obtain coal from abroad. Five cargoes of American gas coal, amounting in all to approximately 20,700 tons, were then purchased, the cost being exceedingly high—about two and a half times that charged for good gas-making coal before the strike. This American coal, although not up to the standard of the coals usually carbonized in Birmingham, proved to be fairly satisfactory. The yield was equivalent to the poorer quality of English gas-making coals, but the coke was particularly dense and gave considerable trouble in the carbonizing plants. The chief difficulty experienced probably was due to the fusible nature of the ash (about 8 per cent), which caused severe clinker troubles in the water-gas generators.

The first cargo arrived for the Glasgow Corporation Gas Department from Canada on May 24, and further cargoes of Canadian and American coal, amounting in all to about 60,000 tons, were received (average price 63s. 9d. per ton at docks). Very satisfactory results were obtained. It was rich in gas and the coke produced was quite as good as can be obtained from the best Scotch coals.

Belgian and American Coal Give Good Results

The Dundee Corporation Gas Department obtained 7,391 tons of imported coal at an average rate of £3 17s. 6d., besides 2,185 tons of coal from home collieries at an average rate of £3 11s. 6d. The average price for coal delivered from April 1 to June 30 was £3 16s. The average price for coal delivered in March was £2 2s. 8d. The results obtained from both the Belgian and American coal were very good. The local coal used gave endless trouble, both from the volume of gas produced and the heating value of the coke.

The Liverpool Gas Co. reports that the quality of the coal from the different sources varied greatly. Some of the American coal was quite satisfactory, while other coal said to be from the same source was anything but good. The German coal from the Saar Valley gave good results, but this was not the experience with Belgian coal.

Imported coal was not purchased by the Exeter Gas Co. to any extent until the latter part of June, and then this was blended with the stock coal, with fair results. Some of the imported coal was tried alone, and the results were anything but favorable.

Could Make Gas from Imported Coal Only at Loss

The Portsea Island Gas Light Co. (Portsmouth) was able to obtain, in spite of considerable competition, about 10,500 tons of French, German and American coal. This imported coal was expensive and on the eve of the strike settlement had attained a cast which would result in gas being made only at a substantial loss. Some of the foreign coal gave very poor results, only from 6,000 to 8,000 cu.ft. per ton, as compared with more than 11,000 cu.ft. under normal conditions, and no coke was obtained from it. The total quantity imported was as follows: 6,000 tons of French coal, at 63s. 6d., alongside the company's wharf; 2,000 tons of American coal at 80s., alongside the company's wharf; 2,500 tons of German Saar Valley coal, at 90s., plus H.M. dockyard charge for unloading. The French and American coals gave the following analysis: Average thermal value, 4,866,000 to 5,200,000 B.t.u. per ton; volatile matter, 23 to 24 per cent on the dry basis. The coal was found to be very unsatisfactory in vertical retorts, and the maximum throughout was reduced by 20 per cent as compared with the usual coals. The Saar Valley coal gave excellent results in both vertical retorts and horizontals, as also did the coke produced from it in the company's water-gas plant.

The Colchester Gas Co. reported the following results obtained from the use of foreign coal: The gas yield varied between 11,200 and 8,000 cu.ft. per ton with a calorific power of 450 to 420 B.t.u. The Belgian and French coke came out of the retort in huge blocks, difficult to break, and contained a high percentage of ash.

The Edinburgh Corporation Gas Department purchased a little over 14,000 tons of American coal. This proved to be of first-class quality, giving gas-making results fully equal to the best local coals, being of a coking nature and producing superior coke and heavier weight per ton.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

MORE active buying by retail dealers in some sections of the country during July indicates a slight improvement in the business situation, according to Archer Wall Douglas, chairman of the Committee on Statistics and Standards of the Chamber of Commerce of the United States, in his monthly review of business conditions in the September number of *The Nation's Business*.

"A study of their orders," he says, "reveals the vital fact that they are actually buying goods for their needs instead of having them sold altogether by the traveling salesman, and the difference is as deep as a well and as wide as a church door. For it means the gradual return to usual ways and methods, both of thought and action, and the slow effacement of fear and apprehension."

Another hopeful sign, according to Mr. Douglas, is "an increase in the working forces of some railroads, both in the number of trainmen and shop workers to take care of the added tonnage and to repair cars that were urgently needed.

"While these promising signs have appeared on the business horizon, it is not quite time to 'holler,' for we are not yet out of the woods. There are still readjustments to be made, financial wrecks to be disposed of, many problems to be solved. But we seem to be headed definitely toward better conditions, even though they are still afar off. We are apparently in the initial stages of emergence from the present business depression and entering upon a period when each particular business will be governed more by the natural laws pertaining to it and less by those abnormal forces which turned the world upside down.

"One of the serious handicaps of business is the difficulty in obtaining a living profit because the cost of doing business has not yet been adjusted to the still high prices of necessary supplies and the expense of many of the operating methods. Moreover, the prime need is to make sales so as to preserve some reasonable relation between the values of output and the cost of operation. In order to do this, care must always be taken that the prices made are not out of line and apparently too high, and any attempt to make sales beyond the immediate wants of the purchaser must only too frequently be accompanied by some inducement in price. For the consumer is much of the persuasion that 'profiteering' is still in vogue and he is scarcely open to argument on that score."

Upturn in Business in East

The turn in general business and employment has come and the situation now is one to be faced with optimism, according to the belief expressed by officials of Chambers of Commerce along the Eastern seaboard in at least 100 cities, ranging from Maine to Virginia, who replied to a questionnaire submitted to them by the Philadelphia Chamber of Commerce. These replies record the normal and present employment conditions, and in virtually every instance it was said that employment was taking a slight upward trend. The total number of men normally engaged in industries in the various centers mentioned in the compilation was 1,592,923. The unemployment figures showed that 539,937 were out of work. This total, it was explained, represented virtually the peak of unemployment, a decrease taking place since.

American Woolen at Capacity

The American Woolen Co. is reported to be running full in all lines with as large a force of employees as was ever on the company's lists. With the exception of the early months of the year the plants have been operating at capacity.

B. & A. Repair Shops Reopen

Announcement was made Aug. 20 that the Boston & Albany R.R. locomotive repair shops, at Springfield, Mass., which had been closed, or partly closed, since June 15, would reopen with a full force Monday morning, Aug. 22. Employment, it was said, would be given to between 200 and 300 men.

Typewriter Plant on Full Time

The Remington Typewriter Co. plant at Syracuse, which had been operating on a part-time basis, is expected to operate at capacity with 850 men on the payroll on Aug. 29. One hundred more portable typewriters will be produced per day than at any time since the new machine was placed on the market

Organize $10,000,000 Cotton Co.

The organization, at Austin, Texas, of the Planters and Merchants' Mills, with capital stock of $10,000,000, to build a number of mills for the manufacture of cotton goods is announced by Major S. M. Ransopher, formerly director of trade and industrial education at the University of Texas.

$7,000,000 Lumber Order Placed

An order for 150,000,000 ft. of pine lumber, costing between $6,000,000 and $7,000,000, has been accepted from the French Government by a syndicate of forty sawmills in Louisiana, Texas and south Mississippi. As soon as financial arrangements are completed the mills will begin cutting. This order will put most of the mills on full time and offer employment to many additional men.

Cotton Mills Expected to Resume

The reopening of all cotton mills at Charlotte, N. C., is expected soon, following resumption of operations at the Concord, Kannapolis and Brancord plants.

Repairing More Freight Cars

Another order for repairing 1,000 freight cars for the Lackawanna Railroad has been received by the Berwick plant of the American Car & Foundry Co.

To Build Maine Road Next Year

Announcement was made Aug. 23 that the proposed Eastern Maine Ry., giving the Canadian National Ry. direct connection with the New England States via the St. John and Quebec railway route, would be built next year. Canadian interests plan to build the part of the connecting link from the present St. John valley line near Pohick to the Maine border, whence American interests are to build to connect with the Maine Central Railway near Danforth, Me.

Coal Situation Discussed by Authorities in Industry

FURTHER evidence of a growing disposition on the part of the daily press of the country to enlist the advice of authorities in the industry when treating of coal affairs is seen in a series of articles on the coal situation recently published by the *New York Commercial*. The men whose services were obtained included H. Foster Bain, director of the U. S. Bureau of Mines; T. H. Watkins, president of the Pennsylvania Coal & Coke Corporation; George H. Cushing, managing director of the American Wholesale Coal Association; J. G. Bradley, president of the National Coal Association; Edward W. Parker, director of the Anthracite Bureau of Information, and Dr. Henry M. Payne, consulting mining engineer, New York City.

Under the caption "What's the Matter with the Coal Industry?—Lack of Stabilization Hurts Trade," H. Foster Bain writes in part as follows:

"If the real facts as to the industry were widely known it would be much less easy to get the money used in overbuilding, and if no part of the public could rely on this excess mine capacity to care for an artificial peak load, steady running would be possible. If also the buyer of coal could know at all times how much of the price to which he objects was due to the cupidity or inefficiency of his local dealer, how much reflected the railroad rate, and how much was chargeable to the 'Coal Baron,' the cartoonist's picture, it would be easier to fix responsibility, and having done so to get rid of the excess charge. Unless we are prepared boldly to attempt to limit the opportunity to enter the coal business, there is no remedy except publicity, and to be effective this must be official, for trade publicity is justly or unjustly considered by the public to be tainted with self-interest."

Watkins Would Curb Speculators and Labor

T. H. Watkins, on the subject "Curb Speculators and Labor, and Improve Sales Methods as Aid to Coal Trade," writes, in part:

"Looking into the future, one of the greatest hindrances to the continuation of the production of reasonably cheap bituminous coal of different grades is the tendency on the part of the United Mine Workers of America to interfere with the management of the mines through an effort to nationalize and control the industry. Propaganda, which includes misrepresentation as to the operators' profits, and a steady effort to convey to the miners that the operator is their chief obstacle in the way of better living conditions, results in constant friction, breaking out in national and local strikes, which prevents the operator from securing the good will of the working force necessary for all round reasonable efficiency.

"Coal is a commodity that goes up the chimney; it cannot be worn, like a coat, a second time. The public is loath to realize that it takes a large amount of capital to develop the coal mines; a large amount of labor, which must be fairly paid to mine the coal; and that it costs money to transport and deliver it. The general public will not accept the statements of an operator as to costs or conditions surrounding the production of coal; neither is it sympathetic to organized labor, which causes costly strikes, and it is for that reason that we get the clamor for government regulation of the industry.

"However, I believe the public is entitled through government agencies, to know more about costs, more about the returns to capital, and more about the rates of wages paid to the miners and their working conditions. I believe the public would be astonished to find that the miner is not only well paid but that his living and working conditions are far better, far more wholesome than in most any industry in this country where labor is largely employed, and also would be surprised at the low average return upon capital invested in the business. The securing of this information for the public, through government agencies, ought not to be harmful to either the operator or the miner, and should tend to stabilize the business, both as to production and prices, but the fear on the part of the operator, the wholesaler and the retailer is that acquiring such information by government agencies through inquisitorial methods would lead to further confusion through the facts being distorted, or to further attempts at unwise regulation. These fears prevent the operator from acquiescing in any government policy by which he is forced to furnish information not required in other industries."

Demanding fair play for the coal industry from legislators who would regulate the industry, George H. Cushing writes:

"The coal industry has no power over the railroads. It cannot build their facilities up to the point where they equal all needs at all times. The railroads themselves cannot expand their facilities without money. They can get the necessary money only by earning or borrowing it. They can do neither under present laws and conditions of business. In fact, if the railroads had the money and wanted to expand, they could not do so without a certificate of public necessity and convenience. Those who have tried to do a little pioneering in the matter of railroad building have been plainly told by the Interstate Commerce Commission that we want no 'unnecessary' railroads in this country. The railroad situation, under such conditions, is impossible of much improvement.

A Heroic Remedy for the "Coal Situation"

"The only apparent solution of the 'coal situation' is to make it a national habit to rush coal to the market on each lull in the movement of other commodities by rail. This is next to impossible because of the attitude of the buyers.

"There seems to be but one solution. That is to allow the recent fluctuation in coal prices to continue until the public has become sufficiently convinced of the essential fault in our handling of the transportation question to induce them to order a radical change. This sounds like—and is—a heroic remedy. The only alternative, however, is to whittle all business down to the size of the crippled transportation system. That spells national industrial suicide.

"Not being able to recommend the latter course, the former is the only one which, to me, seems wide open."

J. G. Bradley has the following to say on the subject "Wages Held Only Remaining Item of Inflation in Bituminous Industry":

"In the bituminous coal market the lack of demand has driven down the price below the average cost of production of most of the mines. The bituminous coal operators have met the market price of coal as the price has receded along with the price of other commodities until their profit has disappeared, and in many cases not even a new dollar is being obtained for an old one, but still the price has not gone low enough to stimulate an increased demand. During the existence of the Fuel Administration careful studies were made to ascertain the price that would be fair to the coal producers in the various bituminous districts.

Doubts Wisdom of Bituminous Commission's Award

"In the opinion of some who were familiar with the bituminous coal situation, the award of the Bituminous Coal Commission of 1920 was of more than doubtful wisdom because it approved the increase of wages in a basic industry for a fixed time without reference to the general industrial situation, and regardless of the fact that the country was on the threshold of a general deflation of commodity prices.

"There is a question as to whether this award has not in part caused the coal industry to lag behind others in the price deflation process and was not the first step in the creation of the unfortunate coal panic of the autumn of 1920, the more obvious and preponderating cause, after it had been initiated, being the failure of transportation facilities—that is, the inability of the railroads to supply enough empty coal cars to the mines to carry the coal which was there, waiting to be carried to the consumers.

"If the price of bituminous coal is not to continue at present levels mine labor and railroad labor must join with other wage earners of the country and assume part of the burden. If there are to be further reductions in the price

of bituminous coal, the mine workers must take a reduction in wages to cut the cost of production and the railroad workers must submit to a wage reduction to cut the cost of transportation. Otherwise these two privileged classes of wage earners will fail to bear their part of the cost of the re-establishment of American industry, and their day of reckoning with the great American public lies before them."

Regarding conditions in the anthracite industry Edward W. Parker writes in part as follows under the caption "Anthracie Industry Today Held to Approximate Normal Conditions":

Anthracite Industry Now Practically Normal

"So far as the anthracite industry is concerned, the coal situation today approximates somewhat what were regarded as normal conditions prior to 1917. Ever since the coal year began, April 1, the mines have been working steadily and the output of domestic sizes has been shipped to market, but since July 1 there has been a noticeable decline in the consumers' demand. The present weakened demand for household supplies is probably, however, nothing more than was to have been expected during the vacation period, which covers most of July and August.

"Considering it from a general business standpoint, it must be pointed out that the anthracite industry is one of the few basic industries which is now at the peak of wartime cost inflation. Wages and costs are now at the highest points ever known. By order of a Federal commission, appointed by President Wilson, the anthracite mine workers received a substantial increase in wages effective April 1, 1920, and the wage agreement entered into by operators and miners stands until March 31, 1922. Official announcement has been made by officers of the miners' union that no modification of this agreement, during its term, would be considered by the miners.

"In other respects, operating costs are still at war peak. Taxation has been vastly increased, and two new anthracite taxes, to become effective this year, were levied by the Pennsylvania Legislature last spring. Mine supplies, in which timber, steel and cement bulk largely, have come down somewhat so far as wholesale quotations at the point of production are concerned, but so far as delivered prices at the mines are concerned, they remain at old high levels.

"Without going into detail, it is perhaps sufficient to say that in a general way, anthracite producers find that such decreases as there have been in the quotations on supplies are just about balanced by the increased rates on freight, so that supplies when delivered maintain their old war-time levels."

Study of Fuel Values Saves 25 Per Cent

Dr. Henry M. Payne writes on "The Analysis of Coal—Factors That Enter Into Fuel Coal Selections" in part as follows:

"It has been a surprise to a great many managers and purchasing agents to learn that a study of fuel values, made at each individual plant, has resulted in a saving as great as 25 per cent in fuel consumption, with correspondingly decreased cost of freight, handling of ash and plant efficiency.

"In all these matters the average reputable coal company or wholesaler is glad to co-operate with the consumer and to render such service as will make for permanent trade relations.

"In buying an automobile or a mining machine, a pump or a generator, the purchaser usually exhausts the possibilities of the make under consideration, and because of the lump sum cost gives rigid instructions regarding the intelligent operation of the machine. In the purchase of fuel, whose cost is no less, and usually many times greater, only extended over a continuous period, a corresponding investigation and regular supervision will bring even higher returns.

"The principal classifications of our Eastern coals are now being more and more rigidly drawn by the tidewater coal exchanges operating at the various ports. If this work be supplemented by the consumer along the lines indicated, and with the proffered co-operation of the producer, the logical outcome will be closer and more intimate relations between the coal trade and the consumer and a corresponding confidence which cannot result in other than more stable market conditions."

Forecasting a larger demand for bituminous coal and narrow price fluctuations, W. R. Coyle, vice-president, Weston Dodson & Co., Inc., writes:

"Preliminary production figures indicate a total production from April 1 to July 15 of this year as being 111,989,000 tons as against a production in the same period last year of 147,268,000 tons of bituminous coal.

"The writer's conclusion is that daily production very nearly marks at all times the amount consumed in that day, and if we have produced less this year, when transportation has been free from interruption, it has been because less has been used, and the increasing demand when it comes will be due not so much to desire to store as to increase in immediate needs.

"The mine capacity to produce has never been taxed in this country for a long period. On the other hand, the capacity of the railroads to transport has very often been taxed. Today the railroads claim to have capacity to move nearly twice as much coal as is being produced and it is fairly safe to assume that as long as the buyer does not demand that they shall move more than their capacity, there will be no scramble for coal with consequent enhancement of the price.

"Barring a stampede, against which there is no insurance, the likely trend for the next six months is increasing volume within the range of prices marked by the low prices of today and the somewhat higher prices of last April. It is possible to buy good coal today cheaper than at any time in the last few years. It is not likely that good coal will go below these present low prices in the next six months. It is likely that they will go somewhat higher. Purchases for use within six months at present market cannot possibly be a mistake. It is a rare thing when it is ever bought for early delivery and used at a further deferred date."

Freight-Car Loadings Increase 24,184 in Week; Coal Movement Gains Heavily

THERE was an increase of 24,184 in the number of cars loaded with revenue freight during the week which ended Aug. 13, compared with the previous week, according to reports by the car service division of the American Railway Association.

Total loadings for the week were 808,965 cars, which was, however, 162 304 cars less than were loaded during the corresponding week in 1920 and 23,474 cars below the total for the corresponding week in 1919.

Increases in the loading of all commodities were reported. The principal gain was in the loading of coal, the total for the week being 158,260 cars, which was an increase of 10,987 cars over that for the preceding week. It was, however, 63,500 cars less than were loaded during the corresponding week last year.

Due principally to the increased demand for transportation facilities, a further decrease of 13,446 was reported in the number of freight cars temporarily out of service on Aug. 15, because of business conditions, compared with the total on Aug. 8. The number idle on Aug. 15 was 499,594, compared with 513 040 the week before.

Tabulations showed that of the total, 284,338 were serviceable freight cars, while the remaining 215,256 needed repairs. Surplus box cars in good order totaled 84,522 on Aug. 15, which was a decrease within a week of 4,071, while surplus coal cars which could be placed immediately in service, if freight conditions warranted, numbered 145,072, or 7,702 less than were reported on Aug. 8.

A reduction in the car shortage which has been reported at certain points was shown by the reports. On Aug. 15, this shortage was 2,125, or 1,239 below what it was on Aug. 8.

Will Help Mine Strikers.—On Aug. 22 the United Mine Workers' International Executive Board authorized the continuance of the strike in Mingo County, West Virginia, and promised support to the mine workers who are resisting a reduction in wage in western Washington.

Federal Control of Coal Industry Provided in Newton Bill

Measure Introduced in the House by Representative from Minnesota Is Composite of Calder and LaFollette Coal Bills

JUST prior to the adjournment of Congress for a four weeks' recess, Representative Newton, of Minnesota, introduced a bill (H. R. 8405) providing for federal control of the coal industry. The bill is a combination of the original Calder bill and the La Follette bill which took the place of the Calder bill after the Senate hearings on that measure. Earlier in the session Representative Newton introduced the La Follette bill in identically the same form that it was reported out by the Senate Committee on Manufactures. In his present bill he picks up, with certain alterations, those sections of the original Calder bill which provide for the licensing of every operator and dealer in coal, the section empowering the Federal Trade Commission to determine when an emergency exists, the brokerage tax and the assignment of various duties to the Secretary of Labor, the Bureau of Mines, the Interstate Commerce Commission and the Geological Survey.

The brokerage-tax feature of the original Calder bill carried a proviso that no such taxes are to be paid by any dealer whose gross annual sales aggregate less than $500,000. Mr. Newton has changed that proviso so that the tax shall not apply "to those transactions in coal in which the coal is physically handled by the seller." Mr. Newton then departs from the text of the Calder bill to insert a section making it unlawful for any person or corporation, delinquent for more than ten days in the shipment of contract coal, to offer spot coal for sale or to deal in options on spot coal at a higher price than the price specified in the contract on which there is a delinquency.

Mr. Newton's bill was referred to the Committee on Interstate and Foreign Commerce. Under present conditions it is certain that the committee would give no consideration to any bill of this character but it is recognized that if there were to be a serious shortage of coal this winter there would be considerable demand in the House for the reporting out of some type of coal regulation bill. It can be stated, however, that the treatment accorded comparatively mild Frelinghuysen bills is regarded as positive evidence that no such radical legislation as is proposed by Mr. Newton has any chance to proceed further than the committee's pigeonhole.

British Miner Still Wants to Work Less

SOME of the items down for discussion at the annual conference of the Miners' Federation of Great Britain are causing concern in the more moderate labor circles. The three districts, Leicester, Nottingham and Scotland, will all put forward proposals for a working week maximum of five shifts, and the Midland Federation will press for the realization of a six-hour working day for miners, which, it will be remembered, was one of the conditional recommendations of the Sankey Commission.

There are other proposals which tend to show that the miners will attempt to lower the production per man in a mistaken endeavor to provide work for unemployed miners. Thus Durham is to propose that a "ballot of all pieceworkers be taken for the purpose of ascertaining whether they are in favor of abolishing all piecework in and about the mines." Again, the Northumberland district will put forward a resolution condemning "the present system of payment by results," and striving "for a national weekly wage for all mine workers." South Wales also will endeavor to do away with piecework in a resolution to "take the first opportunity available for the abolition of the piecework system for the payment of workmen in the mining industry."

The Midland Federation's resolution probably will be carried unanimously; this resolution states that the Federation "views with regret the failure of the government to introduce legislation for the purpose of nationalizing the mining industry, and reiterates its conviction that the industry will never be placed upon a satisfactory basis in the interests of the community until it is publicly owned and worked between the representatives of the state and the technical and manual workers engaged in it, and resolves to continue to educate and organize working-class opinion until the government is compelled to bring about this fundamental change in the ownership and management of the industries."

The general trend of these resolutions makes it apparent that the economic lessons of the strike were entirely lost on the miners.

Opinion of Coal Producers Divided on Proposal to Organize Coal Exchange

AGITATION of the coal-exchange proposal has resulted in the National Coal Association's receiving numerous inquiries from its members in regard to the matter. No recent consideration has been given this problem by the National Association. It is known that coal producers are very much divided in their views on this subject.

It is from the ranks of the producers that the principal opposition against grain and cotton exchanges has sprung. Producers of those commodities tend to the belief that the bear influence on the exchange is more potent in the aggregate than is the bull influence. The result is a depression of price below the level that would have been attained had the exchange not existed. Such a contention is emphatically contradicted by many other interests and the great weight of opinion among disinterested students of marketing problems is that the exchanges are invaluable assets in the handling of any commodity.

Tabulating the probable advantages and disadvantages of the proposed exchange, George H. Cushing, managing director of the American Wholesale Coal Association, lists the advantages as follows:

1. It establishes, daily and by actual transactions, the prices commonly charged over a considerable territory.

2. By establishing prices, it gives, automatically, publicity to the prices on coal over the whole territory influenced by the exchange.

3. Prices, on an exchange, cannot be intelligent without a statement of "visible supply." Therefore, the exchange must have daily a statement of production, of shipments and of storage within the zone of influence of that exchange.

4. By open trading, it prevents the pyramiding of sales on a single lot of coal.

5. By careful grading, it assures the buyer the quality of coal he specifies.

6. By an inspection system, it prevents the rejection of coal, on an assumption of inferior quality, when the purpose is solely to break the price.

7. By policing the members of the exchange, it establishes a code of ethics in the industry and automatically eliminates many objectionable elements in the trade.

8. By laying, daily, all the facts of the coal industry—even as to future tendencies—before the public, it promises to avoid any need for legislation calling for information which is believed to lead, with a degree of sureness, to regulatory legislation.

9. By coupling pooling with open trading, it allows the coal industry to ship on open consignment to the pool and thus to avoid both demurrage and reconsigning charges without delaying the equipment of the carriers and without loading the industry with prohibitive charges. This would be accomplished without, necessarily, returning to the old practice of glutting the market with consignment coal.

The demerits and disadvantages of the exchange, as stated by Mr. Cushing, are:

1. The mere cost of administration must be at least 5c. a ton. If the inspection system is elaborate, it may cost more.

2. The tendency of pooling of coal—unless carefully provided against—is to destroy the good will of a coal com-

pany by subordinating, if not eliminating, trade names and trade-marked brands.

3. The tendency of pools—unless carefully guarded against—is to abolish differentials as to price between certain coals, thus giving an artificial advantage to some and an artificial disadvantage to others.

4. It must remain optional with traders whether they deal through or independent of the exchange. The percentage in or out of the exchange at any time will determine its success or failure. And the cost of doing business through the exchange—measured against the benefits—must determine which way a trader will trade.

5. It provides, at all times, an organization which can be reached by the officers of the government who may take it over, in emergencies, to carry out their ideas as to distribution.

6. Since the government is already regulating the grain exchange and is talking of either regulating or suppressing the exchanges in other commodities, the coal industry by forming an exchange may automatically fall under the very regulation it is trying to avoid.

Union Orders Kansas Miners Back to Work

WHEN the men of the Dean Milling Co. and the Reliance Coal Co., both of which companies operate a mine, went on strike no effort was made by the mine workers to avoid the suspension by prior negotiation such as the union agreement requires. The union officials at Indianapolis desired Alex. Howat, president of the district, to go to headquarters to discuss matters, and he arrived Aug. 16. As a result of the deliberations the strike was outlawed, and the men were told to go back to work Aug. 22.

The Industrial Court of Kansas on the same day held a conference with Charles I. Martin, Adjutant General, to determine what should be done if Alex. Howat should go to jail Sept. 8, as he has stated he will. A strike of mine workers probably would follow, and the Industrial Court is alert to prevent such a violation of the Industrial Relations Law of the State.

In a statement issued Aug. 25 Alex. Howat affirmed reports that he would refuse to give bond restraining him from calling a strike as a condition to avoid being committed to jail on Sept. 8.

Howat will further refuse, according to his statement, to order back to work the striking miners of the Dean and Reliance strip mines, as demanded by the International Executive Board of the mine workers at Indianapolis.

"My position is unchanged," he said. "District 14 may be suspended from the organization or I may be kicked out of office, but the only way I would consent to put the men back to work would be under the customs and conditions that prevailed when the men quit work. In spite of the operators and our international organization, I do not propose for them to take away the working conditions for which the miners have sacrificed and struggled for years."

THE NATIONAL COAL ASSOCIATION expects to call a meeting during the latter part of September of the secretaries of local coal associations. The date and place of meeting have not been set. J. D. A. Morrow, vice-president of the national association, states that conditions in the coal industry have reached the point where only efficient producers can survive. Under these conditions, there is the most imperative need, he says, for the greatest accuracy in all details of cost accounting. The sole object of calling the secretaries together is to discuss the cost-accounting matter and to point out that it is the local secretary who must bear a considerable portion of the blame if one of his members meet disaster through lack of knowledge as to costs.

ANOTHER WEST VIRGINIA WAGE READJUSTMENT.—The only wage adjustment reported from the New River district recently has been at the Lookout mine, under the management of D. W. Boone. This is a non-union operation, and the men have accepted a decrease per ton of 50c. in the mining of coal and $2 per day where paid by that method of reckoning.

W. J. Rainey's Miners Still on Strike

ON AUG. 18 W. J. Rainey, Inc., posted a notice of another wage reduction effective next day. The result was that the men at their Allison plant did not go to work that day, the men at Mt. Braddock came out next day, Saturday, and on Monday the men at Revere and Royal plants did not work.

The present scale with a few exceptions is the same as the wage scale adopted in the coke region generally May 17, 1917. For comparison the following wage scales are given: The scale generally adopted in the region May 17, 1917, the highest scale reached in the region which was generally adopted on Sept. 1, 1920, the last previous scale adopted by Rainey on July 1, 1921, which was also put in force by many of the other independent companies, the scale of Aug. 19, 1921, which caused the strike, and the scale now being paid by the H. C. Frick Coke Co., and which was adopted by them Aug. 1, 1921:

SOME COMPARATIVE MINING SCALES

	General Scale May 17, 1917	Highest General Scale Sept. 1, 1920	Rainey Scale July 1, 1921	Rainey's New Scale Aug. 19, 1921	H.C.Frick Coke Co. Scale Aug. 1, 1921
Pick Mining and Loading, per 100 bu.	$2 00	$3 24	$2 06	$2 00	$2 38
Room and rib coal	2 20	3 56	2 26	2 20	2 63
Heading coal	2 38	3 85	2 44	2 38	2 77
Wet heading coal	1 40	2 10	1 48	1 40	1 50
Loading machine					
Per day					
Drivers, tracklayers, etc	3 80	7 50	4 50	3 80	5 00
Other inside labor	3 00	6 55	3 75	3 00	4 15
Firebosses	4 60	8 80	6 25	6 25	6 30
Common outside labor	3 00	5 90	3 00	2 55	3 00

None of the other independent companies has as yet followed Rainey's last lead, as they probably are waiting to see the outcome of the Rainey strike and what the Frick company willl do as a result of the announcement that appeared in the press a few days ago that on Aug. 29 the Steel Corporation would make a wage reduction reverting back to the scale of wages that became effective May 1, 1917. If the Frick company takes this action on Aug. 29 or Sept. 1, it will bring the wages paid by that company down to about the same scale as that just adopted by the Rainey company. Late reports show all the eight Rainey-Connellsville region plants on strike. It is said that the Frick company will not reduce wages at this time.

Navy Defers Until Sept. 6 Opening of Bids On Six Months' Bituminous Supply

BIDS which were to have been opened by the Navy Department Aug. 23 for a six months' supply of bituminous coal for delivery beginning in October, were returned to bidders and the opening deferred until Sept. 6. This was due to the action of the department in eliminating the clause in the specifications making the bids subject to increases or decreases in wage scales. The department says there have been wage adjustments in some bituminous fields and there is a possibility of changes in other fields effective prior to October.

The Navy clause as to wages stipulated that the prices would be subject to increase or decrease in the wage scale in the fields from which obtained, and under this bids would have been based on wage schedules in force Aug. 23, when the bids were to have been opened. The department points out that where reduction of wages has already become effective operators in such fields would enjoy an undue advantage over those in other fields where no reduction in wages has been made although one may be contemplated. To place all operators on a fair and equal footing the bids were postponed and the wage clause eliminated.

The department, however, received bids on Aug. 23 for anthracite from the Philadelphia & Reading Coal & Iron Co., the Newport (R. I.) Coal Co., the Nottingham & Wrenn Co., of Norfolk; the Weston Dodson & Co., Bethlehem, Pa., and the H. W. B. Haff Co., New York, on small quantities for delivery at Washington, D. C.; Hampton Roads, Newport, Submarine Base, Lake Denmark, Norfolk, Philadelphia, Fort Mifflin, Lakehurst and White Plains.

Mine Workers' March on Mingo Stopped

A BAND of West Virginia mine workers, variously estimated between 4,000 and 6,000, many of them with arms, started from Marmet in the morning of Aug. 25 for Mingo County. Marmet is only twelve miles from Charleston and on the south shore of the Kanawha River, where the West Virginia & Southern R.R. joins the Chesapeake & Ohio Ry. "Mother Jones" was a visitor to the Marmet camp and had the men ready to do anything to end martial law and all laws in Mingo County.

Williamson is fifty-seven miles as the crow flies from Marmet and is about eighty miles by the road. As the trip was sure to take several days the marchers looted stores. Some traveled in automobiles, others in wagons and many on foot. Before the invading host many of the women and old men fled to the towns and the men of fighting age joined either the marchers or the defenders.

The invaders bought some of the rifles they carried. There is a story that two miners in automobile trucks purchased $5,000 of rifles in a Huntington hardware store. Other rifles were obtained by looting. Josiah Keely, manager of the Cabin Creek Consolidated Coal Co., and his store manager, George Baker, were held up by fifty masked men and compelled to surrender twelve high-powered rifles and a large quantity of shells. A store at Edwight, in Raleigh County, was robbed of two machine guns and all ammunition. At Maxine, Sharlow, Cedar Grove, Acme, Red Warrior, Quarrier and other places all rifles and ammunition were taken. Freight trains had been commandeered on the Cabin Creek and Coal River divisions to take the mine workers to the rendezvous.

Marching Mine Workers Invade Enemy Country

The mine workers crossed into Boone County—"enemy country"—on the first day, reaching Racine on Coal Creek and Rock Creek on Little Coal Creek without interference. One man was killed for spying on the mine workers' army, but this probably was before it started. He was a union miner at Eastbank, upstream from Marmet on the Kanawha River. His head was blown off because he gave information to officials and newspapermen. It also is stated that another man was shot for the same offense.

Two planes owned by coal operators which followed the movements of the "army" were fired on near Madison, in Boone County. The deputy sheriffs in the planes did not return the fire though the wings of the machine were pierced by bullets. During the night of Aug. 26 and the whole of Aug. 27 the deputies of Sheriff Don Chafin of Logan County fought at intervals with the invaders. He sent out for help, and it was said that McDowell County sent 500 men by automobiles and that 125 special state police, militiamen and deputies left Mingo County at daybreak for the scene. A band of 1,200 men crossed the line at Sharples, seized a special train sent to carry them home and ran it to the Coal River terminal branch near Blair.

All this time Governor Morgan was endeavoring to obtain 1,000 Federal troops from Washington, but the government declared itself unwilling to do anything without investigation. In Ohio and Kentucky, however, troops were held ready for quick dispatch. Brigadier General H. H. Bandholtz, former provost marshal general of the American Expeditionary Force and now commander of the Washington (D. C.) district, and Lieutenant Colonel Stanley H. Ford were sent to Charleston to ascertain the facts.

These officers appear to have done little scouting around. They summoned C. E. Keeney, president of district 17, and Fred Mooney, the vice-president, on Aug. 26, and told them that it was useless to say they did not care what the mine workers did; they had organized them and if martial law were declared they would have to control them or stand the consequences. No excuses that they had not authorized the unlawful acts would serve. They were responsible and would be so held. This made the officers of the union active. Accordingly Keeney left Charleston for Madison and induced most of the mine workers to return. They could not hold all the men, but they held enough to make the advance more or less of a fiasco. A train at Racine took a number of the marchers back to their homes.

On Aug. 28 there was a clash between deputy sheriffs and mine workers at Sharples, across the Logan County line from Boone. Five miners were shot and three deputies and a justice of the peace were captured. John H. Charnock, new Adjutant General of the West Virginia National Guard, and three union officials left Charleston late on Aug. 28 to induce these irreconcilables to return, like the others, to their homes.

Hoover Has Difficulty in Finding Man Qualified for Coal Commodity Chief

HERBERT HOOVER, Secretary of Commerce, is having great difficulty in finding a properly qualified man to serve as his coal commodity chief. The $5,000 salary which goes with the position fails to interest the type of man for which Mr. Hoover is looking. It is developing that comparatively few coal men in the United States have given specialized attention to the export end of the business.

Despite the fact that a chief for the coal division has not been found, there has been no delay in the general plans for carrying forward the coal work. A co-operative arrangement with the Bureau of Mines is under consideration, in which it is proposed that the bureau work out some of the technical matters which must be solved before the Department of Commerce can carry out fully the program it is arranging. Under such a co-operative arrangement the idea is to learn more definitely why certain coals will or will not store. There are a number of engineering problems which must be worked out in connection with the storage of coal. There is also the matter as to what extent it is feasible to establish grades of quality. It is recognized that systematic steps must be taken to build up a good name for American coals in foreign markets.

Labor Department Seeks Data on Cost-of-Living Figures in Fixing Wage Scales

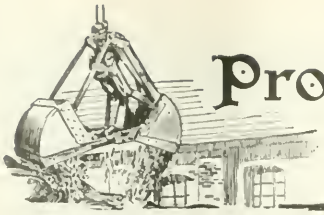
THE Department of Labor, through the Bureau of Labor Statistics, is making a study of the methods of adjusting wage scales and concluding collective wage agreements where cost-of-living figures enter into the wage adjustment. To that end, the Bureau of Labor Statistics wishes to communicate with the various companies, members of arbitration boards, labor managers or others who are using cost-of-living figures in the determination of wage awards.

If any reader of *Coal Age*, who has not already communicated with the Bureau, is using cost-of-living figures in the adjustment of wages, it will be appreciated by the bureau if he will write to the Commissioner of Labor Statistics, Washington, D. C., and inform him of that fact.

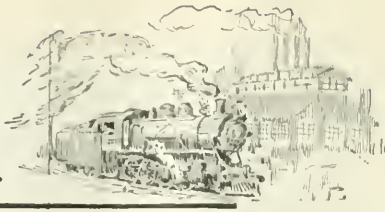
W. R. Coyle Elected Trustee in Bankruptcy Of Old Tidewater Coal Exchange

MAJOR W. R. COYLE, vice-president of Weston Dodson Co., Inc., with offices in the Woolworth Building, New York City, was elected trustee in bankruptcy by the creditors of the old Tidewater Coal Exchange on Aug. 25. The meeting of creditors was held in the office of Peter B. Olney, referee in bankruptcy, 68 William St., and was largely attended. It is understood that the representatives of the railroads favored Frank E. Wright, of Boston, for the trusteeship. If no objections are filed within ten days, the name of Major Coyle will be submitted to the court for final action.

The Senate Committee on Education and Labor probably will take testimony at Mingo, W. Va., soon in its investigation of the mine troubles that have existed there for some time. The committee recently conducted an investigation in Washington, but Chairman Kenyon intimates that it will be necessary for the committee to take evidence at Mingo in order to obtain information necessary to complete its report, which will be presented to the Senate later.



Production and the Market



Weekly Review

SOMEWHAT general but relatively small increases in production of bituminous coal in the past three weeks, over the corresponding weeks of July have only tantalized the market. In the Middle West there has been a real stimulus to the domestic demand for lump and prepared coals, but the output of sized product to meet the demand has again thrown a surplus of screenings on the market and distress sales are quite common in Chicago territory. This condition extends east into Ohio and south into Kentucky. In the Appalachians, particularly in Pennsylvania, some improvement in demand for run-of-mine steam bolstered prices slightly, but not sufficient to affect the *Coal Age* weekly index of spot prices of bituminous coal, which on Aug. 29 was 90, unchanged from the previous week.

A year ago the output of soft coal was 11,813,000 tons in the second week of August; this year it was 7,756,000 tons, or 70 per cent as much. A year ago Illinois and Indiana mines were reporting operation at 60 to 68 per cent of full time; this year it is 40 per cent of full time—that is to say, the country as a whole is producing 70 per cent of last year's tonnage of bituminous coal and the largest fields in the Middle West are doing around 66 per cent of last year's record. By the same standards, southern Ohio is doing half as well as last year, eastern Ohio 85 per cent, Pittsburgh less than one-third as well. Somerset County, the large non-union district, is working better time now than last year. The Pocahontas field is working 75 per cent of last year's rate, the high-volatile fields in southern West Virginia at about half last year's feverish speed. The important point to bear in mind, in comparing this year with 1920, is that lack of orders now dominates the market; a year ago it was lack of cars in which to load the coal.

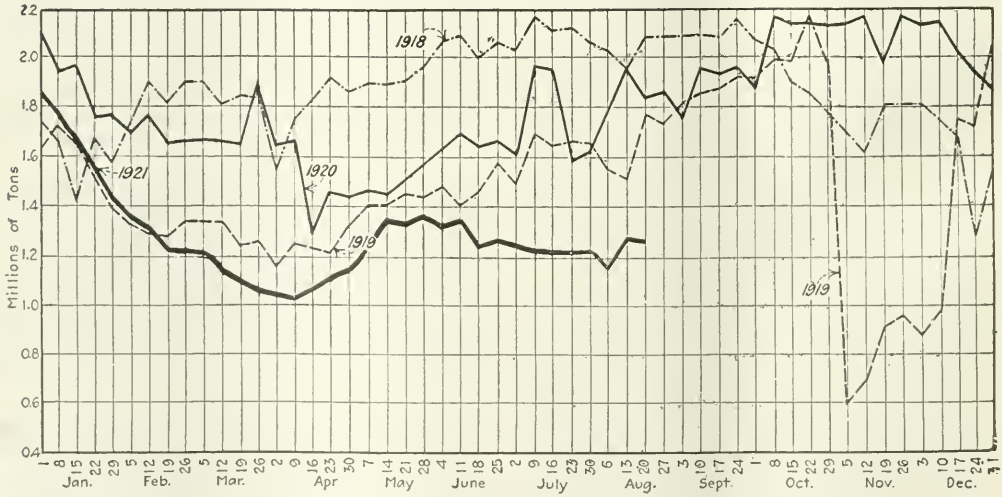
Coal Movement Increases Encouragingly

Encouraging signs are found in the better movement off upper Lake docks to interior points, more cars of coal going into New England and more railroad buying. Dumpings for up Lake are easing off but exports through Hampton Roads have picked up—not, however, as a result of any new business.

Anthracite, dropping in the week of Aug. 20 because of general observance of a religious holiday to 1,529,000 net tons, is not in as steady demand as earlier in the season and as it will be with cold weather.

The mine-cave tax bills of the State of Pennsylvania having become effective last Saturday, Aug. 27, it is reported that the Glen Alden Mining Co. closed three collieries and the Price Pancoast Coal Co., one mine, that, in the opinion of these companies cannot be operated under the law. It is too early yet to determine whether

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

the operation of this law will seriously affect anthracite production.

Labor troubles in Indiana, West Virginia and Pennsylvania have had no effect on production nor have they influenced the market. The West Virginia trouble is a continuation of the effort to unionize the Kenova-Thacker field; the Indiana disturbance is reported as due to some radicals getting out of hand. The Governor of Indiana has called a conference to settle the matter.

BITUMINOUS

A slight decline in production marked the week ended Aug. 20. According to the Geological Survey, 7,704,000 net tons were produced, as compared with 7,756,000 the last preceding week. Preliminary reports for the last week of August indicate an increasing output for that period.

Domestic demand has picked up considerably of late. Retailers report a better call from small consumers, although deliveries from the yards are still far from normal, as compared with other seasons. Dealers are replenishing their yard stocks and the call on the mines for more domestic has, of course, thrown a larger tonnage of steam sizes on the market. That industrial consumption in general is now keeping pace with this increased tonnage is apparent from the larger number of distress coal offerings in those sections using domestic bituminous.

Bargain prices, however, only cause the buyer to feel more uncertain as to the future, in the belief that quotations may even be forced down another peg. This is especially true in New England, where water-borne coal from the Pocahontas and New River region, because of the low marine freight rates, has caused slashing reductions in the all-rail central Pennsylvania fuels. Tight buying all around has resulted. The cuts of central Pennsylvania shippers are almost fruitless, however, as to compete with the Hampton Roads shippers would mean a price in the neighborhood of $1 per gross ton, f.o.b. mines.

CARS OF COAL FORWARDED OVER THE HUDSON TO EASTERN NEW YORK AND NEW ENGLAND

	1921		1920	
Week Ended	Anthracite	Bituminous	Anthracite	Bituminous
August 6	2,609	2,780	1,863	6,732
August 13	2,313	2,560	2,230	6,124
August 20	2,460	2,982	2,976	5,369

Movement of coal into that part of the Northwest served by the Head-of-the-Lakes docks is increasing rapidly, as shown in the following table. During July 13,448 cars were shipped inland, as compared with 9,557 cars in June. The year's movement, however, is much less than any in the last six years. Lake receipts are still heavier than the outgo and docks are nearly filled to capacity. It is appar-

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

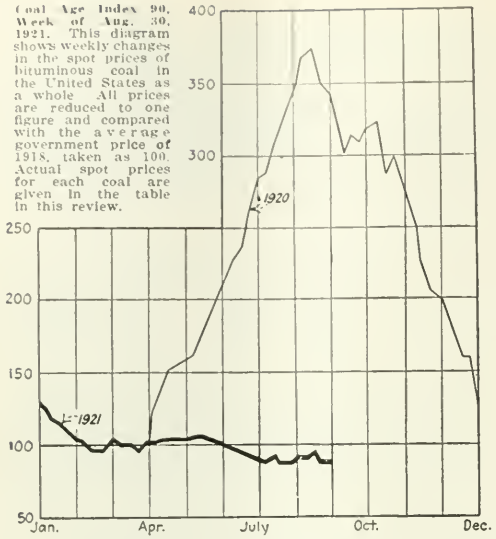
Low-Volatile, Eastern	Market Quoted	July 26, 1921	Aug. 16, 1921	Aug. 23, 1921	Aug. 30, 1921†
Pocahontas lump	Columbus	$5 40	$5 20	$5 25	**$5 10@$5 50**
Pocahontas mine run	Columbus	3 15	3 00	3 10	3 00@ 3 25
Pocahontas screenings	Columbus	2 30	2 40	2 45	*2 25@ 2 35*
Pocahontas lump	Chicago	5 15	5 25	5 00	4 75@ 5 25
Pocahontas mine run	Chicago	3 15	3 00	2 75	2 25@ 3 25
*Smokeless mine run	Boston	5 70	5 60	5 45	*5 00@ 5 25*
Clearfield mine run	Boston	1 95	1 90	1 75	**1 50@ 2 10**
Cambria mine run	Boston	2 70	2 55	2 45	2 15@ 2 75
Somerset mine run	Boston	1 75	1 70	1 60	1 50@ 1 85
Pool 1 (Navy Standard)	New York	3 15	3 15	3 20	**3 00@ 3 50**
Pool 1 (Navy Standard)	Philadelphia	2 80	2 95	2 95	2.85@ 3 00
Pool 1 (Navy Standard)	Baltimore	2 45	2 50	2 50	2 50
Pool 9 (Super. Low Vol.)	New York	2 50	2 55	2 55	*2 25@ 2 75*
Pool 9 (Super. Low Vol.)	Philadelphia	2 40	2 35	2 35	2 25@ 2 40
Pool 9 (Super. Low Vol.)	Baltimore	2 20	2 25	2 30	*2 10@ 2 35*
Pool 10 (H. Gr. Low Vol.)	New York	2 25	2 25	2 35	*2 00@ 2 25*
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2 20	2 05	2 05	1 90@ 2 15
Pool 10 (H. Gr. Low Vol.)	Baltimore	2 00	2 10	2 15	*2 00*
Pool 11 (Low Vol.)	New York	1 90	1 95	2 05	*1 75@ 2 00*
Pool 11 (Low Vol.)	Philadelphia	1 90	1 75	1 80	1 75@ 1 85
Pool 11 (Low Vol.)	Baltimore	1 75	1 75	1 85	*1 75@ 1 85*
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1 70	1 85	1 95	*1 75@ 2 00*
Pool 54-64 (Gas and St.)	Philadelphia	1 75	1 65	1 70	1 60@ 1 75
Pool 54-64 (Gas and St.)	Baltimore	1 50	1 60	1 65	*1 50@ 1 70*
Pittsburgh se'd gas	Pittsburgh	2 95	2 70	2 70	*2 55@ 2 75*
Pittsburgh mine run (St.)	Pittsburgh	2 10	2 10	2 10	**2 20@ 2 30**
Pittsburgh slack (Gas)	Pittsburgh	1 45	1 70	1 70	1 65@ 1 75
Kanawha lump	Columbus	3 15	3 45	3 45	**3 25@ 3 70**
Kanawha mine run	Columbus	2 15	2 10	2 15	2 00@ 2 25
Kanawha screenings	Columbus	1 20	1 50	1 55	*1 30@ 1 85*
Hocking lump	Columbus	3 15	3 15	3 15	**3 00@ 3 40**
Hocking mine run	Columbus	2 15	2 15	2 15	2 00@ 2 25
Hocking screenings	Columbus	1 30	1 50	1 60	*1 25@ 1 40*
Pitts. No. 8 lump	Cleveland	3 25	3 25	3 25	3 00@ 3 50
Pitts. No. 8 mine run	Cleveland	$2 20	$2 30	$2 30	$2 25@$2 35
Pitts. No. 8 screenings	Cleveland	1 35	1 80	1 85	*1 65@ 1.75*
Midwest					
Franklin, Ill. lump	Chicago	3 55	3 80	3 55	**3 25@ 4 05**
Franklin, Ill. mine run	Chicago	3 15	3 30	2 80	2 25@ 3 50
Franklin, Ill. screenings	Chicago	1 90	1 75	1 90	**1 25@ 2 65**
Central, Ill. lump	Chicago	2 50	2 90	2 50	**2 40@ 3 00**
Central, Ill. mine run	Chicago	2 25	2 15	2 40	2 00@ 2 75
Central, Ill. screenings	Chicago	1 60	1 55	1 65	**1 25@ 2 25**
Ind. 4th Vein lump	Chicago	3 65	3 60	2 95	2 35@ 3 50
Ind. 4th Vein mine run	Chicago	3 05	3 10	2 50	2 25@ 2 75
Ind. 4th Vein screenings	Chicago	2 15	2 15	1 60	**1 25@ 2 15**
Ind. 5th Vein lump	Chicago	2 90	2 90	2 75	**2 50@ 3 25**
Ind. 5th Vein mine run	Chicago	2 60	2 45	2 40	2 00@ 2 75
Ind. 5th Vein screenings	Chicago	1 90	1 65	1 75	1 35@ 2 15
Standard lump	St. Louis	2 25	2 65	2 65	*2 10@ 2 75*
Standard mine run	St. Louis	1 70	1 75	1 85	1 75@ 1 90
Standard screenings	St. Louis	1 00	1 10	1 00	*0.90@ 1 00*
West. Ky. lump	Louisville	2 90	3 00	3 25	*2 75@ 3 40*
West Ky. mine run	Louisville	2 30	2 45	2 65	*2 15@ 2 75*
West Ky. screenings	Louisville	1 55	1 70	1 65	*1 00@ 2 00*
South and Southwest					
Big Seam lump	Birmingham	3 55	3 75	3 75	3 25@ 4 20
Big Seam mine run	Birmingham	2 15	2 15	2 15	*2 00@ 2 20*
Big Seam (washed)	Birmingham	2 35	2 40	2 40	*2 25@ 2 40*
S. E. Ky. lump	Louisville	3 15	3 65	3 65	3 50@ 3 75
S. E. Ky. mine run	Louisville	2 20	2 35	2 35	*2 15@ 2 40*
S. E. Ky. screenings	Louisville	1 35	1 70	1 55	1 40@ 1 70
Kansas lump	Kansas City	5 50	5 65	.....	.....
Kansas mine run	Kansas City	4 40	4 40	.....	.....
Kansas screenings	Kansas City	3 25	3 25	.....	.....

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advance over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	Aug. 16, 1921 Independent	Aug. 16, 1921 Company	Aug. 23, 1921 Independent	Aug. 23, 1921 Company	Aug. 30, 1921† Independent	Aug. 30, 1921† Company
Broken	New York	$2 61	.....	$7 50@$7 75	.....	$7 50@$7 75	.....	$7 50@$7 75
Broken	Philadelphia	2 66	$7 50@$8 20	7 65@ 7 85	$7 50@$8 20	7 65@ 7 85	$7 50@$8 20	7 65@ 7 85
*Broken	Chicago	5 62	12 40	12 55	12 75	12 65	12 75	12 65
Egg	New York	2 61	7 30@ 7 75	7 50@ 7 75	7 40@ 7 75	7 50@ 7 75	**7 60@ 7 75**	7 50@ 7 75
Egg	Philadelphia	2 66	7 60@ 8 20	7 65@ 7 85	7 60@ 8 20	7 65@ 7 85	7 60@ 8 20	7 65@ 7 85
*Egg	Chicago	5 62	12 40	12 55	12 80	12 65	12 80	12 65
Stove	New York	2 61	7 80@ 8 25	7 80@ 8 10	7 80@ 8 35	7 80@ 8 10	**7 80@ 8 50**	7 80@ 8 10
Stove	Philadelphia	2 66	8 00@ 8 35	7 95@ 8 25	8 00@ 8 35	7 95@ 8 25	8 00@ 8 35	7 95@ 8 25
*Stove	Chicago	5 62	12 70	12 80	13 40	12 90	13 40	12 90
Chestnut	New York	2 61	7 25@ 7 75	7 80@ 8 10	7 35@ 7 80	7 80@ 8 10	**7 60@ 8 00**	7 80@ 8 10
Chestnut	Philadelphia	2 66	7 75@ 8 00	7 95@ 8 25	**7 75@ 8 00**	7 95@ 8 25	7 75@ 8 00	7 95@ 8 25
*Chestnut	Chicago	5 62	12 75	12 90	13 10	12 90	13 10	12 90
Pea	New York	2 47	4 50@ 5 25	6 05@ 6 45	4 50@ 5 75	6 05@ 6 45	4 50@ 5 75	6 05@ 6 45
Pea	Philadelphia	2 38	4 50@ 5 50	6 10@ 6 20	4 50@ 5 50	6 10@ 6 40	4 50@ 5 50	6 10@ 6 40
*Pea	Chicago	5 62	11 10	11 25	11 10	11 00	11 10	11 00
Buckwheat No. 1	New York	2 47	2 50@ 3 25	3 50	2 75@ 3 50	3 50	**3 00@ 3 50**	3 50
Buckwheat No. 1	Philadelphia	2 38	2 50@ 3 00	3 50	2 50@ 3 00	3 50	2 50@ 3 00	3 50
Rice	New York	2 47	1 50@ 2 25	2 50	1 75@ 2 50	2 50	**2 00@ 2 50**	2 50
Rice	Philadelphia	2 38	1 75@ 2 00	2 50	1 75@ 2 00	2 50	1 75@ 2 00	2 50
Barley	New York	2 47	0 90@ 1 25	1 50	1 00@ 1 50	1 50	**1 25@ 1 50**	1 50
Barley	Philadelphia	2 38	0 75@ 1 25	1 50	0 75@ 1 25	1 50	**1 00@ 1 25**	1 50
Birdseye	New York	2 47	.....	2 50	.....	2 50	.....	2 50

*Prices and freight rates, net tons; quotations f.o.b cars, Chicago.
†Advances over previous week shown in **heavy type**, declines in *italics*.



Coal Age Index 90, Week of Aug. 30, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.

ent that there will not be a bituminous shortage in that section this winter, although it is desirable that the interior market move as much coal as possible, in order that dock replacements may be made during the remainder of the period of navigation.

CARLOADS OF COAL MOVED INLAND FROM DULUTH-SUPERIOR HARBOR (*a*)

(Figures include both anthracite and bituminous coal)

Month	1916	1917	1918	1919	1920	1921
January	31,775	30,707	30,123	20,430	35,008	8,403
February	34,416	26,112	22,227	12,435	32,202	8,164
March	24,732	27,043	13,457	13,441	20,177	7,450
April	14,410	14,116	10,990	13,009	10,400	5,831
May	16,988	16,389	12,913	12,067	8,844	7,883
June	15,545	19,377	20,895	14,994	10,401	9,557
July	14,419	16,927	22,768	17,293	15,052	13,448
Total to July 31	152,285	150,671	133,373	103,669	132,084	60,736

(*a*) Furnished to the Geological Survey by the Western Weighing and Inspection Bureau.

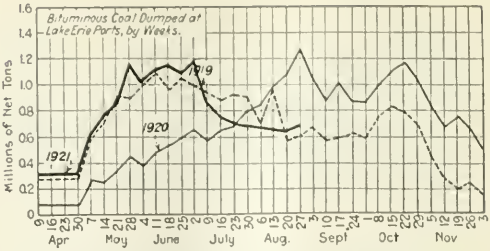
Lake dumpings increased slightly during the week ended Aug. 27, when 673,176 net tons of cargo and 23,693 tons of vessel fuel were dumped, a total of 696,869 tons as compared with 649,224 tons dumped in the preceding week. Cumulative dumpings for the season to date are 16,134,915 tons as against 10,924,327 tons in 1920.

The export market is unchanged. Demand is practically nil, especially on the high-volatiles. Prices at the piers have been depressed further, but business is simply lacking and orders have not resulted. Dumpings at the Hampton Roads piers amounted to 269,525 gross tons during the week ended Aug. 25. Although this represents an increase of 60,000 tons over the preceding week, the cleanup of some of the Tidewater accumulation is largely responsible. Present exports are less than one-sixth of the June maximum.

ANTHRACITE

Production declined sharply during the week ended Aug. 20. The total output was 1,529,000 net tons, as compared with 1,772,000 in the week preceding. Observance of a religious holiday on Aug. 15 was the principal cause of the decline, as last year also the week was marked by a slump in tonnage produced.

Ordering of domestic sizes by retailers was better during the closing days of August, due not so much to any great rush of householders' business as a desire to secure the August circular. At the same time retailers state that there has been some pick-up to their business, although it is still far below normal for this time of the year. Independents have advanced slightly on the family sizes with the better call. Steam coals have improved their position



with the approach of autumn. Barley is in greatest demand. Lake dumpings continue heavy—during the week ended Aug. 24 the Buffalo piers dumped 172,400 net tons. Shippers apparently are determined to push the tonnage through this gateway until the all-rail markets regain their strength.

COKE

Production of beehive coke was 57,000 net tons during the week ended Aug. 20, according to the Geological Survey, or a slight increase over the preceding week's figures of 50,000 tons. The industry is still in a state of great depression, however, as shown by the fact that the output for the week was 14,000 tons less than the daily average in the corresponding week of 1920. Cumulative production for the calendar year to date is 3,724,000 tons, only 27 per cent of that for 1920.

Byproduct offerings still hinder the beehive coke industry from participating in the slightly improved market. These interests are even quoting competitively on inquiries coming in because of the possible early resumption of some blast furnaces. Connellsville quotations on Aug. 30 were: Spot furnace, $2.90@$3; contract furnace, $3@$3.25; spot foundry, $4@$4.50.

The Rainey interests, in announcing a further reduction of wages, encountered a strike, which has closed down six plants in Fayette County, Pennsylvania, and thrown more than 2,000 men out of employment.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

(NET TONS)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date (*a*)
Aug. 6(*b*)	7,186,000	233,834,000	10,432,000	308,994,000
Daily average	1,198,000	1,270,000	1,739,000	1,674,000
Aug. 13(*b*)	7,756,000	241,590,000	11,813,000	320,807,000
Daily average	1,293,000	1,271,000	1,969,000	1,683,000
Aug. 20(*c*)	7,704,000	249,293,000	11,039,000	331,846,000
Daily average	1,284,000	1,271,000	1,840,000	1,688,000

(*a*) Less 2 days' production during New Year's week to equalize number of days covered for the two years. (*b*) Revised from last report. (*c*) Subject to revision.

ANTHRACITE

Week Ended	1921 Calendar Year to Date		1920 Calendar Year to Date (*a*)	
August 6	1,564,000		1,805,000	
August 13	1,772,000		1,851,000	
August 20	1,529,000	55,593,000	1,640,000	55,845,000

(*a*) Less 2 days' production during New Year's week to equalize number of days covered for the last two years.

BEEHIVE COKE

Week Ended Aug. 20 1921(*a*)	Aug. 13 1921(*b*)	Aug. 21 1920	1921 to Date	1920 to Date(*c*)
57,000	50,000	425,000	3,724,000	13,656,000

(*a*) Subject to revision. (*b*) Revised from last report. (*c*) Less two days' production during New Year's week to equalize number of days covered for the last two years.

Foreign Market And Export News

British Industry Unable to Absorb Rapidly Increasing Output of Coal

Export Market Sought by Great Britain—French to Deliver Saar Coal to Germany—Ruhr Output Gaining—Hampton Roads Activit es Confined Largely to Bunker Account

As cabled to *Coal Age*, production in the United Kingdom for the week ended Aug 13 was 4,537,000 gross tons, an increase of 900,000 tons over the preceding week and within 80,000 tons of the figure for the week ended July 30, which was the heaviest since the strike. The industry is recovering rapidly from the effects of the strike and production is as heavy as it was a year ago.

With many iron and steel foundries shut down, England has much coal seeking a market, which is being obtained at the expense of American shippers. The present cost of the Amercian dollar in foreign exchange is playing directly into the hands of British exporters. Cardiff coal exports for the week ended Aug. 20 were 213,000 tons, the largest during the present year. The total includes 16,000 tons to Argentine, and 7,000 tons to Karachi and South Wales.

The market is quiet, and buyers are holding off. Exporters believe that the present selling prices approximate production cost and although quotations may weaken with the sluggish demand, not much decline is looked for.

There is a general opinion among miners, railwaymen and transport workers that the Triple Alliance will be dissolved as a result of its failure to organize a national strike in support of the miners. The actual breaking up of the Alliance will be deferred until the prospects have been ascertained of the formation of a Labor Council, comprising the men's unions in the labor movement.

There is a good deal of distress among miners in Scotland, especially in Lanarkshire, due to the difficulties experienced in reopening some of the pits. In Fifeshire there are about 8,000 miners unemployed, and in the Lothians about 2,000. To aid the families of these unemployed miners a fund is being raised.

While the fall in the price of blast furnace coke throughout Great Britain has greatly improved the prospects for an early resumption of the industry, pig-iron smelters state that a further reduction is necessary before they can produce iron on an economic basis. In the Midlands the price of coke recently fell from 45s. to 30s. per ton. Several plants are putting their blast furnaces in order with the view of resuming work.

German Production Increases

A cable to *Coal Age* on Aug. 27 shows the output of the Ruhr district for the week ended Aug. 13 as 1,741,844 metric tons as compared with 1,736,182 tons for the preceding week.

Production of coal for the first six months of this year was 60,947,000 tons as compared with 61,890,000 in the corresponding period of 1920. The omission of Upper Silesian figures for three months of this year indicates that the output was really considerably in excess of the period in 1920.

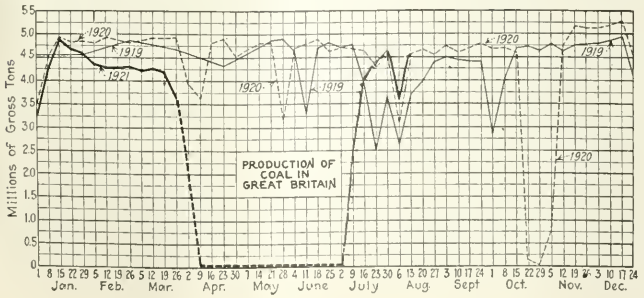
June production in the chief German coal districts improved slightly as compared with May, according to H. O. Herzog, correspondent for *Coal Age*, in Berlin. Although no official figures for May and June are as yet available for Upper Silesia, where the output was affected by the unrest, returns were received in July, as shown in *Coal Age*, issue of Aug. 11, 1921. This disturbance extended to Lower Silesia with the loss of some tonnage when discontented miners struck for higher wages.

Estimating the Upper Silesian output at 1,500,000 metric tons, the following table shows the June production of the chief districts:

District	Metric Tons
Ruhr	7,753,350
Upper Silesia	1,500,000
Lower Silesia	294,307
Saxony	382,763
Aachen	181,762
	10,112,182

Transportation difficulties in June were practically nil. The pit reserves were again decreased 34,000 tons, to 231,000 tons at the end of the month.

Lignite production in June was 6,952,000 metric tons and briquets 1,755,000 tons. In spite of the reduced demand, the production of lignite in Central Germany increased in comparison to May by 7.1 per cent, and the production of briquets by nearly 11 per cent. This is due to the expectation of a brisk demand in view of the impending coal tax.



Pier and Bunker Prices, Gross Tons

(Foreign Bunker Quotations by Cable to Coal Age)

	Aug. 20	Aug. 27†
PIERS		
Pool 9, New York	$5 75@$5 90	$5 75@$5 90
Pool 10, New York	5 25@ 5 60	**5 40@ 5 60**
Pool 9, Philadelphia	5 80@ 6 00	5 80@ 6 00
No. 10, Philadelphia	5 40@ 5 70	5 40@ 5 70
Pool 71, Philadelphia	6 00@ 6 25	6 00@ 6 25
Pool 1, Hampton Roads	5 50	*5 00@ 5 25*
Pools 5-6-7, Hampton Roads	5 00	*4 50@ 4 75*
BUNKERS		
Pool 9, New York	$6 00@$6 20	$6 00@$6 20
Pool 10, New York	5 60@ 5 85	**5 70@ 5 90**
Pool 9, Philadelphia	6 10@ 6 30	6 10@ 6 30
Pool 10, Philadelphia	5 70@ 6 00	5 70@ 6 00
Welsh, Gibraltar	60s. f.o.b.	55s. f.o.b.
Welsh, Port Said	80s. f.o.b.	74s. f.o.b.
Welsh, Singapore	102s. 6d. f.o.b.	102s. 6d. f.o.b.
Welsh, Rio Janeiro	90s. f.o.b.	90s. f.o.b.
Welsh, Algiers	60s. f.o.b.	55s. f.o.b.
Welsh, Malta	67s. 6d. f.o.b.	67s. 6d. f.o.b.
Welsh, Lisbon	85s. f.o.b.	85s. f.o.b.
Welsh, La Plata	80s. f.o.b.	80s. f.o.b.
Welsh, Madeira	65s. f.a.s.	65s. f.a.s.
Welsh, Teneriffe	65s. f.a.s.	65s. f.a.s.
Welsh, Genoa	69s. t.i.b.	69s. t.i.b.
Durham, Newcastle	35s. @ 37s.	35s. @ 37s.
Belgian, Antwerp	135 fr.	135 fr.

C.I.F. Prices, American Coal

(In Gross Tons)

	Aug. 20 Low Vol.	Aug. 20 High Vol.	Aug. 27† Low Vol.	Aug. 27† High Vol.
River Plate	$9 50	$9 00	$11 40	$10 90
French Atlantic			10 10	9 75
United Kingdom			10 15	9 60
West Italy	10 00	9 50	11 70	10 50
Scandinavia			10 70	10 35
Rotterdam			9 90	9 40

Current Quotations British Coals f.o.b. Port, Gross Tons

Cardiff	Aug. 20	Aug. 27†
Admiralty Large	36s. 9d.	*32s. 6d.*
Steam, Smalls	19s. 6d.	*17s. 6d.*
Newcastle:		
Best Steams	29s. 9d.	**30s.**
Best Gas	31s. 9d.	*30s. @ 33s.*
Best Bunkers	32s. 6d	*27s. @ 28s*

† Advances over previous week shown in **heavy type**, declines in *italics*.

Czecho-Slovakia Has Labor Troubles

A report to *Coal Age* shows that the negotiations between the Coal Miners' Union and the representatives of the owners in the Astrau-Karvin district have proved abortive, owing to the miners' refusal to consider proposals

for a reduction of wages. The miners have handed in their notices to terminate the present agreement which expires in November, 1921.

Coal and Coke Exports from the United States During July

Exports of bituminous coal were nearly a million tons less in July, 1921, than they were in July, 1920. The United Kingdom, as a result of the strike in England, took 406,525 tons of American coal during July, 1921. Italy took an increased tonnage. The 1920 revised figures of the Bureau of Foreign and Domestic Commerce follow:

	July, 1920	July, 1921
Anthracite	659,095	388,041
Bituminous	3,556,802	2,649,989
Exported to:		
Belgium		2,866
Denmark		20,621
France	261,555	110,648
Italy	126,069	239,187
Netherlands	134,212	83,221
Norway		
Sweden	281,418	
Switzerland	60,297	8,759
Canada	1,684,722	1,308,973
Panama	9,899	18,149
Mexico	16,683	14,499
Br. West Indies	14,156	6,478
Cuba	94,019	33,282
Other West Indies	9,179	7,792
Argentina	130,393	97,512
Brazil	83,468	27,525
Chile	53,767	1,523
Uruguay	25,158	24,333
Egypt		36,994
United Kingdom	12,219	406,525
Other countries	569,588	201,102
Coke	80,112	19,129

Export Clearances, Week Ended August 23

FROM HAMPTON ROADS

	Tons
For Africa:	
Br. S.S. Hartfield, for Dakar	6,757
Br. S.S. Stentor, for Port Said	4,054
For Brazil:	
Am. S.S. Orinoco, for Buenos Aires	5,776
Am. S.S. Robin Hood, for Rio de Janeiro	8,283
For Peru:	
Br. S.S. Bogota, for Callao	985
Br. S.S. Munarden, for Fort de France	5,036
Br. S.S. Capelhall, for Las Palmas	2,806
Am. Schr. G. J. Cherry, for Nassau	588
Br. S.S. Telemachus, for Singapore	4,157

FROM BALTIMORE:

For Italy:	
Ital. S.S. Milazzo	6,597
Ital. S.S. Olimpeo	4,984
Am. S.S. West Lashaway	7,671
For Sweden:	
Dan. S.S. Fredericksborg	2,923

FROM PHILADELPHIA

For Bermuda:	
Am. S.S. Irma	988
For Brazil:	
Dan. S.S. Florida, for Rio de Janeiro	5,248
For Cuba:	
Nor. S.S. Trafalgar, for Neuvitas	3,195
For Italy:	
Ital. S.S. Adriatico	6,266

Hampton Roads Export Outlook Extremely Poor; Prices Decline; Bunkers Are the Mainstay

Practically no export business has been noted in the past week, and shippers are not optimistic over the foreign situation. The number of ships sailing for foreign ports is steadily declining. Only nine vessels cleared for oversea during the week.

Pools 1 and 2 are being offered freely for $5. Reductions in price, however, have failed to stimulate the market to any appreciable extent. Pools 5, 6 and 7 have been reduced as low as $4.50, although the average quotations last week were $4.75. The bunker business continues somewhat active, although the number of vessels engaged in all phases of trade are said to be gradually declining. Railroads entering Hampton Roads have announced slight reductions in freight rates on coal from certain fields, but this has not stimulated the trade. The accumulations at Tidewater are steadily decreasing, while the vessel tonnage awaiting cargo is the lowest in many months.

PIER SITUATION

	Week Ended— Aug. 18	Aug. 25
N. & W. Piers, Lamberts Point:		
Cars on hand	2,641	2,303
Tons on hand	134,502	122,427
Tons dumped	102,738	134,173
Tonnage waiting	7,300	4,200
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	1,808	1,848
Tons on hand	90,400	92,400
Tons dumped	70,094	79,296
Tonnage waiting	6,857	2,380
C. & O. Piers, Newport News:		
Cars on hand	1,961	2,233
Tons on hand	98,050	99,050
Tons dumped	36,991	56,056
Tonnage waiting	6,550	2,500

Reports From the Market Centers

New England

BOSTON

Market Still Further Depressed — Hampton Roads Shippers Set the Pace — Low Prices for Slack — Marine Freights Weak—Anthracite in Better Request.

Bituminous—The downward trend of prices continues unabated. Several of the Pennsylvania interests have come to a full stop as far as making competitive prices is concerned, but there are enough left in the open market to show how really desperate is the situation from the producers' standpoint. Receipts both all-rail and by water and rail from central Pennsylvania are relatively light, and it would be difficult to figure out any improvement for September

There are representative factors in the trade who feel that the low point in prices has now been reached, but there are many others who are not so sanguine. Coal classified as "Pool 10" is now openly quoted at $2, while fair to medium grades on the B. & O. have receded to $1.40 or less. Should the slump continue through the early part of September it is likely that buying in this territory will practically cease, for there would be much less confidence in prices. Developments the next fortnight will be studied with much interest.

The Pocahontas and New River agencies still dominate the whole of the zone accessible to water coal. For any point paying less than $1.75@$2 freight inland from the re-handling centres the grades from central Pennsylvania are now practically out of the question. The bunker trade has slumped materially, $5.15@$5.35, plus trimming, being now the average price level. The Shipping Board made a contract recently at $5.20, also plus trimming. Alongside Boston as low as $6.15 per gross ton has been named, and purchases have been made at $6.40 on cars, Boston or Providence.

The comparatively high prices on screened coal for western territory are reflected in the extraordinary efforts to place smokeless slack; $1.12 has been rumored as a selling price, and a few large consumers here are negotiating for this cheap fuel. At most points, for Pennsylvania coal to compete all-rail would necessitate a price level of less than $1 per gross ton.

Not only are marine freights easy at $1, Hampton Roads to Boston, but the same rate has been extended to points farther East. There have been rumors the past few days that 90c. had been offered. On Long Island Sound the rate to New Bedford is easy at 70c.@ 75c., with Providence perhaps 5c. less. Charters from New York to Boston have been closed at $1. The fact is that the vessel owner, along with the bituminous operator, is at a loss to know whether the bottom has been reached.

Anthracite — Toward the close of August the domestic sizes were in active demand, largely to take advantage of the August circular. Independent shippers are combing the territory with some success. The low range of vessel freights is of much assistance to them. Stove and egg are the sizes in most demand; chestnut and pea, particularly pea, are much less called for.

Tidewater—East

NEW YORK

Domestic Coals Show Strength — Independent Quotations Stronger—Bituminous Demand Slow — Prices Slightly Lower.

Anthracite — There has been a strengthening in the market. All sizes show more strength which it is believed will continue as the season advances. The closing down of many small mines has shortened the tonnage available to such an extent that egg and chestnut which were long on the market for some time have tightened and independent coals are now being quoted at or near company schedules.

There are many rumors as to what the trade may expect in the way of

increases in the mine prices of domestic coals on Sept. 1, but it is the general opinion that not more than the usual monthly advance of 10c. would be made. It is not believed the operators would at this time increase prices to include the Pennsylvania State Tax until after the new laws have been finally passed upon by the courts.

The retail trade is picking up. Dealers are ordering more freely, some of which can be traced to the expected increase on Sept. 1. Movement of company coal has been active. Independents report greater demand for all sizes. Stove coal heads the list. Egg and chestnut have stiffened considerably because of western orders.

The buckwheats continue to grow in strength. All three coals are tighter and some shippers of independent coals are refusing orders for immediate shipment. Barley is the strongest of the three sizes.

Bituminous—The trade is complaining once more of the lack of business. Inquiries have fallen off and quotations are slightly lower. Reports received from Canada indicate an increase in demand. At Tidewater there is little urgent call while the line trade is not taking its full quota.

It is apparent that buyers are not considering the low prices at which the better grades are now being quoted and mine owners cannot see much encouragement from present indications. Railroads are not taking much coal, as they have an average of about five weeks' supply on hand and many of them have orders placed to insure a sufficient supply throughout the winter.

On Aug. 25 there were reported at the local piers ontside of the pools 1,251 cars of coal and in the pools 105 cars, as compared with 1,313 and 144 respectively on Aug. 19.

Many mines remain idle and comparatively little of the lower grades of coal is coming into this market. Low-volatile slack was quoted $1.60@$1.85; low-sulphur slack around $2, and Fairmont slack $1.75@$2.

BALTIMORE

Soft Coal Trade Very Flat—Anthracite Deliveries Below Normal — Export Movement Comparatively Light.

Bituminous—Business remains flat in this section. Best steam coals are offering to the trade as low as $2.10 although the range for average is closer to $2.20@$2.25. Lower grade steam coals are still generally below the $2-mark, while such fuels as run to Pool 34 are to be had $1.59@$1.75. It is a market in which few mines without good contracts are able to run on a profitable basis.

The export movement continues comparatively light and August will fall far behind the good record made in July. For the period from August 18 to 26, inclusive, only four ships cleared from Baltimore with export coal cargoes. The amount of bunker taken is very light. The entire situation at this time in the soft coal line fails to show any particular bright spot.

Anthracite — Below-normal buying and delivering to both homes and coal yards is the order of the day. Baltimore takes ordinarily around 60,000 tons of coal per month, or 720,000 tons per year but for the period from April 1 to date has fallen considerably below this level. It is estimated that the receipts for August are likely to fall to less than 30,000 tons. The big fall-off in buying is shown in the fact that despite this drop in movement there is still a total of more than 35,000 tons on reserve at this point. There is now sure to be a real pinch when cold weather comes, as thousands of cellars are still without fuel. The coal men are blaming the grand jury indictment and the failure of the public to understand that such a movement cannot bring lower prices.

PHILADELPHIA

Anthracite Holding Its Own—Consumer Shows More Interest—Steam Coals Unchanged — Bituminous Market Disappointing—No Activtiy in Sight.

Anthracite—The retail trade is at least holding the improvement in evidence during the last few weeks. All yards are working with reduced forces and there are times when deliveries have not been as prompt as some customers desired. As usual, after waiting this long to make up their minds about laying in their winter supplies, the buyers want coal right away.

The strongest demand is still for stove, but both egg and chestnut are also being asked for in a greater proportion than formerly. All dealers have heavy stocks of pea and are hopeful that the small order business this winter will be for pea, as it used to be. It seems altogether likely that the difference of $3 a ton in its favor will be a big factor when coal consuming begins.

Mines have made better time recently, although the increased production must be going to distant markets, as local retailers are a trifle hesitant at this time about filling in the gaps made in their stocks.

It is thought that the companies will complete their advances with their final increase on Sept. 1. It looks as though a few independents at least will add 10c. to preserve their ratio over company coal, although should business pick up it is quite likely that some others may even put on an extra 25c.

Bituminous—Demand continues to be a disappointment. There had been hope that by this time the market would show some real sign of strength, but this is still missing. It cannot be said that inquiries have increased, principally for the reason that the trade is so actively solicited that the consumer hardly needs to ask prices, as he has them given to him in person almost daily.

There continues to be much jockeying in the contract situation, as the market prices are so attractive that the consumer is at least taking a fair share of spot coal. It would appear that some concerns are overanxious for business, if price offers which have been heard are bona fide, such as a contract at $2.15 on a high-grade coal, but with the understanding that the name of the fuel will not be mentioned when shipments come out.

The lowest spot figures of the coal year have been effective for the past month, and there has been no change during the last week. One thing is certain and that is if there should be a scarcity of coal there will be an enormous free tonnage to take the market price.

BUFFALO

Little Change in the Situation—Both Anthracite and Bituminous Sell Slowly —Lake Shipments Heavy.

Bituminous—Demand is still small. While it is a fact that some jobbers are doing considerable business, they are getting prices that do not afford the producer any profit, and often sell on a margin that gives them little above expenses. The consumer is in full control of the situation, and he uses his power just as if it was certain to last always.

Every effort is made on the part of manufacturers and the public generally to discover an improvement in business, but the stir is not very near. Jobbers say the consumer is so over-solicited that he needs to be careful or he will buy more coal than he can take care of. Jobbers have scarcely seen a Montreal coal man this year, and as for going there to solicit orders, the expenses are doubled and the result would mostly be nothing. So all that can be done is to watch for the small business offering and wait till it is better.

Prices are not showing any improvement. Quotations are: $3 for Youghiogheny gas lump, $2.75 for Pittsburgh and No. 8 steam lump, $2.50 for Allegheny Valley mine run and $1.75@$2 for slack, adding $2.36 to Allegheny Valley and $2.51 to other coals to cover freight to Buffalo.

Anthracite—The cool August has done something to stimulate buying. Sellers are making what effort they can to show the foolishness of holding off, for when people get ready to buy they will all want coal at the same time, and then up goes the premium. Given also a good car shortage and the demand will run up to a panic. As it is, the independents are more or less closed, and the larger mines could do more business if they had the orders to fill.

Lake — The companies are getting what revenge they can by keeping up a heavy tonnage. Never have they shipped so much Lake coal at this time of the year. They apparently will go on till the Upper Lake docks are full

Water shipments for the week ended Aug. 22 totaled 172,400 net tons, of which 76,300 tons cleared for Duluth or Superior (shipper's option after

leaving), 50,200 for Milwaukee, 41,400 for Chicago and 4,500 for Green Bay. Freight rates are still quiet.

Coke—Business is as slow as ever. There is no real stir in the furnaces yet. Of the fifteen or so in this district only four or five are running. Jobbers can get only now and then an order, their prices being about as before.

Northwest

MILWAUKEE

Increasing Movement—Better Feeling In the Trade—Some Dealers Shading Hard Coal Prices—Lake Receipts Are Falling Off.

Movement of coal, both by rail to the interior and to local consumers, is greatly improved since last week's report, and the feeling in the trade is correspondingly better. Prices of both hard and soft coal continue unchanged.

For some unaccountable reason, the Lehigh Valley agencies are selling hard coal 10c under the schedule maintained by all other dealers for a month or more past. The September advance has not been announced as yet. It is sure to be 10c per ton, and there is a possibility that the amount of the Pennsylvania tax may be added. Coke dealers advertise that the September price of that product will be $1 higher, or $15 per ton, delivered.

Receipts by Lake have fallen off, and the August record promises to be less than that of any full month since navigation opened. The receipts thus far for August aggregate 71,921 tons of anthracite and 131,382 tons of soft coal, making the season's receipts up to date 597,336 tons of the former and 1,600,350 of the latter.

DULUTH

Interior Movement Increases Rapidly—Bituminous Docks Stored to Capacity—Prices Firm.

Shipments from the docks are increasing rapidly, and it is thought that dealers throughout the Northwest are fearing lest the rapidly approaching winter catch them with no coal on hand to satisfy the demands of customers. Every dock concern reports that business is better.

Receipts at the docks increased last week when 38 cargoes were received, of which 11 were anthracite. This surpasses the number brought into docks the week before. Seventeen cargoes are reported on the way, of which six are of hard coal.

Docks are practically filled, and again there is talk of curtailing shipments to some extent to permit of handling the amount of coal piled. Close to 5,000,000 tons are on the docks, which leaves little room for handling.

Out-bound shipments are helping to relieve the situation, but these are not keeping up with the receipts. Dock men state that no shortage can occur this year as sufficient bituminous is now on the docks to handle the wants of that part of the Northwest supplied from Duluth.

Prices on all grades remain the same, with sellers still firm. No decrease is looked for on the incoming tide of business. Coal men are optimistic and feel that the winter will see sufficient coal of all kinds delivered to dealers to handle needs.

MINNEAPOLIS

Retailers Busy—Industrial Buying Still Lags—Dock Supplies Adequate—All-Rail Business Stronger.

Things are working around to a better promise for the retail trade. There has been sufficient tonnage moved to the docks to avert any early shortage. As to whether there will be any shortage at all in dock coal remains with the consumers and dealers of the Northwest.

The docks are practically loaded to capacity. If they are to receive their usual tonnage there must be a much greater movement to the interior than has yet been the case. In the last several weeks there has been a distinct improvement in this movement. If it keeps up and increases as it should, there will be ample room for the needed dock coal to be moved up and dumped before the close of navigation.

The turn of circumstances has favored the Northwest. If there were the usual rush from other districts, it might even now be difficult to get all the tonnage desired for this section. But coal is sufficient for all requirements at present, and buyers will do well to recall that this condition may not last. On the other hand, the extreme price of coal will cause many to use wood, which is abundant in the northern part of the State.

Present indications are that requirements will be reduced by reason of lessened industrial needs, and also because of the tendency to economize in domestic consumption. A year ago this was not in evidence, but some have since learned that high wages and easy money cannot last indefinitely, and that it would pay to be thrifty again.

The all-rail business is picking up to some extent, and promises to be quite active a little later on. Local representatives of all-rail companies have been active in seeking business, and as the buying spirit revives they will undoubtedly score in the struggle for orders.

Retailers report a distinct improvement in the demand. They have been making deliveries as fast as possible, and have made good progress. They have had no handicaps, as the rail situation has been free from delay. It has been possible to get coal from any source as rapidly as could be expected. If this buying keeps up it will help greatly to escape the usual rush of deliveries from those who are always late and in urgent need of fuel.

The fear of a severe shortage in the fall is past. No one anticipates any trouble with a shortage for several months. But there is always a chance of people being caught unprepared and needing coal quicker than it is possible to get it moved. How many of these there will be rests largely with whether the fall is long drawn out, and mild, or if cold weather starts early.

Inland West

DETROIT

Steam Buying Continues Light—Bargain Coal Sales Only—Some Domestic Activity.

Bituminous—Buyers are adhering to their attitude of aloofness. The few sales made are said to be largely of stock put on the market at distress prices. Notwithstanding the limited volume of business, several of the large steam users are reported to have small reserves.

Curtailed consumption enables buyers to place reliance on filling their requirements in the spot market. Under existing conditions, steam buyers appear reluctant to tie up money in coal or other supplies beyond the extent necessary to provide for current requirements.

Four-inch West Virginia lump is quoted $3.25, 2-in. lump at $3, egg $2.75, mine run $2.25, slack $1.60. Three-inch lump from Ohio is $3.25, 2-in. lump $3, egg $2.75, mine run $2.15, nut and slack $1.50@$1.60. Smokeless lump and egg is $5.25, mine run $3, nut and slack $1.65@$1.75.

Anthracite — Cooler weather has brought home the advisability of making provision for winter fuel needs, resulting in a slightly more active inquiry for prepared sizes. Dealers are endeavoring to stimulate the market by advising their customers to put in at least one ton, as a precautionary measure.

MIDWEST REVIEW

Better Market Tone—Prices Steady—Seasonal Inquiries Bring Orders—Labor Unsettled.

The tone of the market is much better today than it has been since the month of June when there was some little activity in the purchase of coal. At last the people are beginning to realize the danger of their position and inquiries have been coming in. Where an aggressive sales force has been available, it has been found that these inquiries have resulted in some orders.

We do not know of a single corporation fortunate enough to have broken even on coal sales this season. Operators in Franklin County have kept their prices very steady, especially on domestic sizes, but there have been some substantial sacrifices made to move steam coal. In other districts, a loss is shown

on domestic as well as steam sizes. We do not remember another summer in the history of the coal industry so disastrous as this one.

There have been some labor disturbances in southern Indiana, and especially in Sullivan County. The men in a great many cases have definitely broken with the unions and have become so radical that the United Mine Workers have revoked a number of charters. The Indiana fields during the past month seem to be entirely under the influence of the I. W. W. and other bodies even more radical. The situation reached a head last week when men who had been on a strike attacked the superintendents and bosses of a few mines, ran them out of town with warnings never to return. The proper authorities in Sullivan County have not been able at this writing to get a good hold on the situation. In the Linton district, just next door, the local county authorities, by quick and decisive action, have kept the situation well in hand.

It is the consensus of opinion that the miners will be in no frame of mind next April to take a reduction. It is thought that the mines will be idle at least sixty to ninety days from April 1. This opinion seems to be pretty generally shared, and it may be that this has something to do with the demand for steam coals which has lately sprung up.

The number of contracts entered into has been unsually few, and the tonnage required on these has been much below normal. Until recently, most purchasing agents absolutely refused to entertain the idea of a contract, preferring rather to take their chance on the open market; lately, however, the situation has changed slightly.

One or two mines in Illinois and Indiana report "no run" on account of no cars, and it is considered that this is a very ominous sign, coming, as it does, when the demand for coal is extremely slack.

CLEVELAND

Domestic Demand Increases Approximately 60 Per Cent—Prices Remain Firm—Less Lake Tonnage.

Domestic demand has shown improvement to a considerable extent within the last week. Retailers report buying for domestic consumption in a volume approximately equal to that of the corresponding period of last year. This is coupled with a buying impetus brought about by slightly improved industrial conditions. Steam purchases, however, are still for hand-to-mouth needs and reflect the uncertainty and caution of consumers. One retail concern has placed a special grade of eastern Ohio No. 8 lump on the market at $6.90, which is about 60c. cheaper than this grade has been sold at retail for a long time.

For the week ended Aug. 20, vessels loaded 625,809 tons of cargo coal at Lake Erie ports. According to statements of the Ore and Coal Exchange, shipments for the season to date are 14,962,793 tons. Indications are that the movement for the season will be about that of last year.

Retail prices are quoted as follows: Anthracite egg and grate, $14; chestnut, $14.15; stove, $14.20. Pocahontas shoveled lump, $11.25; mine run, $9.50. Domestic bituminous: West Virginia splint, $10; No. 8 Pittsburgh, $8.15; cannel lump, $12.15. No. 6 and No. 8 steam slack, $5.75; No. 6 and No. 8 mine run, $6; No. 8 3-in. lump, $6.

CINCINNATI

Domestic Trade More Active—Steam Market Drags—Smokeless Coals Firm Up.

A general betterment in the domestic trade is the outstanding feature of the market this week. West Virginia splints have benefited materially; Kentucky lump and West Virginia gas coals, while steady, have not seen price advances.

The steam market has been a bit draggy due to the increased production of lump and block. Consumption about keeps pace, and there has been little or no accumulation. Kentucky screenings sell $1.15@$1.35; West Virginia is $1.35; Kentucky mine run is $1.75 @$2, gas $1.85@$2. Country buyers are in evidence so far as the movement of lump is concerned, while city dealers have been working down the accumulation in their yards and show a greater disposition to buy.

Smokeless lump is still obtainable around $5, while some New River is being offered at a trifle lower. Nut sells uncertainly around $4. Mine run is variously quoted from $2.75 to the circular price of $3.50, and screenings can be had down to $1.50.

About the only change in the retail situation is the stiffening of the steam coals. Those dealers who were selling under $5 have withdrawn their figures and little is being sold under that mark. Cool nights experienced during the past week have been responsible for a belated rush for household coals.

COLUMBUS

Good Demand for Domestic — Steam Business Is Still Slow — Lake Slump Curtails Production—Prices Unchanged.

There is a larger movement of prepared sizes to consumers and this is reflected in orders from retailers. Dealers' stocks are pretty well depleted and this is causing a better run of orders from all sections. City dealers are the best customers at this time. The retail price list is well maintained at former levels. Hocking lump is $6.50 while re-screened varieties are $6.75. West Virginia splints are $7.50. Pocahontas is getting stronger. Lump retails around $9.50. Anthracite is firm at $15 while coke is selling at $11.50 for all sizes.

The Lake trade is still fairly active as far as loadings at the lower docks are concerned, but less of the tonnage is coming from Ohio mines. West Virginia and Kentucky coals are making up the bulk of the shipments. The H. V. docks at Toledo during the week ended Aug. 20, loaded 127,062 tons as compared with 159,167 the previous week, making a total of 2,820,022 tons for the season. The T. & O. C. docks loaded 48,842 tons during the same week, which makes 740,563 tons for the season.

Steam trade is slow and practically none except to public utilities is moving. Railroads are taking only a small tonnage. On the whole little improvement is expected during the next few weeks. Screenings which were strong earlier in August have receded to about the levels which prevailed during the greater part of the summer.

ST. LOUIS

Domestic Business Beginning To Pick Up — Country Situation Shows Improvement—Steam Demand Slow and Prices Unsteady.

The local situation as far as domestic is concerned is showing some life. This is on all grades, and is not yet in volume on any one grade.

Local steam business is slow. Some coal is going into storage, but this is not a factor. Country call for domestic is the only stimulant in the entire market. This is going chiefly to western parts of the State, although some coal is moving north and northwest. The steam call outside is better, and a good tonnage is moving north into Chicago.

Domestic business on anthracite coal and coke is almost at a standstill. Indications are that there will be an increase in mine prices on Franklin County in September, and an advance in domestic coal can also be expected.

CHICAGO

More Active Market — Domestic Trade Picks Up—Nearer Coals Favored.

There is more activity in the market. Opinion is divided, however, on whether it is caused by more demand or by the return of a number of sales agents from their vacations. The vacation season, so far as the coal man is concerned, has been a long one this year, as it has been almost impossible to sell coal except at prices away below cost.

There has been a far better domestic demand during the last week. The orders that are coming in to the retailer, however, are small, as the public has not yet gotten over the idea that freight rates and prices are going to be reduced to still lower levels. Retailers are buying in a hand-to-mouth way, and, as their bins have been filled all summer, they are only replacing the slight inroads made by the fall demand.

In Chicago proper there is but little steam demand, and what coal is purchased is on a very narrow margin. The screenings market has not yet recovered from the blow it received recently, when one of the larger operators whose contracts nearly all expired at the same time, dumped a large tonnage on the market.

Eastern bituminous is very sluggish.

The Chicago public seems to be favoring Franklin County as a domestic coal instead of Pocahontas, and the dealers have all the Pocahontas they can conveniently handle. Consequently, what little smokeless has been coming in has been on consignment and sold at a very close price. Block from West Virginia or Kentucky is also in but little demand. Anthracite, however, is moving in fairly satisfactory quantities. The dealers are keeping their bins loaded with this as they feel they are in for transportation difficulties and they want all the anthracite on hand they can take care of before winter sets in.

South

LOUISVILLE

Steam Buying Delayed—Small Seasonal Increase in Domestic—Unrest on West Virginia Border.

The local market is not showing any material improvement, although consumers are using a fair volume of fuel.

Producers claim that the troubles on the West Virginia border in the Mingo section are resulting in some lost time in eastern Kentucky, as such strife is causing unsettled conditions. However, production as a whole is holding up very well.

Retailers are chiefly holding their yard stocks for later use, and buying about as much coal as they are selling at the present time. The average domestic as well as steam consumer is trying to convince himself that there will be no coal or car shortage this year, and that prices will not be higher.

Movement of prepared sizes is increasing a little. Screenings are in better supply, but with industry more active, prices are being maintained at $1.25 and better in eastern Kentucky, a little stock from western Kentucky being quoted at $1. Mine run is moving slowly.

Railroad consumption is said to be a little better, as freight movements are somewhat heavier. Shops of the Illinois Central as Paducah, Southern Railway at Somerset, and others are taking on more shopmen, as a result of increased repairs.

BIRMINGHAM

Conditions Improve Industrially—Buying Continues Sluggish—Prices Undisturbed — Furnace Interests Expect to Resume.

While the demand continues poor, business conditions are looking better. There is as yet no effort on the part of consumers to care for more than their needs for a few weeks ahead, hence the trade is confined to the spot market. One of the leading companies catering to the bunker trade has been making heavier shipments within the last week to Pensacola and New Orleans, but the movement for commercial use has otherwise shown little change.

Steam quotations have not changed in the past week, but as there is considerable surplus coal being thrown on the market by the smaller operations, buyers have been able to secure the limited tonnage taken at figures somewhat below the spot market.

Some improvement is reported in the retail domestic trade outside of the Birmingham district, but locally conditions have taken no turn for the better and dealers are doing practically nothing. As a result, little new business is being taken on. Domestic coal will make the customary advance Sept. 1.

The indications are that several furnaces which have been idle will go into blast again within the next few weeks. Raw material rates on intrastate movement of coal, coke and iron ores for furnace use have been ordered reduced from 20 to 25 per cent, effective not later than Oct. 1, which will mean a saving of 75c.@$1.25 per ton on pig iron manufacture.

West

DENVER

Production Still Low—Retail Stocks Heavy—Municipal Fuel Yard Revived.

Colorado production for July showed an increase of about 100,000 tons over the June tonnage. Thus far only 75,000 tons have been bought for storage in Denver, as compared with 250,000 tons last summer.

Storage prices, set at the minimum in April, have now advanced approximately 50c, and may go higher before winter. Retail prices on domestic lump are $10.75 for southern Colorado coal, $11.50 for Routt County, and a little more for top-notch grades. Best lignite is retailing at $9.25, although the city municipal fuel department has been revived and is taking orders at $6.50.

Mines in many places are working only half-time or less. For the week ended Aug. 6, 148,147 tons of a possible full-time output of 319,939 tons were mined. For the week ended Aug. 13 the tonnage was 145,961.

Retail dealers have their storage bins filled to capacity, or have expended their financial ability to place more advance orders at the mines. With local private storage bins empty, the first cold snap will start a rush of orders which will swamp the retailers, exceed the carrying capacity of the railroads and the output of the mines.

Canada

TORONTO

Some Improvement but Orders Much Below Normal — Holding Back Orders May Cause Later Shortage.

Since the setting in of cooler weather, orders for anthracite have been freer. Dealers have large stocks on hand and a fair amount is coming forward. It is feared that the unusual delay in laying in winter supplies may result in a shortage later on, as the allotment of coal to Canada was to be taken in evenly distributed shipments throughout the season, and when shipments are curtailed from lack of orders, the total allotment is liable to be cut down. There is no change in the situation as regards bituminous, the demand for which is very light.

Quotations are as follows:

Retail:	
Anthracite, egg, stove, nut and grate	$15 50
Pea	14 00
Bituminous steam	11 00@ 11 50
Domestic lump	12 25
Cannel	16 00
Wholesale f.o.b. cars at destination:	
½-in. lump	7 75@ 8 50
Slack	6 00@ 6 75

News From the Coal Fields

Northern Appalachian

ANTHRACITE

Interest in Kohler Bill—Better Demand —Strike Fear Has Abated.

The problem of interest is whether the companies will file maps of their mines under the provisions of the Kohler bill which prescribe that maps be filed ten days prior to operation. In Scranton some companies filed early and other were reported as preparing to file, but at Wilkes Barre the filing of maps by companies of any size is being delayed so long that it would rather look as if they intended to seek an injunction in the courts against the enforcement of the law.

If the Kohler-Fowler bills prevent second mining in the Northern district, business may take renewed heart in the sections where mining can be pursued without danger of mine caves and risk of penalization.

PITTSBURGH

Higher Asking Prices — Scarcely Any Demand—Production Extremely Light —Lake Shipment Slumps Further.

In the face of an extremely light demand prices are higher by 10c.@20c. a ton on mine run, while domestic lump is up still more. The explanation may be that the more highly competitive production has ceased, not enough business being developed by low prices. At any rate, the great majority of mines are closed.

Open market demand is as light as formerly, except that there is a little

seasonal inquiry for domestic. Dealers show no disposition to take hold to any extent, and at best buy only in limited quantities. Lake tonnage continues to dwindle. But few contracts for gas and steam are operative.

While the district has lost some business to Connellsville and other non-union fields, it appears that the main cause of the idleness is the lack of buying in general.

Prices, which are largely nominal, are now as follows: Slack, $1.65@$1.75; steam mine run, $2.20@$2.30; ¾-in. steam, $2.75; 1¼-in. domestic, $3.25; gas mine run, $2.25@$2.35; ¾-in. gas, $2.55@$2.75.

CENTRAL PENNSYLVANIA

Production Improved—Wage Scale Adjustment Held to Be Vital.

Some improvement in production has been reported from various sections and operators are still hoping that an adjustment of the wage scale will permit the full operation of the mines before the opening of winter.

One of the leading operators of the central Pennsylvania field is authority for the statement that the Central Competitive producers are as much to blame for conditions in not adjusting wage scales as the United Mine Workers. Little hope is held out that a downward revision will be effected with the officials of District No. 2.

Production figures for August have not been completed but will show a decided increase over July. Mines in the northern Cambria field are getting back to normal gradually and are now running five and six days a week, with assurance that if the proper wage adjustments were made, the output would soon reach normal.

EASTERN OHIO

Lake Slump Causes Production Decline—Steam and Domestic Demand Is Stronger—Slack Weakens.

Production during the week ended Aug. 20, amounted to 357,000 tons or approximately 57 per cent of rated capacity. This represents a decrease of 53,000 tons under the preceding week when operations were at about 66 per cent of capacity and is the lowest output since the latter part of April. Production figures for the year to date indicate a total output of 11,110,589 tons or 54 per cent of rated capacity. Association mines also report a decided falling off, producing about 55 per cent of capacity and working 42 per cent of possible worktime. Railroads are taking an increased tonnage for fuel and with the decided decrease in mining operations this is not far below 35 or 40 per cent of the aggregate output. Looking to a heavier traffic on the roads this fall and the approach of the winter season, it is expected that this demand will show considerable improvement. There is a better tone in the industrial market, caused by resumed operations in the steel mills and other manufacturing plants. This is being reflected by some new life in spot sales and inquiries.

Domestic mines are running full time to meet the requirements of retailers. The domestic trade has picked up materially and is no doubt stimulated by the cool weather which has prevailed in this section for the past ten days.

However, the improved situation with respect to both industrial and domestic demand is not sufficient to offset the decreased output for Lake and many in the coal trade therefore feel that maximum operations have passed, for the time being at least. Some weakening has been noted in the price of slack, but with that exception there is little change in spot quotations.

CONNELLSVILLE

Byproduct Offerings Stand in Way of Connellsville Coke—Wage Scale Uncertainties—Production Remains Light.

Offerings of accumulated byproduct coke continue to stand in the way of Connellsville production, against the occasional inquiries that are now coming out in connection with the possible resumption of a few blast furnaces. It is understood that some of the byproduct interests are prepared to quote on production in competition with Connellsville.

On the theory that the wage reduction, announced by the Steel Corporation to become effective Aug. 29, would involve a new Frick scale to replace that of Aug. 1, the Rainey interest announced another reduction at its plants, a strike resulting at four of the mines Aug. 22. Other independents made no move to reduce wages, their scale being lower than the Frick scale would be if reduced 10 per cent.

Coal demand is not good, although byproduct has improved somewhat in the past week or two, and sometimes brings as high as $2.

The coke market is quotable $2.90 @$3 for spot furnace, $3@$3.25 for contract furnace and $4@$4.50 for spot foundry. The *Courier* reports production in the week ended Aug. 20, at 12,700 tons by the furnace ovens, and 24,250 tons by the merchant ovens, a total of 36,950 tons, an increase of 1,190 tons.

UNIONTOWN

Strike at Rainey Plants—Workers Refuse Further Reduction—Market Still Quiet.

Virtually complete suspension of operations at six plants of the W. J. Rainey, Inc., following refusal of employees to accept a further reduction of 10 per cent in wages, was the outstanding feature in the Connellsville coke region during the week. Approximately 2,000 men are idle and Rainey officials claim the company is prepared for an indefinite suspension.

No disorder has resulted from the strike although Sheriff I. I. Shaw early Friday morning stopped a delegation of workers approaching the Paul mine, which until that time had been working.

There is no union phase to the Rainey strike, Organizer John O'Leary, of Charleroi, being quoted as saying that the United Mine Workers was not conducting any campaign at this time. There are no recognized leaders of the Raineymen, the walkout at all of the plants being a spontaneous protest against further wage reductions.

FAIRMONT AND PANHANDLE

More Inquiries Appear — Production Still Low—Tide and Lake Shipments Decline.

FAIRMONT

Conditions were practically unchanged during the week ended Aug. 20. Mine idleness was still very apparent, production not running over 25 per cent. About the only grade manifesting any strength was slack, which was selling as high as $2. Tidewater shipments were slim and comparatively little Lake coal was moving. Unconsigned loads were on the increase.

NORTHERN PANHANDLE

A few more inquiries were being received, but little new business had materialized, production being about 60,000 tons. Lake shipments had virtually ceased, and there is no indication of a resumption of buying for this trade.

UPPER POTOMAC

Production at Standstill — Non-Union Competitors Get the Spot Orders.

Production was still largely at a standstill in the Upper Potomac and Georges Creek regions in the week ended Aug. 20. No coal other than that to be applied on contract, principally for railroad fuel purposes, was being mined. There was no spot business available, all orders of that nature going to the competitive non-union fields in Pennsylvania, where producers were able to undersell local operators.

Middle West

INDIANA

Steam Consumption Low — Domestic Demand Unimproved — Price Advance Due.

Demand for domestic coal, which usually shows a good increase during the closing days of August, continues at a low ebb. The retail dealer, because of the uncertain situation, is not carrying large stocks. He received such a bumping during the last year that he hesitates to lay in large supplies at this time. What will come with the advent of the first cold spell is only a guess.

Any price advance would be due more than anything else to a growing scarcity of lump. The demand for steam coal, because of the industrial depression, continues light and the production of prepared sizes depends upon the finding of an outlet for this steam coal.

Right at present the consumer can obtain domestic coal of high quality and prompt delivery, a situation which in other years at this time was almost unknown.

WESTERN KENTUCKY

Orders Increase — Domestic Higher — New Rates Developing More Markets.

Orders are coming in increasing numbers and inquiries are more numerous. Due to the comparatively small retail stocking this year, and light buying the past two months, it is believed that September business will be active.

Retailers are demanding shipments in flat bottom cars, but this type is scarce. A 20 per cent increase in demand will result in all cars being scarce on some of the producing lines in Kentucky.

Screenings are a bit weak, some overproduction selling down to $1, but lump is firm and higher.

The L. & N. is publishing through rates on coal from its western Kentucky mines connecting with the B. & O. at Louisville to points in Indiana and Ohio. The recent granting of through rates to Missouri and north Arkansas points at 25c. a ton over the southern Illinois group mines, and the status of the through rate protest to Georgia points, are all having their effect in an increased outlet for production.

SOUTHERN ILLINOIS

All Coals in Better Position, Especially Domestic—Prices Steadier—Signs of Car Shortage.

A steadier tone has developed in the Carterfield field, although screenings are not doing much. They are still around $1.25, but are moving a trifle better. Nut coal still hangs heavy, but egg is commencing to move. Many mines are way behind on their lump shipments.

Everything indicates that the domestic trade is beginning to buy. There has been no change in prices. Railroad tonnage was heavier the past week and the matter of car shortage continues to show its near approach. Working time shows up a trifle better, but many mines are still idle.

In the Duquoin and Jackson County fields conditions show a slight improvement, both in working time and prices, which are stronger on domestic sizes and range the same as Carterville.

In the Mt. Olive field a slight improvement was noted in the demand for lump. Egg is slow and nut and screenings are going mostly on contracts. Country price on Mt. Olive lump and egg is $3.75, with St. Louis and Chicago prices about $3. Working time is better than two days a week.

In the Standard field some slight improvement is noted in the demand for domestic lump. Egg is slow and hard to move, also nut, bringing prices equal to 2-in. lump, which range $2.10@$2.35, while 6-in. is about $2.75, with screenings averaging 90c@$1. Railroad tonnage is heavier, but the bulk of the steam coal is moving to the north, while domestic sizes are moving out in the country west of the river. Working time ranges from two to four days, with many mines idle altogether.

Middle Appalachian

LOW-VOLATILE FIELDS

Tidewater Outlet Closed — Domestic Demand Stronger—Slack Coal at Bargains—Contract Movement Better.

New River and the Gulf

There was a very poor market for New River coal during the week ended Aug. 20, and production remained in the same rut, with prices still on the downgrade. The Tidewater market was extremely sluggish, and it was difficult to secure more than $5 f.o.b. Hampton Roads. In short, little other than contract coal was being mined and moved.

Similar conditions prevailed in the Winding Gulf district, with mines running less than half-time. Inland buying was very slow and hence contracts alone stood between the mines and complete idleness.

Pocahontas and Tug River

Pocahontas production was on a somewhat larger scale, reaching about 60 per cent as compared with 40 per cent earlier in the month, with "no market" losses not far short of 200,000 tons. Tidewater shipments were greatly curtailed as the result of a very poor demand. The western movement was fairly large, and domestic was selling more favorably. Slack, however, was difficult to dispose of.

As was anticipated, there was a slight increase in Tug River production, the gain over preceding weeks amounting to about 30,000 tons. There was a little more activity in the open market, but only a small proportion of the output was moving to Tidewater. The bulk of the coal was being applied on contracts.

HIGH-VOLATILE FIELDS

Labor Disturbance Affects Production —Steam Demand Unimproved—Domestic Buying Is Better.

Kanawha

Production during the week ended Aug. 20 was seriously interrupted at the few mines operating on Cabin and Paint creeks by the assembling of men near Marmet for the purpose of marching into Mingo County. It is estimated that on Aug. 24 more than 5,000 men were gathered at this point.

Sales were almost at a standstill, little other than contract coal being moved, although slack was in better shape, owing to the growing scarcity.

Logan and Thacker

In the Logan region only about half as much coal was being shipped as during the corresponding period in July, as it was necessary to curtail shipments for storage, which for some months had constituted the bulk of production. Although orders were no more plentiful, operators were beginning to receive a better line of inquiries.

Williamson mines were producing about on the same basis as during preceding weeks. Production losses from "no markets," while heavy, were not such as to force very many mines into idleness. There was no interference with operations at any point owing to industrial trouble.

Northeastern Kentucky

A slightly heavier demand for lump coal was apparent, as retailers were beginning to add to their fall stocks of coal. Although some classes of industry were taking on additional reserves, consumption was low and sales of gas and byproduct coals were few.

Virginia

The output amounted to 47 per cent of capacity, "no markets" representing a loss of 52.7 per cent. Production was heavier on the Interstate R.R. than on any other lines serving southwest Virginia. Production was mainly on contract, operations being limited to the larger tipple mines. Prices remained virtually unchanged.

West

UTAH

Some Buying Improvement — Retail Stocks Heavy—Industrial Demand Still Low.

The situation continues to improve, though dealers are not experiencing anything like a rush on the part of consumers to place orders. Industrials are slow to pick up. The general public continues to grumble at the prices which prevail, and the winter will doubtless be upon many householders before they decide to fill their coal bins.

Retailers are still piling up coal in the yards, but with present facilities it will be impossible to adequately care for the winter trade unless consumers order the greater part of their supplies during the next few weeks.

July Loadings on the C. & O. system were 671,930 tons lighter than during June and were 396,770 tons less than in July, 1920. Of the entire 2,016,406 tons, handled in July, about one half or 1,018,970 tons originated in the Logan field. Production in net tons in the various fields as reported by the C. & O. was as follows:

	June, 1921	July, 1920	July, 1921
New River	682,130	594,810	370,990
Kanawha	390,040	525,670	289,910
Coal River	260,400	217,270	186,610
Logan	1,195,780	799,230	1,018,970
Kentucky	160,040	276,250	149,986
	2,688,390	2,413,230	2,016,400

MINE And COMPANY NEWS

ALABAMA

Papers of incorporation have been filed by the **Helena Straven Coal Co.**, to engage in the mining, buying and selling of coal, with a capital stock of $20,000. The incorporators, who now operate the West Helena Coal Co. and the Montevallo-Straven Coal Co., domestic mines in Shelby County, are A. Sicard, F. E. Dunlap, Mrs. Mary E. Dunlap and Mrs. Amelia Sicard. The present going mines are located at Sicard and Straven, Shelby County.

It is reported that the **Burnwell Coal Mining Co.** is having a spur track constructed to the site of a new mine to be opened near Burnwell, Walker County, where a slope is now being operated. The new development will be along modern lines and all machinery will be electrically driven. Coal-cutting machines are to be employed and equipment installed for the proper preparation of the product, which will be taken from the Mary Lee seam. The Burnwell company operates the Samoset mine in the same vicinity, which is served by the Frisco lines. General offices are in Birmingham.

ILLINOIS

The Electric Coal Company, formed at Danville, with Indiana holdings, in 1895, by Will and John G. Hartshorn, brothers, has been sold to a syndicate of capitalists headed by George E. Moore of New York City and Frederick E. Butcher of St. Louis, Mo., a final payment of $1,000,000 being made. The Hartshorn brothers held all the stock in the concern which was started on $5,000 capital.

A new 3,000-ton mine is being planned by the **Dodds Coal Mining Co.**, at Carrier Mills. A switch will be extended from Dodds Mine No. 1, about three miles south to the site of the new mine. If the plans of the company are carried out as specified, coal will be hoisted from the new plant not later than December.

The superintendents, foremen and office clerks of the four mines of the **Nason Coal Co.**, were banqueted recently by officials of the company at Virden. The four mines are located at Springfield, Auburn, Girard and Virden. The meeting was held with the idea of increasing the spirit of cooperation among the mines and to better acquaint the men with each other.

INDIANA

Earl Sigmon and Charles Sigmon, operating under the name of **Sigmon Coal Co.**, have filed suit in Indianapolis against the **J. R. Morris Coal Co.**, asking that a receiver be appointed for the defendant company, which, the plaintiffs allege, is not only indebted at the present time in the amount of $25,000, but is losing daily between $250 and $300. As stockholders in the defendant company, the plaintiffs ask the appointment of a receiver to prevent further wastage.

The Etnica Coal Co., which has an office at Clinton, has been placed in the hands of a receiver. Attorney Homer H. Aikman was named as receiver. The company was organized four years ago, but from some cause has never been pushed into real operating activity. The assets are not sufficient to meet liabilities, and it is believed some of the land will fall back to the title of the man who holds a first mortgage.

KENTUCKY

The Wiser Coal Co. has filed a voluntary petition of bankruptcy as a result of unsatisfactory railroad connections, freight rates, and the miners' strike last September. The company was organized last autumn to take over a lease in Clay County. The company has listed its liabilities at about $35,000 and its assets at $55,000. The largest of these is a leasehold listed at $35,000. Action requesting the appointment of a receiver was brought in the Clay County Circuit Court.

Improvements which will increase the company's capacity to 1,000 tons a day have been undertaken by the **Kentucky Block Fuel Co.**, at Elwood. The company has let a contract for the erection of a tipple to cost $25,000, which will have three loading tracks in connection with its operation.

George D. Caldwell and Charles G. Middleton will organize a company to mine coal as the **Alexander Y. Malcom Coal Co.**, with a capitalization of $500,000.

The Delaware Coal Co., recently increased its capital from $30,000 to $60,000.

The Standard Harlan Coal Co., has acquired a mine at Ages, formerly owned by the **Harlan General Coal Co.**, and plans construction of a mile of railroad and development.

MINNESOTA

The Duluth Atomized Fuel Co., of Duluth, is a new concern, formed by the interests already represented in Minneapolis and St. Paul, to engage in the manufacture of pulverized fuel from peat. The capital stock is $480,000.

Whitney Bros., have started to rebuild the foundation of the **Boston Coal Dock** at Duluth. At present piling is being driven along the side of the dock and concrete will be put at an early date.

NEW YORK

An involuntary petition in bankruptcy against the **Interstate Coal & Dock Co.** was filed in the United States Court for the Southern District of New York, Aug. 15, on behalf of three creditors—**C. H. Mead Coal Co.**, who claims $50,000; **Ragland Coal Co.**, who claims $10,000, and **Manhasset Coal Co.**, who claims $100. The attorney for the petitioners is Robert McM. Gillespie.

OHIO

The Gibson-Hance Coal Co., of Springfield, has been chartered with a capital of $10,000 to mine and sell coal. The company will wholesale coal for the time being. The incorporators are William H. Gibson, Isula D. Gibson, William A. Hance, Theresa A. Hance and Harry A. Shaffer.

The Schiler Coal Mining Co., has filed an action in the Franklin County courts asking for a receiver for the **Faye Coal Co.**, of Columbus. The plaintiff claims that the Faye Coal Co. is insolvent, has ceased operating and the assets are in danger of being dissipated.

Judge Scarlet in Common Pleas Court has appointed Howard H. Palmer and Roy Brenholtz receivers for the **Ohio Consolidated Coal Co.**, upon the application of Robert C. Kyle, who is surety on notes aggregating $21,000. The mine is located at Wilburn. The company had the Imperial mine in the Hocking Valley which was sold to D. A. Weadock of Lima, who organized the Progress Coal Co., to operate the mine.

PENNSYLVANIA

Two historic mines in the Connellsville region are to be reopened, following their purchase from the **American Manganese Manufacturing Co.**, by W. D. McGinnis and J. Fred Kurtz, of Connellsville. The mines are the Hill Farm and Ferguson mines located near Dunbar. The deal involves the remainder of the Connellsville vein of coking coal, the Sewickly and Redstone veins, 200 acres of surface and all mining equipment and the railroad siding. The Hill Farm mine in 1890 was the scene of a disaster in which 32 lives were lost. A bore hole released accumulated gas which caught fire and exploded. The bodies were not reached for 22 months. In 1903 three men were killed by an explosion at the Ferguson mine.

Culm banks of the old Gum Boot colliery, in Carbon County, abondoned long ago, which contains over 1,000,000 tons of coal, will be worked by the **Buck Run Coal Co.**, which recently acquired control. The Philadelphia & Reading Ry. is laying tracks to the banks.

Trustees in bankruptcy of **J. V. Thompson** have declared a dividend of 5 per cent and distribution of $1,003,142 is being made to 1,781 creditors. Of the amount to be distributed, $387,542 will go to creditors upon the basis of 5 per cent of their claims. The sum of $105,599 is awarded the referee for expenses and legal costs. A total of $3,325,437 has now been paid to Thompson creditors, the first dividend being $900,900.42. In addition other estates where Mr. Thompson was surety have also paid dividends thus cutting down the pro rata payment of the Thompson debt.

The Taylor Coal & Coke Co., at Searight, resumed operations Aug. 1, as did also the Griffin plant of the **Hillman Coal & Coke Co.**, near Masontown.

WEST VIRGINIA

In addition to installing much new machinery at its plant at Bachman, the **Atlantic Coal & Iron Co.**, of which W. D. Yerkes, of Philadelphia is general manager, is also contemplating the construction of a number of new houses at its operation. F. D. Enney, of Charleston, is the local manager of the company.

Screens are being installed at the Blume operation of the **New River Smokeless Co.**, at Lookout.

A number of improvements are being made by the **Hazy Eagle Collieries Co.**, at its operation at Edwight. In connection with the opening of the No. 2 gas seam for development, this company is building several new houses and is also installing a shaker screen. W. H. Johnson is the secretary-treasurer of the company.

The Central Pocahontas Coal Co. is putting the finishing touches on the work of electrifying its plant at Caples. This concern has abandoned its old steam plant and is now securing its power from the Appalachian Power Co.

An electric conveyor is being installed by the **American Gas and Electric Co.**, at Beech Bottom, for the purpose of conveying coal from the mines to the large turbine engines used in generating power for the Windsor Power Co. The American Gas Co. also contemplates the construction of a railroad into the coal territory owned by the company in Brooke and Ohio counties. It will require about twelve miles of new railroad to connect with these coal fields.

The Maine Collieries Co. has just been organized by Morgantown people for the purpose of developing a large tract of coal land on the Astor branch of the B. & O. in Barbour County, this company being capitalized at $100,000. Leading figures in the new company are: M. L. Taylor, Paul H. Keener, Lena H. Taylor, William E. Glasscock and H. C. Owen, all of Morgantown.

Approximately 526 acres of coal of Pittsburgh, situated between the waters of Mudlick Run and Shinn's Run, in Clay district has been purchased by the **Consolidated Coal Co.**, from the Monongahela River Co., and the Monongah Co. The consideration involved in the transfer amounts to approximately $322,000.

ALBERTA

J. Handley Yates, who has just returned from England, has advised the Edmonton Board of Trade that a strong syndicate of British financiers, headed by Lord Morris, have become interested in the development of Alberta's coal resources. They propose to acquire a lignite mine and install a system for subjecting the lignite to the low temperature process advocated by Herbert Alexander, under which the byproducts will be secured and the residue converted into briquets.

Traffic News

The commission has denied a rehearing in the case of the **Little Fork Coal Co.** vs. the Eastern Kentucky Ry. Co.

The commission has denied a petition of the **Consolidation Coal Co.**, for permission to amend its complaint in order to include rates on shipments of coal from mines on the Millers Creek R.R., to destinations in Central Freight Association territory, western classification territory and the Dominion of Canada, during the period from Dec. 28, 1915 to Oct. 6, 1917.

In the complaint of the **Hagerstown Chamber of Commerce**, involving rates on bituminous coal from Pittsburgh-Youghiogheny, Connellsville, West Virginia, Cumberland and Piedmont districts to Hagerstown as compared with Martinsburg, W. Va., the I. C. C. has authorized the **Security Cement and Limestone Co.** to intervene.

The commission has authorized the Pennsylvania to continue rates on bituminous and cannel coal from points in Ohio, and Alpena, Mich., to Thornton, Ill.; to Porter, Springville and Machler, Ind., the same as rates on like traffic via direct lines; and to continue higher rates to intermediate points.

In the case of the **Chicago Sewer Pipe Co.**, an examiner recommends that the rates between certain mines and the complainants plant, in the Brazil, Ind., coal district, in effect from June 25, 1918, to Feb. 29, 1920, were unreasonable.

Application has been made to the I. C. C. by head of the Lakes railroads to put into effect a differential of 19c. on soft coal screenings from Duluth-Superior harbor to Minneapolis and St. Paul to meet Illinois competition in that territory.

On the ground that sufficient justification therefor was not shown, the commission has denied, effective Dec. 1, the application of the **Lehigh Valley R.R. Co.**, for authority to continue a rate of $4.41 per gross ton on prepared sizes of anthracite and $4.41 per gross ton on pea and smaller sizes of anthracite from collieries, washeries and stations in the Lehigh, Schuylkill and Wyoming regions to Cleveland, Ohio, without observing the long and short haul clause.

In the case of the **West Kentucky Coal Bureau**, a tentative report of an I. C. C. examiner recommends: That the rates on bituminous coal from western Kentucky mines on the L. & N. to Chattanooga, Tenn. and the northern half of Georgia, are unreasonable because they exceed by more than 50c. the rates from the Jellico-Middlesboro group on the L. & N. to same destinations.

Also that the routing to Atlanta over the L. & N. through Birmingham is unreasonably long as compared with another practical through route.

Also that the maintenance of rates from Alabama, eastern Tennessee and southeastern Kentucky mines to Savannah and Port Wentworth, Ga., for export, while maintaining no export rates to these points from Western Kentucky mines, is prejudicial, which is ordered removed.

Personals

W. B. Reed, secretary of the National Coal Association, expects to visit the local coal associations in the fifth and the ninth Illinois districts to discuss cost accounting.

E. A. Holbrook, assistant director of the U. S. Bureau of Mines, has returned from an official visit to the Bureau's stations at Pittsburgh and Urbana, Ill.

C. B. Ebert, sales manager for the White Oak Coal Co., has returned to the United States after an extended visit in Europe.

A. W. Johnson, Duluth, assistant superintendent of the Berwind coal docks, has returned from a vacation, which he passed in a trip on the lakes.

A. H. Willett of the National Coal Association has been appointed on a committee on industry to co-operate with the Census Bureau in the determination of schedules to be used in the manufacturing census for 1921 and future years.

J. C. Evans, secretary and sales manager of the Fairmont Mining Machinery Co., with headquarters at Fairmont, spent the latter part of the week ended July 23 in Uniontown and Pittsburgh, Pa.

M. L. Taylor, vice-president of the Morgantown Coal Co., with headquarters at Morgantown, was in the Cleveland and Detroit markets during the latter part of July.

Rex L. Tomb, who represents the Raleigh Smokeless Fuel Co., Beckley, W. Va., was enjoying a brief outing at Detroit, during the latter part of July and spent a part of his vacation in the Kanawha field.

Luis G. Jimenez, a mining engineer on the staff of the Department of Mines of the Republic of Mexico, as the State Secretary of Industry and Commerce, is making an extended tour of inspection of the coal fields of the United States. He is making a study of the methods and practices used in the mining of coal in this country for application to the mine-operating problems of Mexico.

W. W. Odell, fuel engineer of the Bureau of Mines, is now in North Dakota, where he will co-operate with **Prof. Babcock** of the University of North Dakota on an extended series of tests of lignite carbonization.

Dr. Harry A. Curtis, who has been with the International Coal Products Corporation, as chief chemist, is now general manager of one of the subsidiaries of this company, known as the Clinchfield Carbo-coal Corporation, South Clinchfield, Va.

W. E. Tatus, who has been purchasing agent for the Sunday Creek Coal Co., of Columbus, has been promoted to general sales agent, taking the place made vacant by the resignation of **J. R. Fitzer**, because of ill health. At the same time, **R. W. Drake** was made assistant general sales agent.

E. V. Albert, general superintendent of the Lynch mines, owned by the U. S. Steel Corporation, was a recent visitor in the Straight Creek district of Kentucky.

D. S. Riddle, of the Riddle Coal Co., of Chattanooga, Tenn., was in Kentucky recently. Mr. Riddle states that he finds business reviving in the South.

J. O. Watson, of Huntington, W. Va., was in southeastern Kentucky recently and made a hurried trip to look over some business properties on the Harlan road.

J. T. Bradley, of the Jewett, Bigelow & Brooks Co., is enjoying an automobile trip through the North and East. He is accompanied by Mrs. Bradley and his youngest daughter.

Harry A. Lawrence, well-known throughout the Middle West, and formerly with the Union Colliery Co., has become sales manager of the Newsam Coal Co., of Peoria, Ill., with offices in the Fisher Building, Chicago.

George H. Bridges, formerly with the Old Ben Coal Corporation and the Chicago, Wilmington & Franklin Coal Co., both of Chicago, has been made sales manager of the Lake and Export Corporation of Illinois, Old Colony Building, Chicago.

Obituary

William James Parshall, 54 years old, one of the most prominent independent coal and coke operators in Fayette County, Pa., died at his home recently, after a lingering illness of a year.

August B. Trum, 51 years old, better known to coal men as "Gus" Trum and who for many years was head of the Trum Coal Co., Cincinnati, died recently of heart disease and kidney trouble. Mr. Trum resigned from active participation in the coal business about five years ago and since had been residing at one of the Cincinnati hotels.

Industrial News

Cincinnati, Ohio—The local office of the Cutler-Hammer Manufacturing Co., Milwaukee, has been moved from the Gwynne Bldg., to the Dixie Terminal Bldg. A. R. Maujer, formerly of the sales engineering force of the Pittsburgh office, is now in charge.

Cincinnati, Ohio—The Humphrey Coal Co., handling smokeless and southeastern Kentucky coals has opened an office at 2209 Union Central Bldg.

Columbus, Ohio.—J. R. Fitzer, formerly general sales agent of the Sunday Creek Coal Co., has opened a wholesale office on the fifth floor of the Citizens Bank Building and will conduct the business under his own name.

Detroit, Mich.—Offices of the Bertha Coal Co. and the Wholesale Coal Co. have been removed from the Majestic Bldg., to the General Motors Bldg.

New York, N. Y.—Bradley Stoughton has resigned after more than eight years' service as secretary of the American Institute of Mining and Metallurgical Engineers and will resume his practice as a consulting engineer. Offices in the Engineering Societies' Bldg., 29 West 39th St.

Association Activities

National Coal Association

The Statistical Committee of the Association, appointed June 1, 1921, is composed of the following:

T. W. Guthrie (Chairman) president, Hillman Coal & Coke Co., First National Bank Bldg., Pittsburgh.

F. C. Honnold, secretary, Coal Operators' Associations, 2017 Fisher Bldg., Chicago.

R. T. Price, president, Interstate Coal Co., Muskogee, Okla.

J. S. Brophy, president and general manager, Piedmont & George's Creek Coal Co., Frostburg, Md.

L. C. Crewe, president, LaFollette Coal & Iron Co., LaFollette, Tenn.

Ira Clemens, president, Clemens Coal Co., Pittsburg, Kan.

C. H. Jenkins, secretary and treasurer, Hutchinson Coal Co., Fairmont, W. Va.

J. C. Layne, Jr., manager of sales, Eaton Rhodes & Co., First National Bank Bldg., Cincinnati.

S. H. Robbins, president, Youghiogheny & Ohio Coal Co., Hanna Bldg., Cleveland.

T. T. Brewster, vice-president and general manager, Mt. Olive & Staunton Coal Co., 1012 Federal Reserve Bank Bldg., St. Louis.

Coming Meetings

The Huntington Coal and Industrial Exposition will be held in the Chamber of Commerce Building, Huntington, W. Va., Sept. 19 to 24 incl. Chairman of committee, Thomas A. Palmer, Huntington Chamber of Commerce, Huntington.

American Institute of Mining and Metallurgical Engineers will meet at Wilkes-Barre, Pa., Sept. 12 to 15. Secretary F. F. F. Sharpless, 29 West 39th St., New York City.

National Association of Cost Accountants will hold its annual convention at Cleveland, Ohio, Sept. 14, 15 and 16. Secretary, S. C. McLeod, 130 West 42d St., New York.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The twenty-fourth annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. E. C. Porter, Convention Manager, Congress Hotel, Chicago, Ill.

The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers will hold its annual meeting at Huntington, W. Va., on Sept. 20 to 23. Secretary-treasurer, Herbert Smith, Huntington, W. Va.

New York State Coal Merchants' Association, Inc, will hold its annual convention at Richfield Springs, N. Y., on Sept. 8, 9 and 10. Executive secretary, G. W. F. Woodside, 250 Arkay Bldg., Albany, N. Y.

Canadian Institute of Mining and Metallurgy will hold its annual Western meeting at Edmonton, Alberta, Canada, Sept. 14, 15 and 16. Convention secretary, R. B. Williams, 10,610 83d Ave., Edmonton, Canada.

American Manufacturers Export Association will hold its twelfth annual convention at the Waldorf-Astoria, New York City, Oct. 5 and 6. Secretary A. W. Willmann, 160 Broadway, New York City.

National Safety Council will hold its annual congress at the State House, Boston, Mass., Sept. 26 to Sept. 30 inclusive. Secretary, S. J. Williams, Chicago, Ill.

The Coal Mining Institute of America will hold its annual meeting at Pittsburgh, Pa., Dec. 7, 8, and 9. Secretary, H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

An Industrial Relations Conference for all industries in the State of Pennsylvania has been arranged for Oct. 24 to 27 at Harrisburg, Pa., by the Commissioner of Labor and Industry, C. B. Connelly.

The sixth annual convention of the **National Association of Purchasing Agents** will be held Oct. 10-13 at Indianapolis, Ind.

International First-Aid and Mine Rescue Meet. Sixth annual event will be held at St Louis, Mo., Sept. 1, 2 and 3, under the auspices of the U. S. Bureau of Mines and the Red Cross.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

E. LESHER AND R. DAWSON HALL, *Editors.*

Volume 20 NEW YORK, THURSDAY, SEPTEMBER 8, 1921 Number 10

Anthracite Ways for Bituminous Operators

BECAUSE anthracite is not free-burning and is hard to break it has been necessary to size it carefully and to provide that none of the coal shall be of such large size that it cannot be burned, seeing it is so hard that it is not readily broken. It will be noted from Mr. Ashmead's interesting article in this week's issue that formerly lump, steamboat and broken—three large sizes—were in demand. Today even egg is regarded as too large a size, and the tendency is not to buy it and consequently not to prepare it.

The preference seems to be toward smaller sizes, even in domestic use. Strange to say, the bituminous operator still finds many persons who want the largest coal and are willing to pay more for it than for smaller, preferring to have a coal they can break up even though the resulting product is full of fines, from which egg or nut coal would be almost free. The time probably will come when the bituminous-coal burning public will demand coal of even grade and not too large, and then all the large lumps will be put through a crusher as in the anthracite breaker. Large bituminous coal is not desirable nor is run-of-mine. An even size that can be stoked as received will burn with less waste.

Many are the hints to bituminous operators to be derived from an inquiry into anthracite practice. Mr. Ashmead, in today's excerpt from his paper before the American Institute of Mining and Metallurgical Engineers, covers a period when it may appear that the industry was more progressive than in the quarter century past. Yet in that later time many changes have taken place and the anthracite operator has not been idle. Underground he has accepted roller bearings, pneumatic drills, undercutting machines and scraper loaders. Between ground and surface he has introduced the self-dumping cage and the water hoist. He has electrified his plants. He is about to introduce tables, classifiers, thickeners, gravity separators and other devices to clean his fine coal. He is preparing to make his strippings not only the deepest but among the most efficient.

At the coming meeting of the American Institute of Mining and Metallurgical Engineers the bituminous operator will at least hear and see many things that will interest him in the anthracite region. As stated, he will find no large coal going to market and he will see better sizing and preparation than is customary at soft-coal mines. He will note the relative absence of the human picker, who is a perpetual expense in the bituminous tipple wherever picking tables are installed.

He will note the care with which large coal is kept with small to prevent degradation—a practice, however, that the bituminous operators do not forget in their conveyors, where the fine coal is fed below the large and so the large coal has the slack to ride on.

He will see how some anthracite railroad operators have met their railroad problems with gigantic standard-gage planes. West Virginia is not unlike the anthracite region and perhaps it would have been better if some of its steeper roads had been gravity planes, and not railroads built on the grades of the steep streams with which West Virginia abounds.

Strictly Business

WHAT is the matter with the price of anthracite? That is the question uppermost in the minds of literally thousands of householders of the East. Government reports show that the prices of about everything else have tumbled—many have dropped to pre-war levels and some have even gone below. Prices of domestic sizes of anthracite, instead of going down, however, have steadily climbed for years. There is no war peak in the price curve of this commodity of common use. On every hand consumers are told that delay in purchase of next winter's fuel means no saving in dollars, but rather the contrary. The country has its mind set on having prices go down, but here is one thing many of us use that is not going down, but tends upward this winter.

How can this be true, unless the country is in the grasp of some terrible, iniquitous coal trust? Why isn't something done about it by the government? Too bad that some of those coal-regulation bills could not have been passed by the Senate! These and similar thoughts are in the minds of many who cannot understand and in large part have never been told the whys and wherefores of the hard-coal business. It is understood that the anthracite operators are going to tell their story to the public very soon. Just how far they will go in such an educational campaign has not as yet been disclosed, but it is assumed that they will stress the facts that bear on the relation of costs of production to selling prices and to profits.

Early last spring we sat across the desk from an executive of one of the large hard-coal producing companies. Spring discounts were being discussed, and we told this man that as far as we personally were concerned, an April reduction of the usual 50c would be no temptation whatsoever to make an early investment in our next winter's coal. Half a dollar per ton when the delivered price was $7 was one thing but that amount with the delivered price $14 was another. It barely represented interest on the investment. "The spirit of the times demands not half a dollar but a dollar and a half," we said.

Opening a large book filled with figures of costs covering every detail of operation, overhead, taxes, depletion, depreciation, royalty and profit of this company for several years back, this official said: "Last year, had it not been for the good prices we obtained for steam sizes, we would have made no money, and prob-

ably would have gone into red. This year, with such low prices for steam sizes and with the large increase in wages, despite the advance in prices of last year, we cannot afford to make any such spring discount as you suggest. In fact we will do well to come out with any profit with but the usual 50c. cut. This company is neither a high-cost nor a low-cost operation. We are about in the middle and represent the average."

For an hour we pored over the figures for that company. We compared its costs with those of all other companies as contained in the report of the Federal Trade Commission. We came away convinced that the anthracite industry could not afford to take a big slice out of our coal bill. And our knowledge of the trade showed us, without being told, that the hard-coal operators did not have to put the prices where they would net a loss for the largest part of the tonnage.

The prices of domestic sizes of anthracite at the mines are justified by the costs of production; they represent a good profit to a few companies, a fair profit to more and no profit and even a loss to others. To reduce the prices to where the consumers would like to see them—at or near pre-war levels as delivered at their curb—would mean practically giving the coal away at the mine mouth, so great are the increases in recent years in the freight rates and retail dealer's margins. The producing industry can afford to make no such reduction and, furthermore, it does not have to. To conjure up a fancied hard-coal trust and berate it for this condition is but demagogy.

The buying public, however, has a stubborn streak. It has had a taste of victory in the struggle with old H. C. L., and by striking at high prices has had the satisfaction of at least reading that the cost of living is going down, even though tangible evidence is not always at hand. The public has been acting largely on the theory that if it refused to buy, then the vendor would of necessity lower his price. Fortunately for the orderly progress of readjustment, this medicine has worked fairly well in some lines. The textile manufacturers were among the first to bow the knee; iron and steel have followed; labor here and there has met the situation by accepting lower wages.

In every case, however, there has been a compelling reason for the lowering of price. First and foremost has been the ability of the consumer to stay out of the market. If it was daily bread, he had to buy; but if it was a suit of clothes or an automobile, he shook his head until the price came down. In the progress of events during the past few months many a business has written off a money loss in lower-priced inventories, started afresh with a determination to meet the market and passed a few dividends—because it had to, or close up shop.

Good, sound business principles and policy have dictated this course. It has been strictly business. Without question much of the paper wealth of 1920 has disappeared in this manner. Bituminous coal has followed this course to a very large extent, but not as far as some other industries. Producers of bituminous coal have liquidated profits either by curtailing or ceasing operations or by selling their coal for what it would bring, even below what it cost them.

Now, the domestic sizes of anthracite are the product of an industry that is not competitive because the deposits of this fuel in the ground, and the mines and miners available are but sufficient to meet the requirements of our hard-coal burning population each twelve months by working through those twelve months. Whatever can be produced in any twelve months will be burned. The household consumer may get as mad as a March hare over "the outrageous price" of his winter anthracite, but so long as he must have it or hesitates over trying a substitute, if one may perchance be available, the miners, the producers and retail dealers have no compelling reason for pricing their product and services below that which returns a profit.

From the standpoint of cold-blooded business policy—and no business, big or little, is operated as a philanthropy—we see no reason for either producer or laborer in the hard-coal field to cut a price that is economically justified by the law of supply and demand. Anthracite is a natural monopoly, with demand equal to supply each year, good times and bad. These facts should be fairly faced. No apologies are necessary.

An Opportunity for Constructive Planning

UNDER the headline "Plan for Prosperity" the American Mining Congress is inviting the coal operators of the United States to join in the twenty-fourth annual convention to be held in Chicago in the week of Oct. 17-22. Stating that collective thought and co-operative effort are essential and that at this convention there will be assembled the best minds and the most influential representatives of all the varied branches of the mining industry, the announcement says that the coal sessions are to be a special feature of the meeting.

Pointing out that the coal industry has been the target for public, press and politician, and that tomorrow it may again be the target for conditions over which the operators have no control, it is suggested that the three factors in the industry most worthy of consideration are the relationships between the coal operator and labor, the extent to which co-operative effort without government interference would prevent wasteful production and benefit both the operator and the public, and the methods by which the railroads can assist the coal operator to effect a more stable and continuous movement of coal throughout the year.

The promoters of this meeting have invited as speakers, among others, J. G. Bradley, T. H. Watkins, T. T. Brewster, H. N. Taylor, C. E. Maurer and Phil Penna. F. S. Peabody is chairman of the Illinois committee on arrangements, which insures not only a good beginning but a successful ending. The government will be represented by Herbert Hoover, Senators Reed and Nicholson, and George Otis Smith. In other words it is evident that a real effort is to be made to have some expressions of opinion on the coal question, whatever each speaker may conceive that problem to be.

It is perhaps well that this opportunity for expression is to be had. It is an excellent time for more from the men in the industry. It will be recalled that at the conventions both of the National Coal Association and of the American Wholesale Coal Association this year, although the occasion for discussion of such matters was at hand, the subjects uppermost in the minds of all were not those discussed on the convention floor. Perhaps meeting under the auspices of a gathering of representatives of all the mining industry, with past trouble more or less in retrospect, there will be a general airing of causes and effects and some constructive planning for the period of prosperity that is coming.

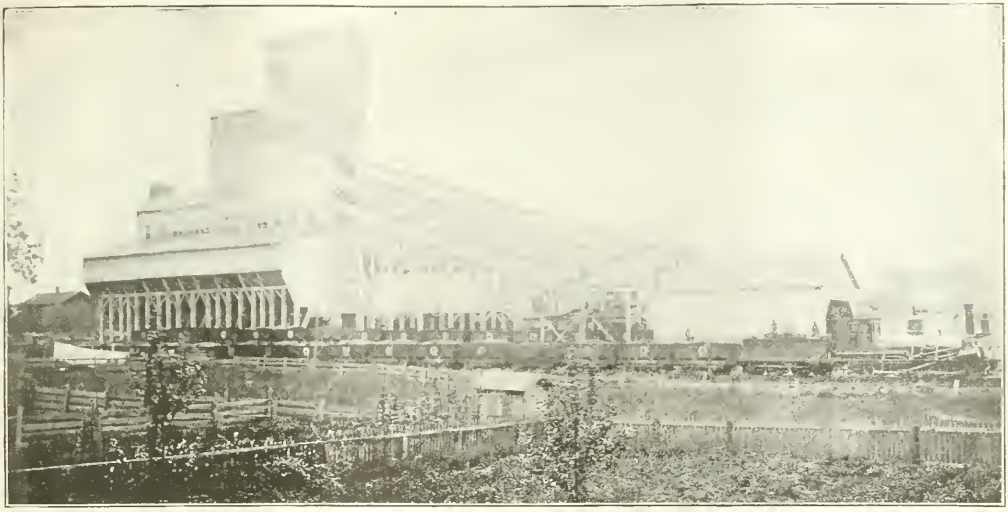


FIG. 3. OLD DODSON BREAKER, BUILT IN 1869 AND BURNED IN 1897, HAD MANY NOTABLE IMPROVEMENTS. This breaker, located at Plymouth, Pa., had rolls, two revolving screens and extensive pockets. It did not save any coal smaller than chestnut. It may also be noted that at that day the trade seemed ready to accept larger sizes than it is today

were dumped upon a perforated cast-iron plate. Here men with hammers and picks broke the large lumps of coal down to commercial size. It is possible that the coal after falling through the plate perforations was passed over bar screens to remove the smaller sizes, which at that time had no commercial value.

About this time also the hand rake—Fig. 1—was introduced. After the coal was mined and before it was loaded it was pulled over with a rake made of wrought iron and having the teeth so set as to give a 1¾-in. clear opening. This permitted the miner to separate all coal smaller than stove from the larger pieces. This larger coal was loaded into mine cars and taken outside, and that which was smaller was left behind. Thus part of the separation was done inside and part outside the mine.

The rake was in use in places in the coal fields to as late a date as 1850, for it was not until 1869 that it was found possible to use pea coal, and when the preparation of this size came to be a commercial possibility it is probable that the rake was discarded. In some operations the rake was superseded by the slotted scoop shovel. Unfortunately it is impossible to obtain exact information on certain details, and it has been possible to get relative data only. As a result the dates here given are merely approximate.

In 1844 the crushing roll was invented by Messrs. J. & S. Battin, of Philadelphia. It was first used in their coal yard in that city during the year named.

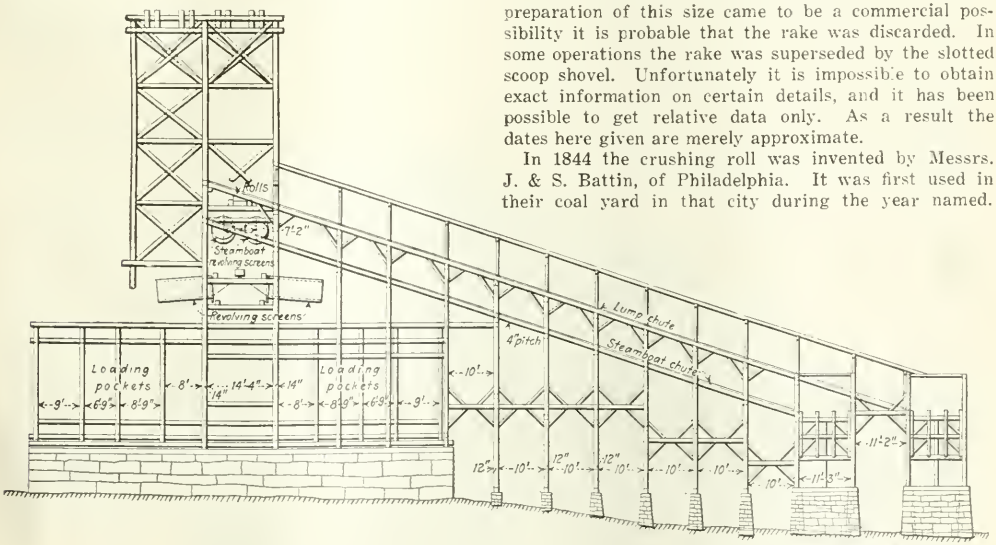


FIG. 4. LONGITUDINAL CROSS-SECTION OF OLD DODSON BREAKER, SHOWING LONG CHUTES FOR LUMP AND STEAMBOAT

The railroad track was laid parallel to this cross-section. The coal must have been badly broken by the time it had traveled these long chutes and dropped into the bins at the bottom. Degradation, however, was little studied at that early date.

During this same year the first coal breaker with circular screens was erected by Gideon Bast on Wolf Creek near Minersville, Pa. A 12-hp. engine was used to drive the machinery, and the equipment had a capacity for breaking and cleaning 200 tons of coal per day. The success of this building led to the construction of thirteen additional breakers in the same field the following year.

Although steam was used to drive the preparation machinery in the first breaker, this was not usual, for in many places horses for a long time furnished the necessary power. In the smaller plants where coal crushers were not used even man power was utilized to turn the revolving screens by which the coal was sized. These hand-power screens in some cases were only 8 ft. long but sometimes they were as much as 12 ft. in length. They could easily be turned by hand.

One of the earliest breakers of which a description is to be found was the predecessor of the present Pine Brook breaker—Fig. 2—at Scranton. The information from which the drawing here presented was made was obtained in the testimony given at a royalty trial. Although this drawing is of the breaker as it stood in 1855 it is evident from the information available that it was built a number of years prior to that time, for in 1855 rolls were generally used for the reduction of the large sizes of coal.

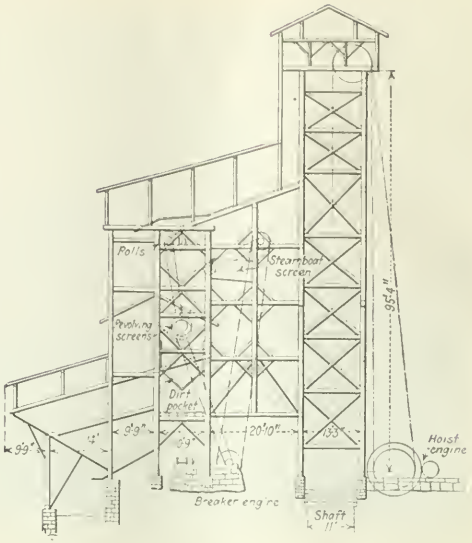


FIG. 5. SIDE CROSS-SECTIONAL ELEVATION OF OLD DODSON BREAKER

This shows that the hoist engine was placed close up to the shaft so that the rope had to pass almost a full half circle round the head sheave. Note that the headframe had already reached an elevation of about 100 ft. and it was due to go much higher.

Break Down Large Coal with a Hand Hammer

After the coal was broken down in the mine it was raked over and the large pieces or those over 1½ in. in size were loaded into the mine cars and hauled to the outside. Here the mine cars were run onto a trestle and discharged by the aid of a horn dump onto an incline. The coal was then pushed by hand or a rake onto a cast-iron plate which was so perforated that grate coal would pass through. On this plate the large lumps of coal were broken down to smaller sizes, the lump and steamboat being pushed across the plate to a pocket. The smaller sizes fell through into a hopper, from which they were fed to a revolving screen 12 ft. long. The "grate," or what is now known as broken coal, passed out of the end of this screen and the rest of the material was separated into egg, stove and chestnut. The coal finer than chestnut was run to a waste pocket and thence to the culm bank.

This screen was revolved by man-power, no mechanical energy of any kind being used in the preparation of the coal. The only impurities that were removed were those that the men took out when they broke the coal down through the cast-iron plate. It was not necessary to remove impurities, as they were few and far between. It is probable that this breaker was built some time about 1845 and was ten years old at the time it was described.

Probably the greatest improvement of this period was

FIG. 6

Old Reynolds Breaker

This breaker, also known as the Washington breaker, was located at Plymouth, Pa. Note with what frugality the sides were strutted and how the roof over the picking chutes was left open, so that the otherwise ill-lighted structure might serve for the picking of coal. Light was needed then even more than today, but window lights were expensive.

FIG. 7. NEW NOTTINGHAM BREAKER TO WHICH IS SENT THE COAL FORMERLY SENT TO THE REYNOLDS BREAKER. A considerable contrast between this and the breaker in Fig. 6. This structure belongs to the Lehigh & Wilkes-Barre Coal Co. It will be noted that some progress has been made in this breaker toward adequate lighting, though not so much light is provided as in some of the more recent breakers.

the introduction of mechanical power. This permitted the use of larger screens as well as the breaking down of the lump coal by means of rolls. This greatly increased the capacity of breakers over those employing the older hand methods. The introduction of steam power did not mean, however, that hand-operated breakers were superseded, for up until about 1860 there were still some of them in existence. In fact, I have a record stating that in 1876 the old cast-iron plate was still in use for breaking the coal and that the small revolving screens were driven by man-power. This was thirty-two years after the introduction of steam power into breaker operation.

The first rolls were made of cast iron with cast integral teeth. About 1876 a roll was introduced having a cast-iron shell into which steel teeth were driven. In some places a fluted roll was tried. In addition to these during the early period of preparation and some time prior to 1865 a fluke roll was used. The teeth of the roll in passing through slots in a cast-iron plate crushed the coal in a manner exactly similar to that employed in breaking the coal with a hammer through cast-iron plates, as already has been described. This method of crushing created as much waste but was more rapid than the hand method it replaced.

In 1864 J. Lykens, of Pottsville, invented a crusher that was supposed to operate in a manner similar to a man with a hammer or a pick working over the old cast-iron plate. This machine had a plate like the one used for hand crushing upon which a pick was operated somewhat in the same manner as a steam hammer, thus breaking down the coal. The plate was circular in shape and fed from a chute and revolved, always bringing a fresh surface with unbroken coal for the pick or hammer to act upon. The coal was discharged through the plate. As far as is known, only one of these crushers was ever made, this one being built at Tamaqua. Of where and when it was used, if at all, I have no knowledge.

This brings us to the late sixties. It is interesting to

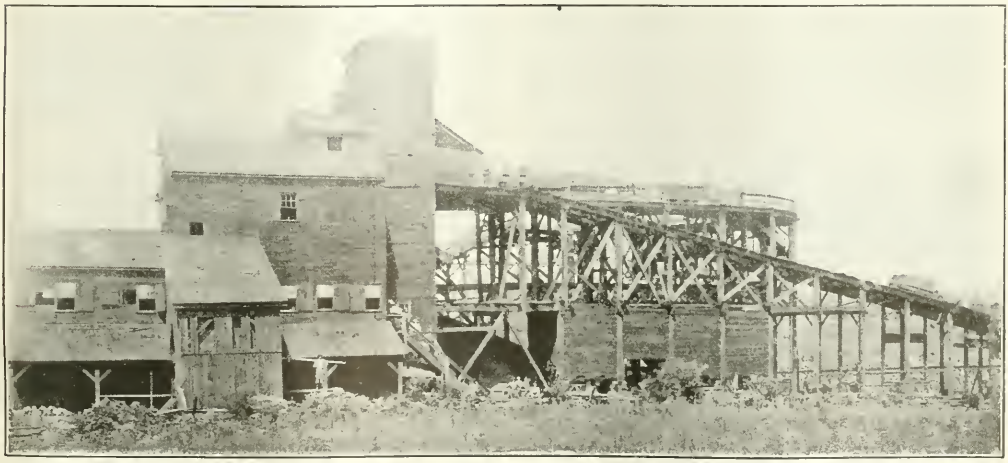


FIG. 8. OLD ALEXANDER GRAY BREAKER, WILKES-BARRE, WHICH STOOD NEAR HOLLENBACK BREAKER Built in 1860 it was torn down in 1874. It had a set of revolving screens 21 ft. 10 in. long and made culm-bank coal, small and large stove coal egg and No. 1 broken. The large sizes were separated by hand.

note the design of a breaker that was built in 1869. This was the old Dodson breaker at Plymouth (Figs. 3, 4 and 5). Here the lump coal was separated from the smaller sizes and run directly to the lump pocket. Next the coal that was large and not very clean, together with the fine sizes, was passed to a pair of rolls and crushed. After passing these rolls the coal was separated into two equal parts, each part going to a separate screen. In these screens only the steamboat coal was taken out, the finer sizes being sent to a second set of rotary screens. It is probable that the steamboat coal was hand-picked before being deposited in its pocket.

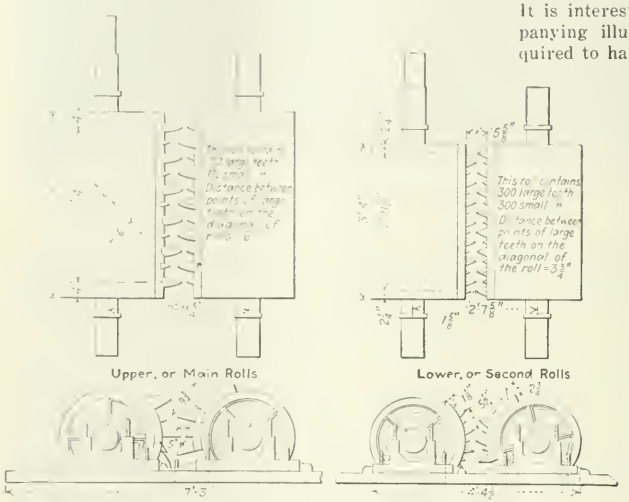


FIG. 9. OLD ROLLS USED AT BREAKER OF NO. 5 COLLIERY, LEHIGH & WILKES-BARRE COAL CO.

The rolls were used prior to 1874, when they were discarded. Note the large and small teeth which were used in each type of roll.

The finer sizes of coal that were separated in the second set of revolving screens were likewise hand-picked by boys before going to their respective pockets. No coal smaller than chestnut was saved, all smaller sizes together with the rock being sent to the dirt pocket, ultimately finding their way to the culm bank. It should be remembered that the mine rake was still in use and all coal smaller than chestnut produced underground was left in the mine, so that fine coal separated in the breaker was only what was made in the crushing down of the larger sizes. It is regrettable that in those days all sizes were not brought to the surface, and the fines placed in the culm pile. As it is, millions of tons of marketable coal now lie buried in the mines and never will be recovered.

Another interesting breaker of the same period is the old Washington or Reynolds breaker of Plymouth (Fig. 6). This structure was reported as being in a dilapidated condition in 1869 but was braced and repaired so that it was used for many years afterward. It is interesting to note in connection with the accompanying illustration that a hundred persons were required to handle the output of this breaker. Of course most of these employees were boys hired to pick the slate and other impurities out of the coal. It did not seem to be the custom in those days to provide many windows to give light. Accordingly it was necessary to remove the roof over the picking chutes and leave the boys unprotected so that they could see to pick the slate. Fig. 7 shows the new Nottingham breaker, to which the coal that was treated formerly in the Washington breaker now goes.

Still another structure of the same period is the old Alexander Gray breaker (Fig. 8), which stood near the present Hollenback breaker. This was built in 1860 and was torn down in 1874. This breaker was equipped with one set of revolving screens having a total length of 21 ft. 10 in. and making culm-bank coal, small and large stove coal, egg and No. 1 broken. Evidently the larger sizes were separated by hand.

It is interesting to note the type of rolls that were in use at this period. Fig. 9 shows two old rolls that were discarded at some time prior to 1874. They were lying in a scrap heap when Mr. Dodge, a consulting engineer of Wilkes-Barre, made measurements of them and drew the original from which this cut is copied.

The long plane ran down to the bank of the canal on what is now Pennsylvania Ave. This plane employed a barney, and the engineer who operated it had the idea that if he put large wheels on the back end of the barney it would require no power to pull the device back uphill. He had a pair of barneys constructed in accordance with this idea but, as well may be imagined, the power consumption was not materially changed.

Bureau of Mines Co-operates in Study and Solution of Coal Problems

STUDY of a number of coal problems is involved in work now being conducted by the Bureau of Mines in co-operation with various industries and State organizations. Coal and coke in the South is being investigated in co-operation with the University of Alabama. The possibility of using Illinois coal instead of Eastern coal in the production of gas is being investigated at the University of Illinois. The washing of Alaskan and Washington coal is being studied at the University of Washington. In co-operation with the American Society of Heating and Ventilating Engineers, a study is being made of efficient and economic heating, ventilation and related subjects.

At Pittsburgh, in co-operation with the Carnegie Institute of Technology, investigations are being conducted to interest mine operators, engineers and others in the coal industry in better training and education in coal-mine engineering.

A study of combustion of powdered fuels is being made in co-operation with the Combustion Engineering Corporation of New York. Means of improving and treating coals of Oregon are being studied at the Oregon Bureau of Mines. In co-operation with the Pennsylvania Geological Survey the Bureau is sampling and analyzing Pennsylvania coal as to heat values.

In co-operation with the Tidewater Coal Exchange of New York and the Sewalls Point Coal Exchange of Norfolk investigations are being made concerning the preparation of coal to increase efficiency in its use and the economic development of the industry by improving the grading and classification of coal shipped to Tidewater pools. "Nokol," a liquid fuel designed for domestic use, is being investigated in co-operation with the Steam Corporation of Chicago. The bureau also is investigating the Trent process for cleaning fuel proposed by the Trent Process Corporation of Washington, D. C. The smokeless combustion of bituminous coal is being studied in co-operation with the General Boilers Co., of Waukegan, Ill.

Development of Ingenious Methods by Which Anthracite Is Cleaned of Impurities and Sized for Market*—I

Large Lumps of Anthracite, Being Unsalable, Have to Be Crushed — Rakes and Slotted Scoop Shovels Formerly Separated Coarse from Fine Coal — Fines Left in Mine — Coal Broken on Cast-Iron Gridded Plate

By Dever C. Ashmead
Kingston, Pa.

ANTHRACITE coal has been used for the past one hundred years and more, and its preparation must date back equally far, for without some degree of sizing it could not have been burned. Two vital factors have determined to a large extent the amount and the method of anthracite preparation. These are, first, the character of the beds mined together with the methods of mining employed, and, second, the means and methods used in burning the coal.

I do not intend to go deeply into the above phases of preparation, as a paper could be prepared on the history of either that would be of no mean length. Rather it will be the intention to point out in as few words as possible the main considerations and to show the influence they have exerted on the preparation of anthracite coal.

In the beginning of the nineteenth century the coal beds were entirely unworked with the possible exception of some outcroppings that had been mined to a slight extent by the Indians. It is known that the American aborigines had a knowledge of the use of this fuel, for when the Wyoming Valley was purchased from them they mentioned the fact that by selling the land they would lose their coal. This was in the year 1754.

Fell First White Man to Burn Anthracite

Real mining of anthracite began about 1808, when Judge Jesse Fell, of Wilkes-Barre, discovered that the "common stone coal of the valley" could be burned in an open grate. For years mining was conducted near the surface. The working places were driven narrow and only the best of the coal was selected, the remainder being left in the ground. Only the lumps could be used, as no market existed for any other sizes.

As time passed, however, it became necessary either to go farther into the ground or to widen out the working places. When the places were widened, falls of roof occurred more frequently. Consequently it was necessary that rock be removed from the coal. This was particularly true of the Schuylkill region, where the measures pitch steeply.

At first only the best beds were mined, the smaller measures being considered worthless. As time passed the thick measures were worked out, and as a result the thinner beds had to be mined. These measures carried a higher percentage of rock partings and bony coal, which had to be removed before the coal could be marketed. This further complicated the methods of preparation.

Later, particularly in the Wyoming field, when a large part of the first mining had been completed in all the beds, in order to keep the output up to the demand it became necessary to commence second mining, or the robbing of the pillars. When this was attempted more dirt in the form of rock became mixed with the coal because of falls of roof. This still further complicated the methods of preparation.

In the lower regions, where steep-pitch mining occurs and the coal is run out of the breasts into the mine cars by gravity, there is practically no way to keep the roof from falling and mixing with the mined coal. Here in many instances the proportions of coal and rock in a mine car will be equal, and it is a common occurrence for mined material to run steadily for some time at one-third coal and two-thirds rock.

Thin Beds and Second Mining Increase Rock

In the upper region, where the coal lies comparatively flat and the mine cars can enter the working chambers, the larger pieces of rock can be separated from the coal and a greater percentage of the latter loaded into the mine car than in the lower region. In the upper field, however, there is more second mining or robbing going on than in the lower, and the rock and bone that are now being produced from the thin beds to some extent compensate for the rock unavoidably brought down in the breasts of the lower regions.

It thus readily can be perceived that because of the changes in the methods of mining and the exhaustion of the thicker beds the preparation of anthracite coal has become progressively more and more complicated.

If the same method of burning coal were followed today that was in vogue a hundred years ago, it is probable that changes in the methods of preparation followed would be less pronounced than they now are

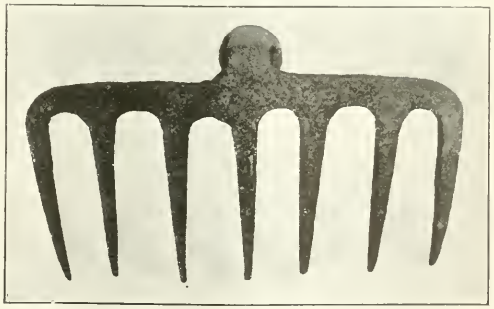


FIG. 1. RAKE FOR SEPARATING LARGE FROM FINE COAL

As the coal finer than 1⅜ in. in diameter was not desired, it became the practice to use a rake to turn over the coal before shoveling. Later it was thought well to screen and shovel coincidentally and the slotted scoop shovel was introduced.

*Introductory part of article entitled "Advances in the Preparation of Anthracite," to be read at the Wilkes-Barre meeting of the American Institute of Mining and Metallurgical Engineers, Sept. 12, 1921.

The methods of using the coal, however, have advanced materially. Boiler furnaces have changed greatly in type, and the coal has to be prepared so that it will meet the new conditions.

When Judge Jesse Fell in 1808 conducted his experiments on coal burning he employed, as he said, "the common stone coal of the valley" in a grate placed within an ordinary fireplace. The inference, however, could hardly be drawn that the fuel was practically run-of-mine coal. It is known that only two years later lump coal only was used. It is almost certain that natural draft was employed. Ignition may or may not have been effected by the aid of the small hand bellows that formed one of the fire tools that reposed upon, or beside, many if not most of the hearths of that day.

Modify Draft So Fine Coal Can Be Burned

Utilization of the finer sizes of anthracite was and still is largely a matter of support and drafting. In the early days grates were crude and of a wide opening. The volume of the interstitial spaces is much greater in the larger grates, with the result that whereas air will circulate freely through a thick bed of large-size fuel such as "grate," it moves only with difficulty through even a much thinner bed of, say, No. 3 buckwheat. When attempts were made to burn the buckwheats, it was found that the air would not pass through the fire, where ordinary natural draft was employed, in sufficient volume to enable combustion to take place with the desired rapidity. Industrial plants, therefore, resorted to forced or induced draft of some sort. The steam-jet blower doubtless was the first, the simplest and probably the cheapest of these means for creating artificial draft. This was successful in a degree but was soon succeeded by fans.

Finally Even Silt Is Caused to Burn

The draft has been further perfected by placing the fuel on a traveling grate and passing it successively over compartments with adjusted draft pressures. These are so arranged as to furnish the amount of air best suited to the fire conditions existing above them and to yield complete combustion of the fuel before the refuse is discharged over the end of the grate into the ashpit. Already this arrangement is making present-day silt or coal passing a ¾-in. circular opening and containing probably at least 10 per cent of moisture a usable commercial fuel for power production.

Two other means of utilizing anthracite fines are used to a limited extent. These are briquetting and the burning of such fines in suspension. The first, though employed extensively in Europe, has never found great favor at the mines of this country. The product of the process is sold in direct competition with the domestic sizes of freshly-mined coal. While perfectly successful, this process has never attained the magnitude that some enthusiasts predicted for it a few years back.

The second—namely, burning in suspension or in the powdered state—has in a measure at least passed the experimental stage and is just entering that of commercial application. Time alone will determine the scope and possibilities of this means of anthracite consumption.

From the foregoing it may be seen that originally lump coal was the only size that could be sold. As improvements in the methods of burning came into being, however, smaller and smaller grades were utilized until at present coal passing a 200-mesh screen, or even finer, can be burned. Naturally this means that much change in preparation has taken place, the number of marketable sizes increasing from one to ten. Further, it has been found that much coal which was considered worthless in the past is now an excellent fuel provided it is cleaned and prepared properly. The cause for the utilization of this material probably has arisen largely from the increased costs of mining rather than from any other reason.

Preparation of Coal in the Early Days

Thus mining itself has affected preparation. Simultaneously methods of combustion have likewise had their bearing upon the preparation processes. Preparation itself therefore will be briefly outlined from the earliest days to the present time.

From about 1808 to 1830 preparation—what little the coal received—took place in the mine itself. Here, after mining, the miner selected the larger lumps and loaded them onto a wheelbarrow and either dumped them directly into a canal boat or into a long chute which in turn delivered the coal to the same vessel. All the sizes finer than lump were left in the mine, being considered worthless. No power of any kind was used at the colliery. All the work had to be to the rise, as no pumps were employed.

In 1830 the first attempt was made to prepare the coal at a scaffold outside the mine. As before, only the large lumps were removed to the surface. These

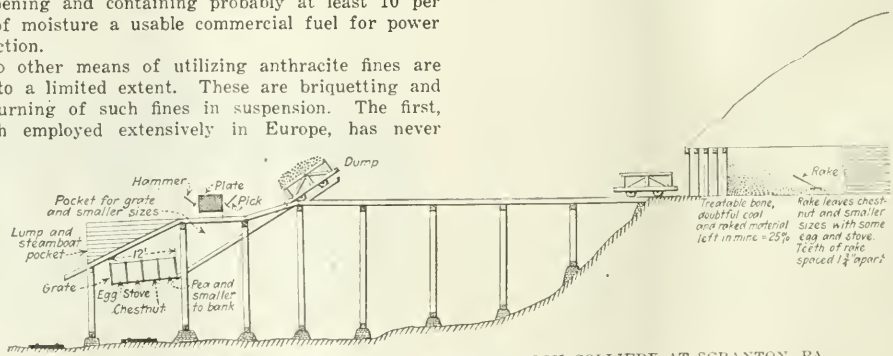

Hammer
Plate
Pick
Dump
Pocket for grate and smaller sizes
Lump and steamboat pocket
12'
Grate
Egg Stove Chestnut
Pea and smaller to bank
Treatable bone, doubtful coal and raked material left in mine = 25%
Rake
Rake leaves chestnut and smaller sizes with some egg and stove. Teeth of rake spaced 1¾ apart

FIG. 2. DIAGRAMMATIC ELEVATION OF OLD PINE BROOK COLLIERY AT SCRANTON, PA., SHOWING PREPARATION METHODS

Based on testimony in a trial regarding the payment of royalties. The breaker was in operation in 1855. The drawing was prepared by Mr. Dodge, a consulting engineer, of Wilkes-Barre, Pa. The coal was dumped on a horn dump and fell on a gridded plate. The larger coal was broken and the finer coal fell through the grid. Coal of lump or steamboat size was pushed on till it fell in a pocket. The finer sizes were screened into grate, egg, stove, chestnut and smaller, the latter going to the culm bank. The grate leaves by the end of the screen.

Detailed Description of Fight Against Two Mine Fires*

Both Were Caused by Open Lights Igniting Timber and Were Extinguished Only by Sealing and Consequent Smothering of the Fire—Intake Closed Off First

By Douglas Bunting
Wilkes-Barre, Pa.

In THE anthracite fields of Pennsylvania, mine fires occur with more or less regularity, their existence being an ever-present hazard. In all probability 90 per cent of the mine fires can be ascribed directly or indirectly to the ordinary miner's open lamp. Other causes may be smoking, electrical installations, gas explosions, gas feeders and the communication of fire to the outcrops from ash dumps, culm banks, timber and brush fires.

Fires in pump rooms, engine rooms, and barns have been largely eliminated as a result of the Act of Assembly, approved June 15, 1911, which provides that all inside buildings, including engine rooms, pump rooms, barns, etc., shall be constructed of incombustible materials. Smoking of pipes, cigars, and cigarettes should be prohibited in the mines, and too much care cannot be exercised in preventing fires by enforcing all rules designed for that purpose. Mine fires that involve underground fighting are invariably dangerous, and all fires, irrespective of the method pursued in extinguishing them, involve property loss and expense.

Seven Systems of Extinguishing Mine Fires

Almost every fire presents a more or less original problem, dependent on the particular conditions. In general mine fires may be divided into two classes, depending on whether they occur in inaccessible or accessible workings. The methods pursued in extinguishing or controlling mine fires are as follows: (1) Direct attack, (2) smothering by sealing, (3) flushing with silt or other solids, (4) flooding with water, (5) cutting off, (6) surrounding with incombustible materials, (7) digging out by stripping from the surface.

Most fires in their incipiency may be extinguished by direct attack, and failure to extinguish them by this method is due to late discovery, lack of water and facilities for fighting or to improper procedure in the initial attack. Should the method first pursued be unsuccessful, careful consideration should be given in determining next the method to be adopted; then the work should be carried on as rapidly as possible and under the supervision of the most competent persons. Materials and supplies should be furnished without delay and in sufficient quantities for the work to be accomplished.

Following the discovery of fire, the foreman or superintendent should organize the men available at the location of the fire and, if necessary, send for others experienced in fire fighting. The ventilation should be promptly regulated by the foreman or his qualified assistants. The quantity of air supplied to the fire area is of prime importance as too much air will in general increase the extent of fire and too little will increase the liability of explosion.

As most fires occur in accessible locations, they are naturally fought direct in their incipiency and in most cases are so extinguished. But the extinguishing of fires by direct attack has not been confined to small fires or fires in their incipiency, as fires have been extinguished by this method after months of work. However, the direct fighting of fires over long periods of sealing where practicable is generally practiced.

The speed of travel of a mine fire is dependent on the conditions in the immediate vicinity of the fire. With dry timber and a strong ventilating current, a fire will make rapid progress; while in coal, the progress is extremely slow, except where there is communication with an overlying vein through caves and broken ground.

The most practical, and probably the most efficient, means of direct fighting is with water directed in hose streams of good pressure and capacity, which can only be secured by providing pipe lines of adequate diameter. A system of water pipes, standardized as far as possible, should be maintained for immediate use in mines liable to fires, and maps giving the location of these lines should be provided periodically to the colliery officials. Pipe, hose, connections, valves, wrenches, noz-

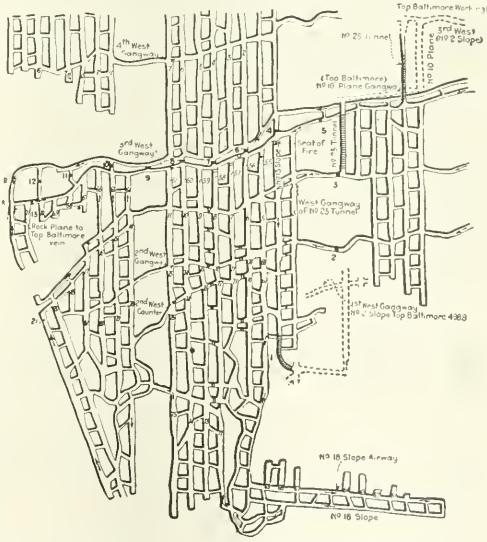

Top Baltimore Work
No 25 Tunnel
3rd West No 2 Slope
(Top Baltimore) No 10 Plane Gangway
Seat of Fire
3rd West Gangway
West Gangway of No 25 Tunnel
Rock Plane to Top Baltimore vein
3rd West Gangway
3rd West Gangway
3rd West Gangway No 2 Slope Top Baltimore 4388
No 18 Slope Airway
No 18 Slope

FIG. 1. WORKINGS IN BOTTOM BALTIMORE BED AROUND SEAT OF FIRE IN SOUTH WILKES-BARRE, NO. 5 COLLIERY

The fire started at X on No. 13 Slope. The ventilation was at that time traveling as shown by the arrows and passing up the burning slope and leaving the workings at R, a rock plane to the Top Baltimore Bed. The numbers refer to stoppings erected after the fire started for the purpose of smothering the burning material. A stopping marked by a V at 6 also was erected in the third west gangway.

*Article to be presented to the American Institute of Mining and Metallurgical Engineers at it Wilkes-Barre meeting, Sept. 12.
†General superintendent, Lehigh & Wilkes-Barre Coal Co.

zles, etc., should be maintained at definite points of convenience.

In the sealing of fires, the conditions favorable to this method are: Limited area of workings to be sealed and minimum number of seals required. The unfavorable conditions are extensive and caved workings with connections through cracks and crevices to overlying veins or the surface. The principal danger is the liability of explosion, which prompts the question as to whether the intake or return stoppings should be erected first. The question has always been a matter of dispute; in 1912 the editors of *Coal Age* invited discussion which resulted in thirty-three opinions being given. Of these sixteen wou'd close the intake first, ten would close the return, six would close the intake and the return simultaneously, and one would close either intake or return first.

Confined Air Holds Water from Anticlines

There have been many failures to extinguish fires by flooding the areas with water because anticlines and pockets in the workings prevented the water submerging the fire, the water being excluded from the burning area by the compression of the mine air.

The fire in the South Wilkes-Barre No. 5 colliery originated on No. 13 slope close to the third west gangway at point *X*, Fig. 1. A workman had repaired a roof pulley at this place during the night of Feb. 20, 1919, and it is presumed that the timber was ignited by his lamp about 10 p.m. It was discovered at 4:45 the next morning by a fireboss, who found several sets of timber on fire.

Streams from Hose Fail to Put Out Fire

He immediately went to the surface and reported to the inside foreman, while the other firebosses proceeded to fight the fire with two hose streams of water. When the foreman and superintendent arrived, two sets of timber had burned through and some top rock had fallen. The fighting of the fire with hose streams was continued at this location until 10 o'clock, when it was found that the fire had traveled up the slope to the No. 23 tunnel west gangway, as there was considerable timber and falls of roof made the work of fighting slow.

The men were then moved to the No. 23 tunnel west gangway and continued fighting direct with two hose streams until 10 p.m. that night, when it was found that the fire had passed the second west gangway. The men were then moved to this gangway and the fire fought from there until the next noon, when it was decided to seal the fire area.

During the thirty-one hours of direct fighting the ventilation was regulated to give only sufficient air in the immediate vicinity of the fire to avoid accumulation of smoke and gases, which would seriously interfere with the work; also the water supply was augmented by utilizing a compressed-air pipe line from the surface to the No. 23 tunnel east gangway.

The ventilation of these workings, previous to the starting of this fire, is shown by arrows. It will be observed that the intake passed up No. 13 slope and slope airway and returned to the face of the third west gangway where it passed through a regulator *R'* located in a rock plane to the Top Baltimore vein.

The quantity of air passing near the top of No. 13 slope to No. 18 slope workings was approximately 14,000 cu.ft. per min. and the quantity returning through the regulator *R'* to the Top Baltimore was approximately 20,000 cu.ft. There was a small split of air passing in the third west airway and through the regulator *R'*, where it joined the split from the fire area.

Fire Finally Extinguished by Smothering

The hoisting shaft at this colliery has a depth of 1,040 ft. and the distance from the foot of shaft to the origin of the fire is 6,500 ft. The origin of the fire is 1,300 ft. below the surface.

To seal the fire, all materials were transported on the third west gangway from No. 2 slope to the foot of No. 10 plane and to No. 25 tunnel and carried by men from these points to the locations of the seals. The seals were located at points 2, 3, 4, 5 and 6 and were constructed by first securely setting between roof and bottom 6-in. props spaced about 4 ft. apart.

To these props brattice boards were nailed and the stoppings made reasonably tight by fitting small pieces of brattice boards into the irregularities of the ribs and roof and nailing them to the brattice boards. The cracks in the brattice were then covered with battens having the top edge beveled to permit sealing, which was done by applying lime mortar to the edges of the battens and along the roof and ribs.

Seal 2, on the second west gangway, was built with a 5 x 5-ft. opening, but seals 3, 4, 5 and 6 were erected without any openings. Seals 2, 3 and 5 were completed first, and immediately upon completion of seals

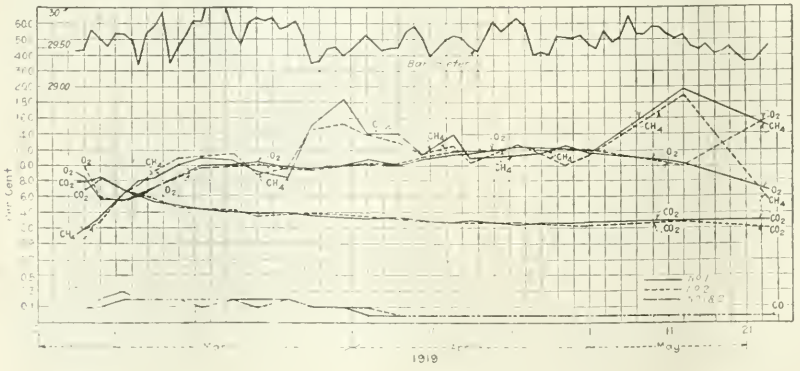


FIG. 2

Pressures and Percentages

During the progress of the fire in No. 13 slope, South Wilkes-Barre No. 5 Colliery, pressures were measured and chemical tests were made at seals Nos. 1 and 2; the graph shows what pressures and gas percentages were obtained.

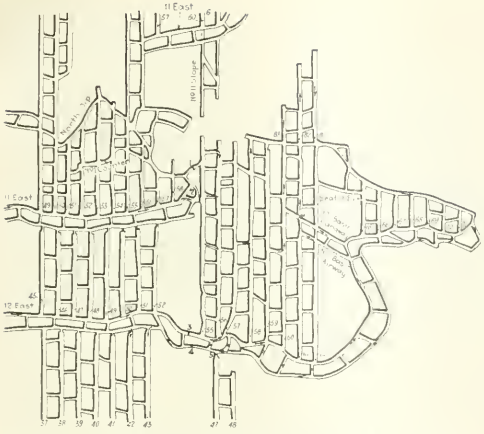


FIG. 3. WORKINGS IN NOTTINGHAM NO. 15 COLLIERY WHERE FIRE OCCURRED

The fire started at X, where No. 1 Basin Gangway, an intake, crosses Room 61. Seals 1, 2 and 3 were placed first and seal 4 later. Seal 5 was made to close a leak belatedly discovered.

4 and 6 a door was put over the 5 x 5-ft. opening in seal 2. This door was made of two thicknesses of brattice boards with canvas between and a sealing strip at the bottom. It was erected at 3:20 a.m., Feb. 23, and all men were immediately withdrawn.

The fire area was now closed on the intake side, for the headings (crosscuts) 7 to 12 on the third west gangway were already stopped by old walls. Where No. 13 slope passes through the rock from the Bottom Baltimore, in which the fire occurred, to the Top Baltimore, at the location of seal 1, there was an extra main door, which was closed at 7 a.m., Feb. 24, covered with canvas and banked with dirt along the bottom. A concrete seal 8 in. thick was built against the door and completed the same day. On the following day concrete seals 2, 3 and 5 were built against the brattice stoppings put in on Feb. 22, and on Feb. 26 concrete seals 4 and 6 were built against the brattice stoppings previously constructed. On Feb. 27 the work of building concrete seals 7 to 12 against the old walls was begun. After the completion of the seals, the third west gangway was closed between chambers 70 to 71 at 4 p.m., March 1, after some difficulty because of escaping gases.

Method of Constructing Concrete Seals

All the concrete seals, with the exception of No. 13, were built against stoppings previously constructed by first standing wooden mine rails about 2 ft. apart and approximately 12 in. from the original stopping. Boards were then put on the inside edge of the vertical wooden mine rails and concrete placed between these and the original stoppings. At the time of putting in these concrete seals, pipes were put in seals 1, 2, 3 and 4 for the purpose of taking samples of the enclosed air for analysis.

The analyses of mine-air samples from seals 1 and 2 are shown graphically in Fig. 2. The dimensions of the seals are given in Table 1. The quantity of concrete placed in the thirteen seals was 37 cu.yd.

The area thus sealed covered 32.8 acres and the volume of the mine workings thus isolated was approximately 4,350,000 cu.ft. An average section of the vein is 7.75 ft., divided as follows: Coal 2.15 ft., rock 0.70 ft., coal 4.90 ft. A maximum of 79 and an average of 17 men were employed in fighting the fire and building the seals. A total of 4,363 man-hours were employed at a cost of $2,555.15. From March 3 to March 29 no labor was employed other than that needed to inspect the seals and to point all cracks and leaks.

TABLE I. DIMENSIONS OF SEALS SOUTH WILKES-BARRE NO. 5 COLLIERY

No.	Length Feet	Length Inches	Height Feet	Height Inches	Thickness Inches	(Volume) Cubic Fee
1	13	4	8	6	8	75 6
2	13	4	7	6	9	75 0
3	15	2	7	0	12	106 2
4	15	3	10	2	12	155 0
5	21	0	8	0	10	140 0
6	11	0	6	7	10	60 3
7	4	10	5	7	10	22 5
8	24	0	6	0	10	120 0
9	9	10	5	5	10	45 0
10	8	0	5	4	10	35 6
11	10	0	4	0	10	33 3
12	9	3	5	0	10	38 6
13	14	0	7	2	11	91 9
						999 0

On May 29, the seals were opened by first removing the upper portion of the concrete of seal 1, after which an opening 10½ in. high and 27 in. long and about 2 ft. below the roof was made through the door, which formed the backing of this concrete seal. The gases emitted from this opening filled the head of the slope in a very short time.

Fire Had Traveled Along Gangway 520 Ft.

An opening 7 ft. square was then made in seal 13, which rapidly relieved the gas pressure at this point; and finally the 5 x 5-ft. trap door in seal 2 was removed at 3:10 p.m. of the same day. The men employed in this work were then withdrawn. At 7 o'clock the next morning, the superintendent, foreman and several firebosses examined the fire area and found that the fire had been extinguished; they also found that the fire had extended to the second heading above the second west gangway, a distance of 520 ft. from its origin, where it had died out soon after the closing of the intake seals.

About two years ago a fire occurred in the Nottingham No. 15 colliery which originated opposite chamber 61 on No. 1 basin gangway, twelfth east, No. 3 slope at point *X*, Fig. 3. A laborer working in this vicinity at 2:45 p.m., May 1, 1919, went to the miners' box and filled his lamp with oil; he then brushed the lamp bottom against the box to spread the cotton and knock

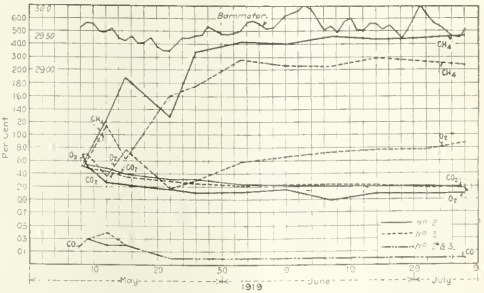


FIG. 4. COMPOSITION OF MINE AIR IN SEALED AREA IN FIRE AT NOTTINGHAM NO. 15 COLLIERY

Here the methane was above 50 per cent at Seal 3, but, fortunately, the oxygen was little above 1 per cent. It had been down to 0.9 per cent at the same seal. The carbon monoxide after rising to 0.4 per cent soon fell to a trace.

off the incrustation, and left immediately so as to catch the man trip up the slope. At 6:20 p.m., a fireboss found the box ablaze, also the platform on which it stood, and some old ties near by. He went for help, and on his return found that the fire had reached the brattice and the timber in the chamber. A fall of top coal had occurred during his absence, and there was evidence of fire under the débris.

While the fire was being fought with water carried in powder kegs from the ditch on the thirteenth east gangway, hose was being secured and word sent to the assistant foreman. About 9 o'clock hose had been obtained, and a stream was played upon the fire until 10 a.m., May 4, when two additional hose streams were secured by utilizing a 3-in. high-pressure air pipe on the eleventh east gangway and extending with 2½-in. pipe and hose down chamber 56 to the twelfth east gangway, thence in the gangway to the fire.

During the fighting of the fire, which had extended to the fallen top coal, forty-one cars of coal were loaded, their removal being completed by 8 a.m., May 3. However, in performing this work many of the men were overcome by the gases of combustion. At this time the organization fighting the fire was disrupted by trouble in another section of the mine, so the fire gained considerable headway.

Fighting continued, however, until 2 p.m., May 4, when it was decided to seal the fire area. During the sixty-five hours of direct fighting, the ventilation was regulated to give sufficient air in the immediate vicinity of the fire to prevent serious accumulations of smoke and gases.

Conditions Under Which Sealing Was Done

The ventilation of these workings previous to the fire is shown, in Fig. 3, by arrows. It will be observed that the intake entered from the eleventh and twelfth east gangways and returned on the twelfth east airway. The quantity of air in the return was approximately 20,000 cu.ft. per min. The hoisting shaft has a depth of 365 ft. and the distance from the foot of shaft to the fire was 12,100 ft. The depth from the surface to the origin of the fire is 950 ft. The materials used in the construction of the seals were transported on the eleventh and twelfth east gangways to within 100 ft. of the seal locations. The locations of the seals are indicated by numbers 1 to 5. They were constructed by the setting of two rows of wooden mine rails between the roof and the bottom. The rails in any given row were spaced about 3 ft. apart, and the rows were separated by 14 to 26 in., depending on the thickness of seal to be built. To the inside edges of these rail props, sheathing boards were nailed, and the space between the boards filled with concrete.

The construction of seals 1 and 2 was started at 2:30 p.m., May 4, and seal 3 at 6 p.m., May 5. Seal 1 was built without an opening, but seal 2 had a 4 x 4-ft. opening and seal 3 a 6 x 6-ft. opening. Seal 1 was completed at 2:45 p.m., May 6, and seals 2 and 3 were completed about the same time, except for the closing of the openings. These were filled with concrete during the hour following. The fire area was thus closed on the intake side, and all men immediately withdrawn. Immediately after seal 3 was closed, the doors in the two headings outside of the seal were thrown open, thereby short-circuiting the air to the twelfth east airway.

At 9:15 p.m., May 7, after an examination was made, with the use of oxygen helmets, the location for seal 4 was chosen and work started; this seal was completed at 2:30 the next morning, and all men were withdrawn. On May 10, a small opening, between chamber 48 from the thirteenth east gangway and the twelfth east airway was found and immediately closed with seal 5.

When seals 1 to 4 were built, pipes were put in so that samples of the enclosed air could be taken for analysis; also an 8-in. cast-iron pipe, with an elbow to form a trap, was placed in the bottom of seal 3 for the discharge of the water flowing in the ditch of this gangway. The hose line connected with the regular twelfth east gangway water line was also arranged so that samples of the mine air could be taken through it from a point as near the fire as possible. The analyses of samples from seals 2 and 3 are shown graphically in Fig. 4.

TABLE II. DIMENSIONS OF SEALS, NOTTINGHAM NO. 15 COLLIERY

No.	Length, Feet	Length, Inches	Height, Feet	Height, Inches	Thickness, Inches	Volume, Cubic Feet
1	15	0	16	0	9 to 18	320 1
2	25	4	7	6	24 to 32	455 1
3	17	0	8	6	18	216 7
4	12	0	8	0	12	96 0
5	3	6	3	6	4	4 1
						1,092 0

The dimensions of the seals are given in Table II. The amount of concrete used in the construction of the five seals was 40.4 cu.yd. The sealed area covered 24.2 acres, and the volume of the mine openings amounted to approximately 5,300,000 cu.ft. An average section of the vein is 21 ft. divided as follows:

	Ft.	
Coal	10 00	Top Coal
Refuse	1 40	
Slate	1 90	Big slate
Coal	7 30	Bottom coal
Refuse	0 40	
Total	21 00	

A maximum of 110 and an average of 30 men were employed in fighting the fire and building the seals, with a total of 6,846 man-hours, at a labor cost of $3,979.60.

On July 12, the opening of the seals was begun at 6:45 p.m. by cutting out the concrete of seal 4, and an opening approximately 8 x 10 ft. was made in the inside sheathing of this seal by 11:15 o'clock, thereby opening the return. A half hour later work was started on seal 2 and the concrete in the 4 x 4-ft. opening was cut by 4 a.m. the next day. The doors in the headings outside of seal 3 were then closed. Preparatory to opening seal 2, the work of removing the concrete in the 6 x 6-ft. opening in seal 3, was begun; this was completed at 5:15 a.m. on the following day. The men employed in this work were then withdrawn and the next day the superintendent and foremen made an examination of the fire area. They found that the fire had been extinguished and also that it had not extended beyond the first heading on the right of chamber 61, a distance of approximately 50 ft. from its origin.

George S. Rice, chief mining engineer of the U. S. Bureau of Mines, landed at Seattle Aug. 19 after an extended trip through the mining regions of Alaska. In order that there be sufficient tonnage to allow of the profitable operation of the railroad which the government is building in Alaska, it is necessary to increase mining activities in the territory. Mr. Rice has been studying the problem at first hand and will make an exhaustive report on the matter to the Secretary of the Interior.

HAZLETON NO. 1 COLLIERY, HAZLETON DIVISION, LEHIGH VALLEY COAL CO., HAZLETON, PA.

Institute to Make Three Tours Over Anthracite Fields

Description of the Trips, Which Will Cover Much of the Northern and Lehigh Regions—The Last of the Excursions Will Be Over a Distance of 117 Miles

ON Sept. 13 the American Institute of Mining and Metallurgical Engineers will tour past the Dorrance, Prospect and Henry collieries, No. 14 colliery of the Pennsylvania Coal Co., the Hoyt shaft and the Ewing breaker by Fort Griffiths to Pittston. It will then visit the Pittston shaft of the Seneca colliery, where mining is being done under the Susquehanna River and its extensive flats. The Twin Shaft of the same colliery, the breaker of the Barnum colliery, the washery of the Phoenix Mining Co. will be passed on the road to Duryea.

The road then runs past the Hallstead breaker and the William A. colliery to the borough of Old Forge with No. 2 shaft of the Old Forge colliery, the breaker where the coal from that colliery is prepared, and the Jermyn colliery. Reaching Taylor the party will pass the breaker of the Scranton Anthracite Co, the Greenwood colliery and a public school which was started but never finished because mine caves stopped the builders. The concrete breaker of the Taylor colliery is the first breaker that the trippers will pass that has been shut down to avoid the provisions of the Kohler law which make penal the damaging of houses by mine caves without any regard to the contract rights of the coal owner.

The Pine colliery follows, and then the National and Dodge collieries, which also have closed down as a result of the Kohler law. The latter colliery is working by a semi-longwall method and using electric undercutting machines and belt conveyors along the working face.

The automobiles also will tour the Hyde Park section of Scranton, where the caves have occurred of which so much has been printed in the newspapers. The first point is the Oxford breaker of the Peoples Coal Co. The mine has been closed down, and the company has passed out of existence, but some of the officials of the company have been tried and found guilty of a violation of an injunction of the court, but they have appealed the case to a higher court.

Passing over the cave area, Mt. Pleasant and the Diamond and the Tripp collieries will be reached. Then

TAMAQUA BREAKER OF THE LEHIGH COAL & NAVIGATION CO., NEAR TAMAQUA, PA.

R. V. NORRIS
General Chairman of Committees on Wilkes-Barre meeting and a vice-president of the American Institute of Mining and Metallurgical Engineers. A leading consulting engineer of the anthracite region.

the old breaker of the Bulls Head Coal Co., the West Ridge, Van Storch, Richmond and Legitts Creek collieries will be visited. Arriving at No. 1 shaft of the Marvine colliery, a Hudson Coal Co. plant, the party will leave the cars and inspect the plant and re-embark at No. 2 shaft. The Price-Pancoast shaft at Throop and the Richmond shaft on the outskirts of Scranton

C. F. HUBER
Chairman of Finance Committee; president, Lehigh & Wilkes-Barre Coal Co.

will be passed on the way to North Park, a section of Scranton, where the top bed, which is 20 to 30 ft. below the surface and which in the name of conservation should be worked, must lie unrecovered because the mining of this bed has been forbidden by permanent injunction.

The party will then take lunch at the International Correspondence Schools and hold a technical session in the same building, returning to Wilkes-Barre thereafter by the Pine Brook, Dodge, National and other shafts visited in the morning. The road taken will be different, and No. 9 colliery of the Pennsylvania Coal Co., No. 4 shaft of the Ewing colliery and Nos. 6, 5 and 11 collieries of the Pennsylvania Coal Co., also the Laflin colliery, the Delaware shaft, and a breaker

DOUGLAS BUNTING
Author of the article on mine fires; chairman of Committee on Printing and Publicity; general superintendent, Lehigh & Wilkes-Barre Coal Co.

of the Wilkes-Barre Anthracite Coal Co. will be on the itinerary.

Other points of interest will be the Pine Ridge colliery of the Hudson Coal Co., the beautiful Mineral Spring colliery of the Lehigh Valley Coal Co., the substantial buildings of the Peach Orchard colliery of the Glen Alden Coal Co., and the ill-fated Baltimore No. 5 colliery, where nearly 100 men were killed by an explosion of powder as the trip was being taken into the mine. No. 2 shaft of the Hudson Coal Co. is the last coal-operating point to be passed on the way to

J. M. HUMPHREY
Chairman Automobile Committee; president, Lehigh Valley Coal Co.

FOOT OF SECOND ASHLEY RAILROAD PLANE

The Ashley planes, which look for all the world like the inclines built for mine cars but are used for standard-gage equipment, are the subject of an interesting paper read before the institute. This is the steepest of the planes, being 14.65 per cent. The planes are close to one another but not in line. This one is 3,000 ft. long and 422 ft. high. The Ashley inclines are operated by the Central R.R. of New Jersey.

the starting point. The whole trip is short, covering but forty-six miles, but, as may be noted, it is well equipped with coal-producing equipment.

A shorter trip will be made on the next day, where the plants on the road not already visited will be the Pettebone, Haddock, Harry E., Forty Fort, Mount Lookout and Maltby collieries and the Cortright slope. The visitors will be entertained by the Wyoming Shovel Co. at luncheon.

Starting at 9.30 a. m. the Institute will on Sept. 15 tour by way of Ashley and Ashley planes to White Haven, passing Stanton, Buttonwood, Inman and Maxwell collieries an their way. Entering the Lehigh region at White Haven the automobile party will proceed to the Drifton breaker, passing the ruins of the old Pond Creek breaker, which was commenced in 1879, the breaker of the East Point Coal Co., Highland No. 2 colliery and that of the Upper Lehigh Coal Co., also Markle No. 5 and Highland breaker No. 2.

Skirting Freeland the party will pass Highland No. 5

HAUTO POWER PLANT, LEHIGH COAL & NAVIGATION CO.

This plant has three alternating-current General Electric Co. turbo-generators totaling 37,500 kw. The 3-phase 60-cycle current is distributed at 11,000 volts. The Babcock & Wilcox boilers generate 8,392 hp.

and the celebrated Eckley breaker and arrive at Jeddo and Japan Village, where coal is reclaimed from the piles by passing it through boreholes into the mines and loading it into mine cars, which bring it to the surface. Passing Jeddo No. 4, some "Mammoth Vein" strippings, the Basin shaft, the Jeddo drainage canal, built to protect the mines from the creek, and G. B. Markle & Co. strippings will in turn be reached, also Harleigh No. 7 and the Hazleton shaft. Beaver Meadow and the breaker named after it, Coleraine and the Evans Colliery Coal Co.'s plant will next be passed on the way to the Hudsondale storage plant of the Lehigh Valley Coal Co.

The visitors will then reach Nesquehoning, with the breaker named after that village, and the Hauto washery and power plant. Luncheon will be served at Greenwood Park, and the party, having traveled sixty miles, will commence the trip home. Passing the Lansford colliery and the Coaldale breaker, now rising to take

OLD SPRING BROOK STRIPPING IN MIDDLE COAL FIELD

This stripping is located not far from the Cranberry Breaker and the Harwood Colliery.

the place of that just burned down, the party will enter Coaldale and will then travel by way of the Greenwood, Rahn and Tamaqua breakers, passing on the way an 800-ft. water shaft having one of the largest reduction-motor hoists in the world.

The motor is a 1,200-hp. machine. It hoists twenty-seven tons at each trip. Crossing the Schuylkill River, the automobiles take the road to Silver Brook washery, Audenreid and the Beaver Brook breaker of Charles M. Dodson & Co. Other points of interest will be the Spring Brook washery, Cranberry colliery and Harwood colliery and electric plant. Hazleton will then be reached. Harleigh No. 7 and Lattimer collieries next will be passed. The Pardee headframe, which discharges the coal at right angles to the direction of hoisting, and the old Milnesville strippings with their interesting rock folds will next be noted, and then the party will make for home by Fairview and Ashley, a total run by the speedometer, from start to finish, of 117 miles.

MAY USE TROLLEY LOCOMOTIVE IN LANSFORD MINE — A special commission, consisting of anthracite mine inspectors A. B. Lamb, M. J. Brennan and E. G. Evans, has sustained Mine Inspector Isaac M. Davies, who gave permission to the Lehigh Coal and Navigation Co. to operate a trolley locomotive in No. 6 shaft of the Lansford Colliery. Employees complained of the action of Inspector Davies to the State Department of Mines and Seward Button, chief of the department, named the commission to investigate, which found that the mine is ventilated by an exhaust fan and the locomotive operates in the intake air.

British Coal Problem Becomes a Market Problem

Public Attitude Strikingly Similar to That of the United States —Despite Wage Reduction and Government Subsidy, Coal Prices Are 2 to 5s. Higher—Operators Optimistic Regarding Mine Labor

By George Otis Smith*

EVEN the casual observer in England must note differences between the methods of mining and transporting coal there and here in the United States. The 10-ton coal car on the railways, for example, seems so futile as a unit in a great industry, when we think of our own 50-ton cars or the new 120-ton cars that represent the most up-to-date practice, but the points of similarity between coal conditions in Great Britain and in the United States are equally noticeable and possibly more significant.

"No market," which last week was responsible for 52 per cent of the lost time in our own coal mines, has become the outstanding trouble in England. In six weeks after the mines were reopened supply had outstripped demand and miles of loaded coal cars were reported on sidings in both Scotland and England—cars of "unwanted coal."

However striking the difference in the "look" of the coal cars, the psychology of coal consumers is alike on both sides of the Atlantic. The public attitude toward coal is the same in England as in America—coal merchants complain of the lack of orders; consumers are waiting for a fall in prices; the coal men say that a rush of buying after the August holidays, with the consequent special demand at the "pitheads," will send prices up there, and prices to the public will then be higher. In the meantime prices are not so low as was expected, and the average householder fails to discover his own benefit in wage reduction and big government subsidy if he has to pay 2 to 5s. a ton more for his coal. The answer is in part the same that has had to be made in the United States—the public fails to understand that there are different kinds and sizes of coal, each with its own market, and that these markets react on one another.

Basis for Optimism in Wage Settlement

Discouraging as is the present outlook for the British coal operator in both his domestic and his foreign market, he can perhaps find some basis for optimism in the new wage settlement. All that I heard directly or indirectly from the mine owners' side indicated a hopeful attitude and labor leaders like Mr. Smillie and Mr. Thomas are giving good advice to their audiences, urging larger production and promising that the settlement will bring about a greater improvement in the conditions of the mine workers in the next ten years than has occurred in the past fifty years. The atmosphere has cleared.

Naturally, utopian conditions were not reached simply by both sides signing an agreement; thousands of miners are still out of work; disputes and bad feeling over wage reductions and cutting off allowances have locally resulted in low output; even where the collieries are running full time, complaint has been made that a man is to be paid only what he earns. Moreover, unless the now rapidly-accumulating surplus of coal finds a market, there must soon be some reduction of working hours or of working force, with the consequent likelihood of further dissatisfaction.

The principles worked out in the terms of settlement appear good in both theory and practice. While avoiding by temporary expedients too radical or abrupt a change in the daily wage, the settlement above all puts the emphasis upon what ought to be the obvious rule in all industry—that of gaging wages by results. The war arrangement of giving the miner a minimum wage to which was added a flat increase, as was explained to me by Secretary Lee of the Mining Association of Great Britain, in effect turned the pieceworker into a day worker, and I suspect not much of a worker at that. For instance, in Lancaster the minimum plus the flat increase worked out to 16s. a day regardless of the tonnage of the miner's output, and so the Lancaster miner would say: "16 bob for goin' down to pit—if want more had to work for it."

When fully effective, after the "temporary period" of readjustment, the terms of settlement provide for standard wages based upon former district rates and "periodically adjusted in accordance with the proceeds of the industry as ascertained in such district." This is universal profit-sharing in a great nation's most important industry. Net profits are figured by coal-mining districts, of which there are thirteen, and 83 per cent of such surplus proceeds goes to increase wages. Several details of this scheme strike me as indicating enlightened economics, logical and helpful to clear thinking in this problem of fair division of responsibility and returns.

Deficiency a First Charge on Future Surplus

First of all, there is no talk about proceeds of the industry until capital has been paid its "standard profits" as well as labor its "standard wages" and the other costs of production met. These standard profits are figured in terms of the standard wages, the basic return to capital being 17 per cent of the basic return to labor, and if these profits are not earned in one period, the deficiency is carried forward as a first charge against a surplus in any subsequent period. In short, the invested capital is granted its determined wage before any surplus exists to be divided.

In the second place, the division of any surplus is again a definite one, 83 per cent to labor and 17 per cent to capital, which of course is a slightly larger proportion for capital than that assigned in the division of costs. This equitable division of net returns is a practical working out of the principle of profit-sharing, and the inherent justice of the arrangement ought to be more and more apparent to both mine owner and mine worker. The realization that his wage depends in large degree upon the company's success and upon his own effort in increasing the profits of the business makes the miner very much of a partner in the business. Too often it has been true that the workman

*Director U. S. Geological Survey.

realized that he was in the same boat with his employer only after he had rocked the boat, but under this plan it is when the sailing is best that labor finds that he shares most largely in the material benefits. By this wise provision, then, the sliding wage-scale does not slide directly with market prices but with net returns. The miner thus becomes interested not so much in market quotations as in the economy and efficiency attained in his own and other mines of his district. He has a personal interest in the common weal of the industry.

Of course it is too early to judge of the settlement by its working. The spirit of the mine operators, from what I heard and read in England, is more optimistic regarding mine labor than regarding the coal market. Already the miner appears to be working harder, possibly to recoup the earnings he lost during the "stoppage." The operators also hope to attain cheaper production through larger individual output. Lower-cost coal seems absolutely necessary if English coal is to regain to the full extent both its home and foreign markets. The revival of all the other industries in industrial England is waiting on cheaper coal. As one company report put it: "Without cheap coal we cannot have the industries England has been accustomed to for a hundred years; without cheap steel and iron, no shipbuilding, engineering, and allied trades."

To two of the very best-informed men on the subject I put a question that Secretary Hoover had put to me—What will be the future cost of British coal? One answer was that costs might be expected to reach 50 per cent above the pre-war costs within twelve to eighteen months. The other answer was "eventually 20 per cent above the pre-war level." To realize either prophecy both partners in the British coal business must pull together as never before. The extension of this wage settlement beyond September of next year will doubtless depend upon success in selling coal as well as in mining it; indeed the recovery in tonnage mined has been so prompt that it may be said that the British coal problem within six weeks resolved itself into a market problem.

British Output Declined but Wages More Than Meet Advances in Living Costs

THE British Engineers' Association puts out the following interesting figures on British production prior to the recent strike and reduction in wage, which shows how the output of coal increased till 1913 and has decreased markedly since especially per inhabitant, and per employee:

TABLE I. COAL CONSUMPTION PER INHABITANT AND OUTPUT PER EMPLOYEE

		Output per Year		
	In Millions of Tons	Per Inhabitant	Employees	Output per Employee
Decennial period—				
1865—1874	111 5	3 54	. .	. .
1875—1884	144 5	4 21	. .	. .
1885—1894	172 5	4 62	. .	. .
1895—1904	214 5	5 17	. .	
1905—1914	263 0	5 80		
Year—				
1913	287 4	6 25	1,114,000	258
1914	265 6	5 76	. .	. .
1915	253 2	. .	. .	. .
1916	256 3	. .	. .	. .
1918	227 75	. .	1,008,867	225 7
1919	229 78	5 00	1,191,313	192 8
1920	229 295	4 98	1,204,300	193
Jan.-Mar., 1921, at annual rate of	215 132	. .	1,213,700	177 2
Mar., 1921, at annual rate of	208 896	4 67	1,197,765	174 36

Another interesting comparison is made in Table II. Despite the slacking and shortened time, earnings increased more than cost of living but only by multiplying the wage cost per ton by almost four.

TABLE II. ANNUAL EARNINGS, WAGES PER TON AND COST OF LIVING

Date	Average Annual Earnings per Employee*	Index of Earnings per Employee	Index of Cost of Living	Average per Ton Mined*	Index of Wage Cost per Ton	Wages in Percentage of Net Cost of Coal Raised
1913	$399 34	100	100	$1 54	100	68 5
1919			215	4 54	294 3	. .
1920	1,086 01	272	249	5 63	365	75 6
Jan.-Mar., 1921	1,129 84	283	252	6 39	414	75 3
Mar., 1921	1,037 31	260	241	5 85	355 6	71 34

* Calculated on normal rate of exchange $4 87 per £1 sterling

In Table III is shown how the output has decreased and the number employed increased, with a large consequent decrease in tonnage per person employed. The index of earnings per person is repeated from Table II and this is corrected for the decreased tonnage per person employed, showing what the earnings would have been if the hours had been unchanged and every man had been as diligent as in 1913.

TABLE III. INDEXES OF OUTPUT AND EMPLOYEES' EARNINGS

Date	Total Output	Total Employees	Output per Employee	Average Earnings per Employee	Same Corrected for Output
1913	100	100	100	100	100
1918	79 2	90 5	87	. .	. .
1919	79 9	107	74 7	. .	. .
1920	79 6	108 1	74 8	272	363 6
Jan.-Mar., 1921	74 8	108 9	68 6	283	412 5
Mar., 1921	72 6	107 5	67 5	260	

D. T. & I. Cuts on Coal-Freight Rates Postponed Until Jan. 1

THE Interstate Commerce Commission on Aug. 29 suspended until Jan. 1 proposed reductions in freight rates on coal in carloads from mines on the Detroit, Toledo & Ironton R.R. to Detroit and other destinations. The present rate on coal from mines in the Ironton district to Detroit is $2.57; the proposed rate is $2.08. The present rate from the Jackson County district is $2.40; the proposed rate is $1.98 per ton.

Hoover Considers Coal Exchange Scheme Feasible as Stabilizing Influence

AS exchanges have a highly stabilizing influence on many commodities, Herbert Hoover, Secretary of Commerce, sees no reason why the plan could not be applied to coal. In discussing the matter on Aug. 29 Secretary Hoover stated that there are many practical difficulties which would have to be studied but that he believes it is entirely possible to have future trading and other transactions in coal on exchanges, just as is done with grains and cotton. He deprecated the misuse of these exchanges by speculators.

Two Bids Submitted to Shipping Board for Supplying Bunker Coal at Bermuda

TWO bids were submitted to the Shipping Board in response to its request for quotations on bunker coal at Bermuda. The requirements range from 1,500 to 2,000 tons a month. The Willard Sutherland Co., of New York, offered to supply the coal at $13 per ton f.o.b. and t.i.b. ex lighters at Grassy Bay. The Berwind White Coal Co., of New York, on behalf of the Bermuda Bunkering Coal Co., offered to supply the coal at $11.22 per ton.

Problems of Operating Men

Edited by James T. Beard

Standard in Mine Legislation

For Many Years Pennsylvania Set the Standard in Mine Legislation, but the Enactment of the Certificate Law and Election of Mine Inspectors Have Robbed Her of that Prestige

FOR many years Pennsylvania has been the leading coal-producing state. It was the never-to-be-forgotten Avondale disaster, Sept. 6, 1869, that lead to the enactment the following year, 1870, of what was then known as the "Ventilation Act," which reduced the death rate, per million tons of coal mined, nearly one-third in five years.

It was in the year 1885 that the first certification law was enacted in Pennsylvania, and four years later (1889) the act was passed requiring a miner's examining board. These and other prominent features of the Pennsylvania law set the pace for mine legislation in other states.

Following her lead, the principal coal-producing states enacted certification laws similar to those of Pennsylvania. In no single instance, however, has any state found it necessary or advisable to revise this law requiring the certification of mine foremen, assistant foremen and firebosses, or to follow Pennsylvania in the enactment in that state, in 1901, of a law requiring the election of mine inspectors in the anthracite region.

Reasons for Change in the Law

Reflecting on the cause for the change in the certification law of Pennsylvania, one is led to think that the question had arisen in the minds of some men as to whether that law operated for the best interests of either the coal companies or their employees. It has been argued that there are plenty of men capable of managing a coal mine successfully, but who have not the education that would enable them to pass an examination in mining.

Strange as it may seem, there are men holding official positions in our mines who can neither read nor write. In one instance, I recall a mine foreman who was obliged to have his timebook made up each night by one of his assistants. He could not figure an ordinary example in arithmetic. There is no excuse for an operator placing such a man in charge of a mine, as long as there are good certified men available.

In reviewing this subject, it must be admitted that coal operators have just grounds for doubting the fitness and capability of many certified men. Indeed, they are not alone in this conclusion. Many intelligent miners have come to regard with contempt certain certificated men in charge of mines whose mismanagement has proved their incompetency.

Charges Irregularities

In this connection, allow me to refer to the recent charges made in a statement by the officers of the United Mine workers of America, in the form of a letter to the governor, which was printed in the daily papers throughout the great State of Illinois.

The letter drew attention to certain alleged irregularities in the granting of certificates by the State Board of Examiners. It was charged that prospective candidates had received copies of the questions to be asked, several days before the examination took place. It was claimed, further, that the state was flooded with incompetent certificates.

These were strong charges, particularly as they were accompanied by the statement that there was plenty of proof to substantiate them. The governor was asked to order an investigation. Such facts as these cause us to wonder what an honest investigation would reveal and whether it would cause a radical change to be made in the present system.

Whatever is the result in this particular case, little doubt exists in the mind but that there are far too many worthless certificates floating around. One is not surprised that operators claim the right of deciding for themselves on the capability of the men they employ. Do not understand that I am condemning certification by a State Board of Examiners, I am only voicing a common sentiment for greater honesty in certification.

Renewal of Certificates

Before closing, let me express what I have advocated for several years, to wit, that certificates of competency should be reviewed every five years by a competent board. The knowledge that his certificate would be reviewed after, say five years, would warn every certified man to continue his study and keep himself up-to-date.

Under the present system many men cease to study and to read when they have once secured their certificate, to obtain which they took a few lessons and applied themselves to getting just enough knowledge to enable them to answer the questions that they expected would be asked. In other words, their express purpose in studying was to get the certificate.

My thought is that if the law required the mining department in each state to review these certificates each five years, to prove that the men are still competent and worthy, it would be an incentive to all mine officials to keep themselves posted on matters pertaining to safe and efficient mining.

Staunton, Ill. W. M. Chambers.

Criticism to Be of Value Must Be Just

Presenting another view of the certificate law relating to mine officials. In criticising this law, statements must be such as can be verified, or they are valueless.

JUDGING from the letters that have appeared criticising that provision in the Pennsylvania mine law permitting the employment of uncertified men as mine foremen, assistant foremen and firebosses, it would seem that most of the writers are either mine foremen or aspirants to that position.

The tone of many of the letters would lead one to think that each man had a good thing and wanted to keep it to himself, which is human nature. It is to be hoped that the effect of this discussion will be to make all uncertified men get down to business and make whatever effort is necessary to get their papers.

Statements That Discredit Good Men

My idea regarding the matter is that we who hold certificates and are filling these positions so much coveted by others, would be doing far more good by giving our common sense greater control and being more cautious in the statements we make, which are often such as to discredit many capable practical men, both certified and uncertified, who have shown their ability by what they have accomplished.

Because some uncertified men have made failures it must not be taken for granted that all uncertified men are failures. Such a conclusion would be unjust to many practical foremen who have made good, perhaps in a place where a certified man had failed.

Believing as I do in the certification of mine officials who have direct charge of work in mines, I would welcome the old status of the law being restored, to the end that only certified men may be employed in an official capacity.

One writer has expressed the opinion that mine superintendents should be examined and certified the same as the foremen who act under their instructions. That is good; but another wants to have the certificates limited to four years, when another examination would be required to renew them. Another stigmatizes uncertified mine bosses as "leeches" who cling to their jobs for what they can get out of them.

Candidly, I wonder if the last statement is not true of all of us, certified and uncertified men alike. For thirty years, I have been trying to get enough out of the jobs I have held to lay by a little against the proverbial "rainy day" or when we must give place to younger men.

It has been said that the revised law has had the effect of lowering the standard of mining, and men of less ability are being chosen to fill vacancies in responsible positions in our mines. I am not convinced that the law has had that effect as yet. My observation is that when a company is looking for a mine boss the best available man is given the place and, almost without exception, he is a certified man.

Effect on Students of Mining

In reference to the claim of the revised law having the effect to prevent young men from studying the principles of mining and taking the examination for certificate, I was skeptical. But in order to convince myself of the actual truth of such statement, last April, I walked into the room where the examination was being conducted. What did I find? There were 76 men packed in that room where only 40 had been expected.

The inspector in charge of the examination informed me that it was the largest class he had ever had. Moreover, by what I could learn, the same condition prevailed in other centers where the examination was being held. It does not look as if any number of young men, today, were losing their ambition to study and secure a certificate of competency for any of these positions in mines.

Indiana, Pa. THOMAS HOGARTH.

Inspector a Welcome Visitor

Foremen have much to learn from the district mine inspectors who visit their mines and whose suggestions are always helpful. Nothing is gained by a foreman attempting to hide any unsafe condition when the inspector is around.

WITH much satisfaction, I read the excellent letter of James Thompson, *Coal Age*, July 7, p. 16. His comments on the suggestion made by a previous writer, that some foremen attempt, at times, to "hoodwink the inspector," expressed my ideas exactly.

When reading the article containing that suggestion, I was puzzled to understand how such a thought could enter a foreman's head, and was inclined to regard the suggestion with some suspicion, as not being an honest opinion.

In my thirty years of service as mine foreman, I have always looked forward to the visit of the district inspector with pleasure. This was not for any social reason, as giving me an opportunity to converse with the visitor; but rather for the benefit that I was sure his visit would prove.

When the Foreman Needs the Inspector's Help

Frequently have I bumped up against some difficult problem or condition, which the inspector was able to solve for me in a satisfactory way. This has occurred on more than one or two occasions and I hold that if more of our mine foremen would make a clean breast of their troubles and difficulties, at the time the inspector was around, they would realize the same benefit and help that has come to me.

There may be a class of foremen who have got it into their heads that they are *it*, and are able to go alone in the work of managing a mine. It generally happens, however, that such men find, when too late, that they have bungled. Eventually, they appeal to the inspector to get them out of their difficulties, which is not always an easy thing to do, because the matter has been allowed to go too long without proper attention.

High Regard for the Inspector

Like Mr. Thompson, I feel that the suggestion mentioned under-rates the large majority of our mine foremen. To my mind, this is deplorable when we consider the arduous duties foremen have to perform. The very thought had me guessing as to how a foreman would dare to attempt to hoodwink his inspector.

An honorable foreman will hold the district inspector in high regard. Why should he not? The man is a bonded officer of the law and responsible to the state for the faithful performance of his duties. He is the guardian of the lives and property in his entire district; and the responsibility resting on his judgment and action is far greater than that of any foreman whose responsibility extends no further than to the mine in his charge.

Penalty for Deception

My opinion is that if it is possible for a foreman to hoodwink his inspector the act would be culpable and worthy of severe reproof. If proved against him he should be relieved of his charge at once, as he is not to be trusted in the management of a mine and disaster is sure to follow in his wake.

There are, at least, three classes of inspectors now visiting our mines. There is the state inspector, the company inspector and the insurance or compensation inspector. My advice to foremen is to practice honesty with all these men, which is by far the best policy. Let every foreman acquaint his district inspector fully with every condition and difficulty in the mine. It is the only true and safe way.

Gans, Pa. R. W. LIGHTBURN.

Eliminate Mine Doors

Mine doors both dangerous and expensive, a hindrance to ventilation; an expense to set up and keep in repair and taxed in the compensation law.

NOT many years ago, like myself, most mining men thought a good mine door, strongly built and having no air leaks, was the only thing required. The idea of going to the expense of building an overcast to take the place of a door was not to be considered.

In his article, *Coal Age*, June 30, p. 1160, W. E. Dickson has happily called attention to the danger and expense of mine doors from many points of view. I am always glad to see this subject brought to the attention of mining men. We should all be made to realize the growing need of cutting out the mine door.

As Mr. Dickson has stated, the door-frame will generally cut down the clearance of 30 in., at the side of the track, so that there is only 12 in. of clearance between the frame of the door and the moving cars. Many a driver or trip-rider will forget about the door and be caught and perhaps killed.

Again, there is always danger of a driver or motorman dashing into a door that he supposed would be opened by the trapper. When that happens, it is a chance if both the driver and the trapperboy are not killed or severely injured, perhaps crippled for life. In addition to that, the door is broken down and the ventilation cut off from a section of the mine.

Why Doors Are Objectionable

One of the chief objections to ventilating a mine by doors is the constant danger of the door being set open by some careless driver or miner. It is a common practice for a driver, in order to save himself the trouble of opening the door again, on his return from the face of a section, to prop the door back and then forget to close it.

Unless a mine door is well built and kept in good order, there will always be a leakage of air through the door. As a result, the miners working in the face of that section do not get their due allowance of air. They lose much time waiting for the smoke to clear after firing a shot. Often, they will come out early or, perhaps, work only half a day, because the air is bad.

Compare these conditions with those resulting when the door is taken out and an overcast carries fresh air to the face of each section of the mine. There is no need of a trapperboy, no danger of accidents to drivers, motormen or trip-riders, no stoppage of the ventilation by reason of a door being set open, and the only expense is the first cost of the overcast.

In closing, let me say that a mine door is only a makeshift and should never be considered as permanent, but should be replaced by an air bridge at the first opportunity when the development of a section warrants so doing.

Crawford, Tenn. OSCAR H. JONES.

Inquiries Of General Interest

Electric Locomotive Haulage Problem

Difficult Question Asked in Mine Inspectors' Examination. A 200-Kw. Generator Producing 2,300 Volts, A. C. Current, Required to Haul an Output of 2,500 Tons of Coal Two Miles in Eight Hours

FOLLOWING is one of the questions asked at the last mine inspectors' examination, held at Pittsburgh, Pa. The proposition presented has caused so much discussion, here, and there is such a difference of opinion regarding the correct answer that I am taking the liberty of sending it to *Coal Age* for solution.

QUESTION—A coal field of 3,000 acres is opened by a shaft 300 ft. deep. The coal is 4ft. 6 in. high. There is a maximum grade of 5 per cent on the haulage road, which is two miles long. The output is 2,500 tons in 8 hours. Make a sketch or explain fully how you would wire the mine for haulage and mining machines, giving the voltage, size of wire, rails, switches, mine cars and generators, keeping in mind the efficiency of the mine and safety of the workmen. JOSEPH SHAFFER.

Windber, Pa.

The question is indeed a difficult one, calling for a far greater knowledge of electric transmission and haulage in mines than a mine inspector should be required to possess. The question does not state the length of the 5 per cent grade or its location in the mine. In reply, however, we will assume that this grade is against the loads and is located on that portion of the haulage road nearest to the shaft bottom.

The first step is to decide on the speed of hauling, say 8 miles per hour (700 ft. per min.) and estimate the number of trips and weight of coal required to be hauled per trip, in order to put out 2,500 tons of coal in eight hours, a round trip being four miles long.

Running at an average speed of eight miles per hour, a single locomotive would make sixteen round trips a day and would have to haul $2,500 \div 16 = 156\frac{1}{4}$ tons of coal per trip. Adding 40 per cent for the cars would make the total weight of a loaded trip, in that case, say 218 tons.

In estimating the weight of locomotive required, the maximum condition must be assumed and the estimate based on the 5 per cent grade. Taking the track resistance as 30 lb. per ton, the grade resistance being 20 lb. per ton for each per cent of grade, or $5 \times 20 = 100$ lb. per ton for a 5 per cent grade, the total resistance is 130 lb. per ton of moving load.

Sanding the rails on the grade gives an adhesion of 30 per cent of the weight of the locomotive resting on the drivers, or $0.30 \times 2,000 = 600$ lb. per ton, from which must be subtracted the sum of the track and grade resistances (130 lb. per ton) and 15 lb. per ton for internal resistance in the locomotive itself. This makes the net tractive force or drawbar pull $600 - 145 = 455$ lb. per ton resting on the drivers.

Now, if the weight of the loaded trip is 218 tons, its resistance on the grade is $130 \times 218 =$ say 28,000 lb. This would require for the weight of a locomotive capable of hauling such a trip $28,000 \div 455 =$ say, 60 tons. Instead, however, we will use six 10-ton locomotives for this service. Each locomotive will then haul $156\frac{1}{4} \div 6 =$ say 26 tons of coal per trip, or $16 \times 26 = 416$ tons of coal per day, making the total output for the six locomotives $6 \times 416 =$ say 2,500 tons.

The accompanying figure shows the relative position of the six locomotives, hauling three loaded trips and three empty trips in the mine, the arrows indicating the direction in which these are moving. Beside the trackroom on the tipple to accommodate the empty and loaded trips and at the inby end of the haulage road, there are five passing tracks or partings, a, b, c, d, e, distributed so as to give equal time for each run and allow five minutes for changing trips both at the tipple and the inby end.

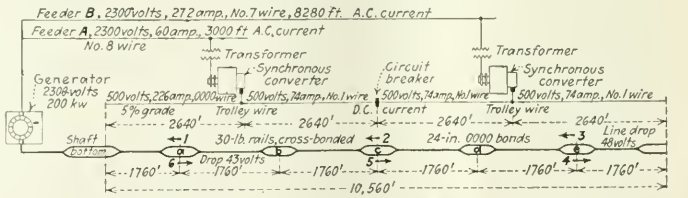


DIAGRAM OF POWER TRANSMISSION ON A TWO-MILE HAUL IN A MINE

While No. 1 trip goes to the tipple, changes ropes and returns to parting (a), No. 4 does the same at the inby end of the line, No. 2 loaded trip passes No. 6 empty trip at parting (b), and No. 3 loaded trip passes No. 5 empty trip at parting (c).

The next step is to estimate the current required for three conditions; viz., a loaded trip on the 5 per cent grade, a loaded trip on the level, and an empty trip on the level. For that purpose, we have the following weights: Coal per trip, 26 tons; cars per trip, $26 \times 0.40 = 10.4$ tons; locomotive, 10 tons.

The weight of a loaded trip is, therefore, $26 + 10.4 + 10 = 46.4$ tons and that of an empty trip 20.4 tons. The sum of the track and grade resistance being $30 + 5 \times 20 = 130$ lb. per ton and allowing 15 lb. per ton for the internal friction of the locomotive, or $10 \times 15 = 150$ lb., the tractive effort of a locomotive hauling a loaded trip up a 5 per cent grade is $(46.4 \times 130) + 150 = 6,182$ lb.

Again, the tractive effort required to haul a loaded trip on level track is $(46.4 \times 30) + 150 = 1,542$ lb. For hauling an empty trip on level track, the tractive effort required is $(20.4 \times 30) + 150 = 762$ lb.

Multiplying twice the tractive effort of the locomotive by the speed of hauling (mi. per hr.) gives the estimated electrical input in watts. Thus,

Loaded trip on grade,
$2 \times 6,182 \times 8 = 98,912$ watts; 132.6 hp.
Loaded trip, level track,
$2 \times 1,542 \times 8 = 24,672$ watts; 33.0 hp.
Empty trip, level track,
$2 \times 762 \times 8 = 12,192$ watts; 16.3 hp.

Referring to the figure, it will be observed that we have divided the haulage road into two sections, by locating a synchronous converter at the center of each mile of the road for converting the A.C. to D.C. current, for use in the mine. We have allowed 360 ft. to extend the conductor from the generator in the powerhouse down the 300-ft. shaft to the bottom. This makes the length of Feeder A, extending to the first synchronous converter at the center of Section A, 3,000 ft.

From the center of Section A, power is distributed one-half mile each way. The maximum condition in this section occurs when a loaded trip is on the grade, another on the level track and an empty on the level track. However, there will be a saving in copper by estimating each half-mile separately.

Thus, in the first half of Section A, a loaded trip is on the grade, going out; and an empty trip, say on the level, returning, which will consume a power of 111,104 watts. Assuming a 500-volt circuit, this power will call for a current of $111,104 \div 500 = 222$ amp. Using a 0000-wire on this half-mile, will give a linedrop of 30.5 volts, while the rail return estimated for the entire current from inby sections will cause an additional 12.5 volts, making a total drop of 43 volts, or 8.6 per cent.

The maximum condition that can occur on the second half-mile, in Section A, is one loaded and one empty trip

both on level tracks. This will consume 36,864 watts and, on a 500-volt circuit, will require a current of, say, 74 amp. Allowing, say 5 per cent, or a drop in this half-mile of wire $0.05 \times 500 = 25$ volts the required area of copper is

$$A = \frac{10.8 \times 2{,}640 \times 74}{25} = \text{say } 84{,}400 \text{ } cir.\ mils$$

which calls for a No. 1 trolley wire.

In order to estimate the size of feeder required for Section A, we will assume a 2,300-volt. circuit, requiring 3,000 ft. of wire and the same return. The maximum condition that can occur, in Section A, is one loaded trip on the grade, and one loaded and one empty trip on a level track, making three trips in all and consuming 135,776 watts. For a 2,300-volt circuit, this will require a current of $135{,}776 \div 2{,}300 = 59$, say 60 amp. Allowing a ten per cent linedrop, the area of copper required will be

$$A = \frac{10.8 \times 6{,}000 \times 60}{0.10 \times 2{,}300} = 16{,}120 \text{ } cir.mils,$$

which will require a No. 8 wire, 6,000 ft. long.

To find the size of wire required for Feeder B (8,280 ft.), the maximum condition that can occur in Section B, is two loaded and one empty trip on level track, which will consume 62,528 watts, and require a current of $62{,}528 \div 2{,}300 = 27.2$ amp. Assuming a wire return and a 10 per cent linedrop, the area of copper necessary is

$$A = \frac{20.6 \times 8{,}280 \times 27.2}{0.10 \times 2{,}300} 20{,}170 \text{ } cir.mils.$$

which corresponds to a No. 7 wire.

Each half of the second mile, or Section B, is estimated in the same manner as the second half of Section A; and a No. 1 trolley wire, in each of these sections, will carry a current of 74 amp., at 500 volts, one-half mile either way from the converters located at the center of each mile section.

A circuit breaker divides Section A from Section B. The calculation of a rail return for these inby sections, however, shows a total drop of 48 volts at the inby end of the haulage road, including the linedrop from the converter, which is 9.6 per cent.

The rail return has been estimated for both rails of the track, which is cross-bonded, the bonds of the rails being 24-in., 0000-bonds. The rails are 30-lb. rails, 30 ft. long and are estimated as having a resistance of 560 microhms, for each double-rail length.

One other point remains to be mentioned; namely, the supply of power to the cutting machines. For that purpose, the power line is tapped between the inby transformer and the converter at the inby end of Feeder B. For use in the machines A.C. current may be used after reducing the voltage from 2,300 to 230 volts, but D.C. current is employed to operate the locomotives. It may be necessary, also, to use a No. 6 wire for Feeder B, which will carry a current of 35.4 amp. This would make $35.4 - 27.2 = 8.2$ amp. available for the machines, or $8.2 \times 2{,}300 = 18{,}861$ watts (25 hp.), which will probably be ample for that purpose.

Examination Questions Answered

Examination, Foremen and Firebosses, Lexington, Ky., May 30, 1921

(Selected Questions)

QUESTION—*When the water gage is 1.85 in., what pressure per square inch does it indicate?*

ANSWER—Each inch of water-gage reading corresponds to a pressure of 5.2 lb. per sq.ft. The pressure corresponding to a gage reading of 1.85 in., is, therefore, $1.85 \times 5.2 = 9.62$ lb. per sq.ft., or $9.62 \div 144 = 0.0668$ lb. per sq.in.

QUESTION—*With a one-inch water gage we have 100,000 cu.ft. of air passing per minute; what will be the water gage if we have 200,000 cu.ft. of air passing in the same airway?*

ANSWER—For the same airway, the pressure or water gage varies as the square of the quantity of air in circulation. In this case, the quantity of air being doubled the water gage must be increased as the square of 2, which is 4. The required water gage is therefore $4 \times 1 = 4$ in.

QUESTION—*(a) There are 360 men in a mine. What volume of air should be measured to comply with the Kentucky mining law and provide for these men and 20 mules, allowing 300 cu.ft. per mule? (b) How many splits should there be to comply with the law?*

ANSWER—(a) The mining laws of Kentucky (Art. 8, Sec. 1) require 100 cu.ft. of air per man per minute. To comply with this requirement of the law, the volume of air supplied to 360 men and 20 mules, allowing 300 cu.ft. per mule per minute, is $360 \times 100 + 20 \times 300 = 42{,}000$ cu.ft. per min.

(b) The Kentucky law, in the same section, authorizes the mine inspector to require that not more than 60 men shall be employed on a single air split, and to comply with this condition there must be $360 \div 60 = 6$ splits of air in this mine.

QUESTION—*If there is 85,000 cu.ft. of air entering a mine per minute and 2,500 cu.ft. of gas is given off in the workings, what will be the percentage of gas in the return air current?*

ANSWER—Disregarding the change of volume due to any difference of temperature between the intake and return airways and decrease of pressure due to mine resistance, the total volume of air and gas passing on the return is 87,500 cu.ft. per min. The percentage of gas in this current is therefore $(2{,}500 \times 100) \div 87{,}500 = 2.85$ per cent.

QUESTION—*Find the motive column in terms of upcast air, corresponding to a pressure of 13 lb. per sq.ft., when the temperature of the upcast air is 150 deg. F. and that of the downcast air 40 deg. F.?*

ANSWER—The height of motive column (M), in terms of the upcast air, when the upcast temperature is $T = 150$ deg. F., and the downcast temperature is $t = 40$ deg. F., the depth of the shaft being $D =$ say 100 ft., is given by the formula

$$M = \frac{T - t}{460 + t} \times D = \frac{150 - 40}{460 + 40} \times 100 = \frac{110 \times 100}{500} = 22 \text{ ft.}$$

The height of the motive column varies with the depth of shaft.

QUESTION—*(a) A fan at a shaft mine, under ordinary conditions, shows a water gage of one inch. If, on a particular morning, you find a two-inch water gage, what may be the cause of this increase in the gage reading? (b) If you find the water-gage reading is only ½ inch, what may be the cause of this decrease?*

ANSWER—(a) In ordinary mining practice, an observed increase in the water-gage reading may be assumed to be caused by some unusual obstruction of the air current in the mine. This may be owing to a fall of roof blocking the air-course or choking a breakthrough, at some point in the mine.

(b) On the other hand, an observed decrease in the water-gage reading when the fan is running at its usual speed is probably owing to a short-circuiting of the air current by the sudden opening of a door at some point in the mine. A door set open on the shaft bottom, cuts out the mine resistance, which might easily cause a fall of water gage from one inch to a half-inch. It would be quite unusual, however, for any obstruction in the mine airways to cause a rise of water-gage reading from one inch to two inches, as that would mean double the usual mine resistance and is hardly probable.

QUESTION—*What are the dangers of black powder in dry and dusty mines?*

ANSWER—The use of black powder, in blasting in mines, always produces much flame, which is projected from the shothole with great force. If the mine is dry and dusty the dust is blown into the air and ignited, causing a local explosion of dust that may be propagated to other portions of the mine, producing a mine explosion with loss of life and destruction of property.

International Geological Congress Will Consider Reorganization at Brussels

GEORGE OTIS SMITH, Director of the U. S. Geological Survey, has returned to Washington from London. The primary object of his visit to England was to serve as a member of the Organization Committee of the International Geological Congress, the next meeting of which is being arranged for August, 1922, at Brussels. Dr. Smith visited various government scientific institutions in England whose work corresponds to that of the U. S. Geological Survey. It is interesting to note, he remarked, that such official bureaus and commissions number not less than half a dozen, operating under nearly as many different government departments. Apparently the logical arrangement and consolidation of such investigation work has not yet gone far in the British government.

In speaking of his calls upon the British scientists Dr. Smith said: "It was most gratifying to hear on every side the expressions of appreciation by the British officials of the scientific work of our own American government, and even more satisfactory is the apparent universal desire to pool information and thus to co-operate in working out the industrial and economic questions that are much the same in both countries.

"The international committee which met in London on July 20 outlined a policy for reorganization which will be the subject of discussion at the congress in Brussels next August. This committee was appointed for this purpose in 1913 at the Canadian session of the congress and was expected to report three years later at the congress which was to have convened in Brussels. The 1922 congress will be noteworthy as a belated acceptance of the hospitality of the Belgians, which is even more highly appreciated at the present time. The reorganization policy recommended, and in fact unanimously favored by the English-speaking members of the committee, seeks national sessions with a minimum of administrative machinery, which is regarded as expensive and inimical to the scientific spirit. On both sides of the Atlantic 'bureaucratic' is a word to be expurgated."

Unrest Prevalent in Anthracite Region

COALBROOK mine workers on Aug. 5 decided to continue on strike till the Hudson Coal Co. can be induced to grant the electric-locomotive runners the arrangement regarding hours which they demanded. The mine workers at the Underwood Colliery of the Pennsylvania Coal Co. at Throop went out on strike Aug. 11 because they claim the company has cars of two sizes and they should be paid extra for loading the cars of the larger size. The company denies that there is any difference in their capacity.

The Glen Alden Coal Co. discharged two footmen at the Taylor mine for refusing to work after the completion of their eight-hour shift. The employees went on strike Aug. 2 but returned to work the next day. Also, on Aug. 2, the mine workers at Mount Lookout Colliery in West Pittston and Westmoor Colliery of the Hillside Coal & Iron Co. went on strike, alleging that the company had suggested a reduction in wage.

Again on July 30 the Mt. Lookout Colliery of the Temple Iron & Coal Co., Wyoming, Pa., went on strike because two men having completed their places could not get breasts to their liking. Just when work begins to decline the anthracite mine workers seem less willing than ever to embrace the opportunity presented them.

Hoover Wants Conference to Speed Buying

IT IS reported that the Secretaries of Commerce and of Labor, Hoover and Davis, are planning for a conference of coal operators and mine workers to consider the present unsatisfactory conditions in the coal industry resulting from the lack of demand for coal. Such a conference might find a way to stimulate coal purchases. Representatives of the miners are understood to be willing to confer, but are opposed to any proposal to reduce miners' wages as a means of solving the problem. Representatives of the union who have recently conferred with Secretary Davis say the proposition to reduce wages is ridiculous. The miners hope the government and operators will inaugurate a campaign which will insure at least four working days a week in summer and five in winter as at present the bituminous mine worker is only afforded opportunity to work for two days in each week.

By Striking Pennsylvania Miners Lose in Six Months One and a Half Million Dollars

OVERLOOKING the inevitable lack of employment, especially in the bituminous regions, the mine workers of Pennsylvania lost by strikes during the first six months of this year 250,349 days, according to the bureau of mediation and arbitration of the State Department of Labor and Industry. These lost days represented $1,473,749 in wages.

The three principal anthracite counties had 31 strikes, with 21 in Luzerne, 7 in Lackawanna and 3 in Schuylkill. The Luzerne County strikes resulted in 188,185 days being lost, equivalent to $857,914 lost in wages; in Lackawanna County 12,984 days were lost and $62,805 in wages and in Schuylkill 128,208 days were lost and $575,518 in wages.

Mingo Martial Law Is Sustained by Court

THE West Virginia Supreme Court on Aug. 16 denied the application for writs of habeas corpus filed by thirty-six persons of Mingo County, who asserted that they were being unlawfully detained in the county jail at Williamson. In the list of those who sought release were many whose names have been frequently mentioned in the Mingo County industrial strife in recent months, including A. D. Lavinder, who following a previous arrest obtained his release upon a writ of habeas corpus on the ground that there was no military occupancy to enforce martial law.

As he was charged with a violation of the terms of the martial law proclamation, he was arrested again and is still in confinement. In refusing to grant a writ of habeas corpus the Supreme Court held that the petitioners did not show that conditions differed any from those stated in previous applications passed upon by the court. It was asserted by Attorneys Houston and Van Fleet, representing the United Mine Workers, that they would carry the case to the U. S. Supreme Court.

Eight of the prisoners were arrested in a raid conducted by Major T. B. Davis and members of the state police and the Mingo enrolled militia. Crossing the mountains near Williamson before daylight Saturday, Aug. 13, the raiding party swooped down in a surprise attack on the hidden body of fugitive idle miners, charged with various crimes, arrested eight men and brought them to Williamson. Among those arrested are several charged with the burning of the tipple at War Eagle in May, before Major Davis took command under the martial law proclamation.

Receivers Appointed for Coal Company

ELIAS McCLELLAN PASTON and John B. Johnston were appointed receivers, on Aug. 11, by Judge Martin T. Manton, of the Interstate Coal & Dock Co., a Wisconsin corporation with New York offices at 32 Broadway, in a suit in equity brought by the Luhring Collieries Co., New York Coal Co., Cleveland-Cliffs Iron Co., Bob-Lo Coal Sales Co., and the Ajax Coal Co., as creditors, with claims amounting to $800,000. The receivers were authorized to carry on the business.

The complainants state the defendant corporation's liabilities amount to about $2,300,000, while the assets include large stock interests in coal mining properties, docks and apparatus. The complaint says the assets are sufficient to pay the liabilities if properly administered.

THE SLACK IN BUYING is not due to a consumers' strike but to the growing number of people who have stopped paying more than they can afford.—*Houston Post*

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

TWO-thirds of the year 1921 having gone into history, business and financial leaders, according to a review of business conditions for September by the Mechanics & Metals National Bank of the City of New York, are counting hopefully, for the remaining months of the year, on the benefits of the sweeping adjustments that the elapsed portion of the year brought about. "Deflation," the bulletin continues, "has now become very much of an actuality, and so far as our domestic situation is concerned we may be said to have obtained a fair start in the attempt to put our house in order.

"That the industrial depression has spent its force and that the ebb tide will be followed by a gradual turn is the general belief, and there would seem to be sound reason for this belief. Close observers of the situation become increasingly cautious in attempting to stipulate any definite time when 'revival' will set in, and it is widely felt that any improvement this fall will be mild. But there are some unmistakably cheerful signs on the horizon. During July, for the first month in a year and a half, the index numbers of average commodity prices compiled by Bradstreet's and Dun's agreed in showing an advance. Even the steel trade, long regarded as the 'key industry,' though in the present cycle its readjustment has lagged behind every other, has shown substantial improvement in activity in recent weeks.

"Net railway earnings in June, the last month to be compiled, were the largest since November; and the attitude of the Administration in urging and effecting railroad relief measures has created a better feeling as to the future of the railroads than has existed since the period of Federal operation. Financial relief to the railroads will indirectly thaw out hitherto frozen banking loans and make possible steel and equipment buying that may help to turn the course of business generally. Brighter tax prospects are ahead in the present program of Congress, and the forthcoming disarmament conference in November may have the most far-reaching results in reducing this burden on business.

"Among commodities, the decline in wholesale prices slowed down some time ago, and that we are not threatened with further drastic general declines has been indicated in the recent movment in staple commodities. There remains a great deal of unevenness in price levels, and there are not a few articles which are still in the stages of deflation. But the stabilizing process is well under way, and where prices fell too much they are now beginning to ascend to their rightful level."

Steel Mill Resumes on Half Basis

The plant of the Weirton Steel Co., at Steubenville, Ohio, resumed operations in part Monday, Aug. 29. Approximately 1,000 men are employed normally at the plant, which has been idle since last January. It started at about 50 per cent of normal.

Sharon Steel Plant Speeds Up

The Sharon Pressed Steel Co., Sharon, Pa., manufacturer of automobile frames, has increased the operating rate of its plant at Wheatland, Pa., to 40 per cent. The outlook for business, officials of the company state, are favorable.

Paper Mills Reopen

The Mittineague and Woronoco plants of the Strathmore Paper Co., which were closed Aug. 15, reopened with a full force of employees Thursday, Sept. 1, according to reports from Springfield, Mass. Officials announced that the outlook is somewhat brighter.

Ford Makes New Output Record

The production of cars and trucks at American plants of the Ford Motor Co. for May, June and July exceeded that for any similar period in the company's history, according to an announcement by the company. The total output for the quarter reached 317,587 cars and trucks, a monthly average of 105,862. The output for July was 107,149 cars and trucks, which was somewhat lower than was anticipated at an early date, but July 4, when the Highland Park plant and Ford plants throughout the country were closed, meant a loss to the month's record of somewhat more than 4,000 cars and trucks. It was expected that June's record of building, 108,962, would be eclipsed in August. June was the highest month in production the company has so far experienced. The schedule for August called for 109,700 cars and trucks.

Business of the Cadillac Motor Car Co. is so favorable, says a statement issued by the general office of the corporation, that the new Clark Ave. plant has been opened. The company, says the statement, has reached 70 per cent of normal production and is employing 70 per cent of the normal working force. More than 1,000 men have been added recently, bringing the number up to more than 4,000. Almost every department is operating full time.

Car Shops Taking on Men

The New York, New Haven & Hartford Railroad Co. is steadily increasing the working force at its East Hartford (Conn.) car shops. Last week the plant had 400 men on the payroll.

Freight-Car Loadings Gain

There was an increase of 7,471 loaded freight cars during the week ended Aug. 20 over the previous week, the car service division of the American Railway Association reports. The total number of cars loaded during the week was 816,436. This, however, was a decrease of 151,667 cars compared with the total for the same week in 1920, and 96,773 cars under the total for the corresponding week in 1919. The principal increase, compared with the week before, was in the loading of merchandise and miscellaneous freight, which included manufactured products, although there was a sustantial increase in shipments of livestock. Loadings of grain and grain products were under the previous week. Coal loadings, which during the week of Aug. 13 went up to 158,260, dropped back to 154,140. This was 50,000 under the corresponding week last year.

Minnesota Dealers, in State Survey, Admit That Coal Prices Are Too High; No Recommendations Made

MINNESOTA is not depending on the government at Washington or Senators Calder and Frelinghuysen to give it information about coal through legislation. Governor Preus directed J. H. Hay, Assistant Commissioner of Agriculture, to investigate the coal situation as it stands today, for the benefit and information of the citizens of the state. The report, composing fifty pages, has just been filed with the Governor. It is considered to be an accurate survey of facts on supply and prices. It contains no recommendations. The Minneapolis correspondent of *Coal Age* in transmitting the following survey of the report notes that some may misapprehend the purport of the information contained in the survey and infer that national legislation looking to control of the coal industry is the conclusion to be drawn.

It will be well for the coal trade, according to our correspondent, to give heed to the statements made, for this sort of information is bound to register sooner or later in the way of restrictive legislation in Congress. The longer action is delayed, the surer will be the outcome. While the subjects are different, the prohibition and suffrage amendments are examples of how public sentiment grows and forces legislation from bodies at heart hostile to the subjects under consideration.

Official Report Summarizes Findings of Survey

The following is a summary of the findings of the survey, as embodied in the official report:

1.—The 1921 production of bituminous coal in the United States will fall far below that of 1920, as is indicated by tables submitted in this report. At the current rate of production, the 1921 tonnage will approximate 70 per cent of the 1920 production.

2.—The 1921 production of anthracite coal promises to exceed that of 1920, and will be ample for all requirements if transportation facilities are available.

3.—The coal docks at the Head of the Lakes are loaded to capacity. This capacity approximately measures one-half the annual requirements for the territory served therefrom. A trifle over ninety days remains of this season in which to remove coal on hand and again to fill the docks with the supply necessary to carry the Northwest through the approaching winter.

4.—Practically no coal supplies were carried over from last winter by Minnesota consumers or retailers.

5.—Consumers in Minnesota and, in fact, throughout the whole country, are refusing to buy coal, and retailers are buying very sparingly.

6.—The reasons advanced for non-buying are: (a) That these two classes consider the current coal prices too high; (b) the scarcity of money with which to buy.

7.—Industry is slowed down in the Northwest from 40 to 60 per cent of normal, thus materially reducing the sale of steam coal.

8.—Illinois coal is gradually increasing in use in the Northwest. It is a strong competitor of dock bituminous. Coal from states west of Minnesota does not move in quantity to this state. Dry wood for fuel is available in Minnesota only in limited quantities. Railroad rates for shipping same are so high that wood is practically out of consideration even if a supply could be procured. Oil and peat are not as yet considered commercially for fuel purposes in Minnesota.

9.—Coal dealers examined by the Department of Agriculture admitted that current coal prices are too high, but they offered no solution of the high-cost problem. On the other hand, two dealers declared that prices were not high enough to guarantee them profits such as their business demanded.

10.—The co-ordinated and interlocked string of interests in the coal business, reaching from the mines in the East to the docks and retail yards in Minnesota, and described by one dock representative as an "economic evolution" are, in effect, and according to the testimony of independent retailers, a real menace to the existence of these independents. This "economic evolution" points the way in its development features to a possible monopolistic control of Minnesota's Eastern coal supply, and particularly anthracite in its movement to Northwestern consumers.

11.—Independents and dealers examined in this investigation and operating in a small way in Minnesota are compelled by the logic of the coal situation to accept the retail prices set by the dock companies having retail yards.

12.—Independent retail dealers have, at various times, been refused coal by dock companies even when the financial standing of such retailers was not in question.

13.—Approximately half the anthracite supply for Minnesota is controlled by one mine operator, represented by one man in this state, who at intervals announces selling prices of anthracite coal, thus virtually controlling, to a certain extent, the anthracite price in Minnesota.

14.—Current costs of some forms of labor in Minnesota coal yards, wagons, delivery trucks, horses, gasoline and oil for motor-truck use, hay and feed for horses, are lower than 1920 costs. All witnesses declared these reductions in cost of operation were reflected in lower prices to consumers, but no estimates of the amount of such reduction were supplied the department. For instance, common labor, which receives 40c. an hour in 1921, received 60c. per hour in 1920.

15.—The practice of the trade is to increase the price of coal from 10c. to 25c. per ton per month from May to September. This practice in the coal trade has no counterpart elsewhere in the business world, despite the fact that dealers in other commodities may exercise the privilege of taking this form of profit if they see fit. The excuse offered by the coal trade is to "persuade" the buyer to purchase early in the season. The refusal of buyers to comply with this practice in 1921 establishes its fallacy and clearly exposes its unfairness. Decreases in costs, as announced in No. 13, ought to be as quickly and clearly indicated and felt by the buyer as are these usual monthly increases. The mere fact that it is a practice in the coal trade is no justification that it is a fair trade practice.

16.—Dealers appearing as witnesses declared that 25c. to 50c. per ton on all coal handled was a fair and reasonable retail profit. Some dealers declared 25c. an ample retail profit, while one dealer declared that 10c. net per ton for all coal handled would be satisfactory. It was evident that dealers handling a very small volume required a broader margin in order to meet cost requirements.

Citizens' Health, Security and Happiness at Stake

17.—The supplying of coal as fuel to homes, hospitals, lighting and power plants is more than a mere business enterprise to be maintained solely for financial profit. The activities engaged in the coal trade affect the health, security and happiness of citizens of Minnesota and other states. With the exception of the organized coal trade and certain persons and civic bodies especially interested therein, the public strongly favors such regulatory supervision of the production and distribution of coal as will protect consumers against exorbitant prices and limited supplies of coal.

18.—Current prices of coal are forcing consumers in Minnesota to organize co-operative coal-purchasing agencies, which propose buying in quantity at the mines.

19.—Investigation developed the fact that trade practices at the mines and costs involved therein would not be available to any representatives sent by this department on an investigational errand. As indicated elsewhere in this report, the Federal Trade Commission was permanently enjoined from collecting cost information.

20.—Congress and several State Legislatures, including that of Minnesota, have, during the past two years, sought to adopt such measures as would protect the public against unreasonable coal prices, and at the same time to insure consumers a steady and ample flow of coal to their bins. Legislation now pending at Washington includes measures which seek to stabilize coal prices and secure such seasonal railroad rates as will stimulate coal movement. Certain measures relating to coal trade practices, which were introduced in the Minnesota Legislature during the session of 1921, failed of favorable consideration. In the larger field at Washington, the proponents of coal-trade regulation are experiencing strong opposition to their legislative efforts. Groups of citizens in Minnesota and throughout the country are organizing to support legislative action relating to the coal industry as is described above.

21.—Minnesota's annual coal requirements are approximately 1,500,000 tons of anthracite, 8,000,000 tons of dock bituminous and 1,000,000 tons of Illinois bituminous.

The report gives detailed figures from dealers, by numbers instead of by names, showing what makes up the cost to the consumer of a ton of coal. A typical statement, by "Dealer No. 6," shows anthracite costs of Aug. 1, 1916, and Aug. 1, 1921, as follows:

	1916	1921
Price, f.o.b. mines	$3.66	$7.053
Freight rail and tax, mines to f.o.b. vessel	2.01	3.605
Lake freight and tax to Duluth	.30	.515
Dockage, degradation, shortage, interest, insurance and taxes at dock	1.03	1.727
Wholesale price, f.o.b. cars, Duluth	7.00	12.90
Rail freight and tax, Duluth to Twin Cities	1.20	2.2969
Cost f.o.b. cars, Twin Cities	8.20	15.1969
Cartage for delivery to consumers' bins	.45	1.00
Selling costs	.1987	.5173
Yardage, degradation, shortage, interest, insurance and profit at retail yard	1.1513	1.1358
Retail domestic delivered price, Twin Cities	10.00	17.85

Up to July 31, the report shows, soft-coal receipts at the Head of the Lakes were 3,762,256 tons in excess of the same time last year, and hard-coal receipts 125,799 tons in excess. But docks are full and very little coal moving, it is stated. As the docks need to be filled and emptied twice to supply the Northwestern demand, the report warns that "the movement from the docks must be immediately accelerated in order to afford storage space for the full supply."

Washington State Mines Use Non-Union Men

AFTER lying idle for over five months the coal mines of King and Pierce counties in the state of Washington are again in operation. The work is being done with non-union crews following the failure of the union miners to accept the wage scale offered by the operators. Some of these mines are the Newcastle, the Franklin and the Black Diamond in King County and the Carbonado, Wilkeson and Burnett mines in Pierce County.

Men are being sent out from Tacoma and Seattle to be gradually made acquainted with the work. More than one hundred miners are reported as employed in the Issaquah mines, two-thirds of them under ground. At other places men are being received in numbers, and it is expected that before many days all the workings will be open again. At Renton the Black Diamond briquet plant is preparing to reopen, also.

The miners' unions still assert that they are standing firm and declare in some districts that they will remain out until March, 1922, at which time they say their wage contract with the operators will expire.

Blame Central Competitive Operators Also For Failure to Readjust Mine Wages

PROMINENT coal operators in the central Pennsylvania district with whom a representative of *Coal Age* has talked recently are disposed to hold the operators of the Central Competitive field, as well as the United Mine Workers of America, responsible for the failure to bring about a downward readjustment of the wage scale in keeping with the action that has been taken by other basic industries.

To all requests that have been submitted to the United Mine Workers for such action, the reply invariably has been, these central Pennsylvania operators assert, that the policy of the international organization has been that nothing along this line could be done without united action by the entire Central Competitive field. The failure of the latter to take any action is causing people to ask, why this inactivity on the part of the Central Competitive field? The fact that they are under indictment in Judge Anderson's court in Indianapolis may have something to do with this lack of initiative. But this, in the opinion of local operators, is a good excuse and not a reason.

The dominant position in wage-making affairs so long enjoyed by operators and miners in the Central Competitive field was being seriously attacked during the period which led up to the strike in November, 1919, it is pointed out. But the weakness of this group that has pretended to dominate for so many years never was so glaringly apparent as it is today. Local operators contend that the coal industry should proceed to do its share toward deflation and keep in line with other industries. The delivered cost of coal today compared with pre-war times is absolutely ridiculous, compared with other basic commodities, such as steel and farm products. This is due in part to high freight rates, but other commodities also have this difficulty.

The coal men, it is contended, have an obligation to perform to the public in bringing about a proper cost of coal. The excuse that they are tied up by a scale agreement to next April, it is asserted, is not true. The wage agreement made by the U. S. Coal Commission was knocked into a cocked hat in August, 1920, less than five months after it was in operation, and a supplementary "voluntary" agreement, after wildcat strikes had closed down many mines in Indiana and Illinois, added $1 to $1.50 to the day scale. This agreement is now in operation. Time after time, it is pointed out, the United Mine Workers have obtained wage advances, using as an excuse the "high cost of living," and now that living costs have come down and all other industries have made reductions, the operators refuse to get together and ask a reduction in wages, which would benefit the public and the miners, as well as the operators.

Summing up the sentiment among central Pennsylvania operators, it is not the fault of the United Mine Workers alone that there has not been a reduction in wages. It is the fault in part of the dominating group of operators in the Central Competitive field who do not sense their obligation to the public and the industry.

Coal Mine Explosion at Harrisburg, Ill., Asphyxiates Eleven Men

A SHOT of dynamite penetrating into old workings filled with fire damp is said to have been the cause of an explosion at the Harco mine of the Harrisburg Colliery Co., Harrisburg, Ill., on Aug. 31. The mine has normally 400 men working it but at the time the shot was exploded only a few men were in the mine. Eleven men were killed and seven men escaped, but not without suffering from the effects of the black damp. D. J. Parker arrived with a U. S. rescue car only an hour after the accident.

Rainey Men March to Stop Working Mines

STRIKERS at the mines of the W. J. Rainey Coal & Coke Co. marched into Allison, Pa., on Aug. 31 to bring out the miners of the Superior Coal & Coke Co. Sheriff I. J. Shaw, of Fayette County, and Deputy Edward Brady set out in an automobile to meet them with a light machine gun stowed away in the car. The Sheriff on meeting them ordered them to disperse and go home. When they refused he began to prepare his machine gun for action. The men retired but did not leave the village. Sergeant Freeman of the state police coming on the sheriff's call, the men were searched, and being found without arms were allowed to proceed. At Brier Hill they took charge of the hoisting engineer, shutting down the mine till the Sheriff appeared. The Rainey men are unorganized.

THAT THE PITTSBURGH COAL CO. would make a reduction of 15 per cent in the wages of between 3,000 and 4,000 members of its salaried staff on Sept. 1, was announced Aug. 29 by Edward J. Walsh, Eastern manager. According to Mr. Walsh the company made two pay advances during the period of rising prices and the high cost of living, one of 25 per cent and another of 15 per cent. Therefore, the readjustment which became effctive the first of this month leaves the concern's employees 25 per cent ahead of the pre-war normal. The reduction, which is participated in by all workers throughout the country, the largest portion of which, of course, are in the Pittsburgh district, will not affect the thousands of miners of the company, since it is party to the wage agreement until the end of the present coal year, March 31, 1922.

IN A SENATE DEBATE on the Shipping Board Senator Fletcher, of Florida, said the operating expenses of a vessel per year include $13.81 per deadweight ton for fuel.

Warfare in Logan County Now at an End

FEDERAL troops soon quieted the turmoil in southern West Virginia. Their arrival in the principal centers, Sept. 1, was the signal for "cease firing" along the line held by the volunteer army defending Logan. A summary of events from Aug. 28 to Sept. 6 follows:

On Sunday, Aug. 28, a clash with the state police under Captain J. R. Brockus, who with deputy sheriffs were defending the Logan County line, occurred at Sharples, a little union mining town across the Logan County line which adjoins Boone County. The defenders numbered twelve in all. They met five mine workers who, on a command to surrender, replied with a volley of shots. Of these, four are believed to have been killed by the fusillade which the police and the deputy sheriffs fired in reply. Others who came up were reported wounded.

As the state police were accompanied by un-uniformed men, Captain Brockus retired, not being able to distinguish friend from foe in the darkness. The fight was at close quarters, the two parties being eight or ten feet apart. It appears that the Captain had taken eleven prisoners. Four escaped during the engagement, and one is believed to have been killed. Had the force of police and deputies not retired they might all have been massacred, as 1,500 to 2,000 mine workers are asserted to have been awaiting their advance into the trap. Later reports show that seven persons were killed and thirteen men and one woman wounded in the encounter.

Work Continued at Mines Despite Invasion

On the same day three deputy sheriffs and a justice of the peace were captured and mine workers from Blair, Madison and Danville were mobilizing to cross the defenses near the Boone-Logan line, assembling at Blasia and Sharples. By the following day three more deputies had been captured and it was difficult for the authorities to prevent citizens of Logan from marching to certain death to attempt their rescue. The mines continued to work despite the invasion, but the men who worked were armed and took up their positions whenever danger threatened.

It was noted on Aug. 29 that armed men from Paint Creek and Cabin Creek were reassembling in large numbers at Marmet and at other points along the creek between the Kanawha River and Madison. Adjutant-General Charnock returned from Danville with the report that his mission had failed, the letters which he carried from President C. F. Keeney of district No. 17 and other union men being of no avail. Neither argument nor the 100 state police and 240 deputy sheriffs could convince the mine workers that the attempted march was futile. The men appeared to be led by two Illinois men, Frank Buts and W. L. Goodman; two from Ohio, Ben Ackley and Mike Casgrove; Lewis Adams, from Indiana, and Ed Secore, from Kentucky. The presence of these men suggested to Governor E. F. Morgan that International President John L. Lewis was willing to shut his eyes to the villainy of certain of the mine workers in his organization.

Danger also threatened from another quarter on Aug. 29. Men were gathering at Mullens, Wyoming County, to march across McDowell County into Logan and thence to Mingo. For this reason Sheriff William Hatfield sent half his 250 deputies back to Welch to keep order in his own county. Meantime Washington was employing "watchful waiting" tactics and blaming Governor Morgan for not doing more. The authorities at the Capitol are convinced that West Virginia has been negligent in dispensing with the National Guard. But at last on Aug. 30 President Harding issued a proclamation to the mine workers ordering them to disperse and retire peacefully to their homes before noon, Sept. 1, or troops would be despatched and martial law declared.

Troops in Readiness for Immediate Movement

This was issued after the President had received a delegation sent by Governor Morgan comprising Senator Sutherland, of West Virginia; George W. A. McCorkle, former Governor; H. G. Young, Secretary of State; Charles W. Swisher, former Secretary of State; John L. Dickinson and Fred W. Staunton, bankers and business men of Charleston. The 26th regiment of infantry, comprising 1,000 officers and men, at Camp Dix, N. J., and the 19th regiment of infantry at Camp Sherman were kept ready for immediate movement to the scene of action.

On the same day, Aug. 30, C. F. Keeney, district president; Fred Mooney, district secretary, and David Robb, international financial agent, and a score of others were indicted for murder; the first two were charged with complicity in the killing of two men in Mingo County on May 13 and the third in connection with the slaying of a state trooper. Two deputy sheriffs also were indicted.

On Aug. 31 more fighting occurred at Blair. The mine workers tried to charge up a mountain and were repulsed. A deputy sheriff was killed. The number of men in the attacking force was 3,500, but the reinforcement of the forces of order was as significant as the strength of the mine workers. Ex-service men, miners, business men, school teachers and even ministers were flocking in from all the countryside, women occupying the working places left vacant by the men or driving automobile trucks with provisions and equipment toward the scene of action. The attacking mine workers, however seemed in no way disheartened. They shrugged their shoulders and passed on when told about the President's proclamation, and copies of the document scattered from an airplane met with no response.

On Sept. 1 the fighting became more fierce than ever and at midnight General Bandholtz sent for troops, which arrived on the evening of the following night, and the mine workers speedily ceased fighting and surrendered, being sent back to their homes. Some of them, it is believed, hid their rifles before giving themselves up, as four hundred men who surrendered at Sharples and Madison Sept. 3 turned in only eighty rifles. The invading mine workers have almost without exception returned to the mines.

Proposed Tariff Would Shut Out British Columbia Coal

IS the export trade of British Columbia collieries, in so far as the adjacent states are concerned, to receive a death blow? There is no exaggeration in the statement that, if the suggested tariff bill as reported to the House of Representatives of the United States is endorsed as it reads, such will be the effect. This bill provides "that when any country, dependency or other subdivision of government imposes a duty on such articles imported from the United States, an equal duty shall be imposed on such articles coming into the United States from such country." It will be noted that the word "shall" and not "may" is used. As Canada's duty on coal imported from the United States now is 53c. a ton, it may be expected, always providing that the bill goes through as it stands, that a similar duty will be collected on coal going from the Dominion to the United States. And, as this duty will be figured in American currency no doubt, the exchange in its favor as against Canadian currency will put Canadian exporters at a further disadvantage.

To obtain a general idea of the effect of the proposed duty on the British Columbia coal-mining companies it is only necessary to scan the records for 1920 as disclosed by the annual report of the Minister of Mines. The total production for the year was 2,696,774 tons, of which about 63 per cent was consumed in British Columbia, the remainder being exported to the United States and Alaska. Of the year's coke output of 67,792 tons some 60 per cent was utilized in the province and the remaining 40 per cent went to the United States.

East Kootenay Collieries Likely to Be Hard Hit

These statistics give the broad view of the situation. It is interesting to look into the matter a little more closely, for by so doing it is found that, although the coast collieries will be sharply hit by the contemplated duty, it is the collieries of East Kootenay that will be most seriously concerned.

The coast district in 1920 produced 1,849,385 tons, of which 20 per cent was exported to the United States. East Kootenay last year produced 847,389 tons and 70 per cent of the coal sold was shipped to the United States. Little further is necessary to prove the nature, and to suggest the probable consequences, of the blow that amendments now before the House of Representatives hold suspended above the heads of those engaged in one of the most important of British Columbia industries.

What the outcome would be in the Crow's Nest Pass it is difficult to predict because the product of that field must, under present conditions, find its greatest outlet in the United States. An effort has been made of late to find a market for the high-class coal of East Kootenay on the Canadian prairies, and success is being achieved. But such eastern Canadian shipments, from the reports available up to date, have not reached really substantial proportions, whatever the future may hold. The building up of trade of this kind, it obvious, must take time. Further, it is to be remembered that the Crow's Nest collieries in these

markets must meet and defeat, under adverse conditions as to transportation, the coals of the large Alberta coal-mine operators.

On this point the annual report of the Minister of Mines contains the following observations:

"The market of the East Kootenay field is provided primarily by the railways of the southeastern part of the province and of the northern parts of the adjoining States of Montana and Washington, approximately three-quarters of the coal, sold as such, being exported to those states, while the remainder went to supply the demands of the southeastern part of the province—its domestic needs, its railways, steamboats, mines and smelters. . . . Coke, a product of the coal mines, is sold in the same markets, with the difference that the local consumption, chiefly by the smelter at Trail, took about 53 per cent of the product, while the remaining 47 per cent was exported to the states mentioned."

The mine operators of the State of Washington do not relish this Canadian competition. They argue that the coal that finds its way into Washington, Montana, Oregon and Idaho from the coast and the interior of British Columbia makes it impossible for them to produce coal, pay present wages and other costs, and make a profit. Therefore they have asked the Federal Government not for the 53c. a ton duty that apparently has been recommended but for 75c. a ton impost "on all imports of coal."

Colorado Fuel & Iron Co. Reduces Wages: 1,200 Miners Idle Since Sept. 1

TWELVE HUNDRED men of the Colorado Fuel & Iron Co. in Southern Colorado have been idle since Sept. 1, when the company made a wage reduction said to average approximately $2.50 per day for coal diggers. Ten mines with a tonnage of twenty-five thousand are affected, although union officials claim fifteen mines and assert that the men were not given the required thirty days' notice. W. I. Reilly, of the Industrial Commission, asserted, however, that the company filed notice of a wage reduction thirty days ago.

Company officials declare that a majority of the men have agreed to reduction equivalent to the scale prior to Nov. 30, 1919, so that large orders for storage coal for railroads could be obtained, giving them more days' work. Officials of District 15, United Mine Workers of America, assert that a majority of the miners could not work. Conditions are quiet. The State Industrial Commission has assumed jurisdiction and will hold a hearing in Walsenburg Sept. 9. The present contract does not expire until next March.

The American Smelting & Refining Co. in the spring of this year reduced wages 20 per cent, including all employees at its Cokedale coal mine and coking plant. The miners refused to accept the reduction and the mine was closed for a period of several weeks, but later on resumed operation under the reduced wage scale, with production of upward of 1,000 tons of coal per day. It is understood that with the lower cost of production due to the decreased wage scale the Cokedale mine was able to underbid other Colorado companies on certain contracts, thus entering the commercial business on an extensive scale in competition with other mines.

Coal prices are announced for the fall and early winter as follows: Lump, $6; nut, $5.50; slack, $2.75. There is little or no coal being stored except by some of the railroads, and the prospects for the coal business the coming winter seem to be anything but bright.

The newspapers convey a hint that there will be a demand made to abandon the Moffat railroad into Routt County, which would cut off several large producing coal mines. The Moffat road apparently has not been a money maker since its installation. It is thought, however, that some arrangement finally may be perfected by which the road will continue to operate.

J. G. BRADLEY, president of the National Coal Association, underwent an operation for appendicitis Aug. 31 at Harrisburg, Pa. The latest reports from the hospital indicate that his recovery will be prompt.

Traffic Bureau of American Wholesale Coal Association Adopts Impartial Policy

THE policy to be followed by the new traffic department of the American Wholesale Coal Association was threshed out at the meeting of its Board of Directors in Chicago Aug. 30 and 31. The department will handle only such traffic matters which are general in their scope and apply alike to all members. Where sectional or individual cases must be taken up the national association will lend its traffic manager to the members concerned, with the understanding that they are to pay his salary and all expenses of the case. The traffic manager of the national association is to take no part in any traffic case where there is a clash of interest between members of the association. The Board of Directors authorized George H. Cushing, managing director of the association, to employ the traffic manager, who will have his offices in Washington and will report to Mr. Cushing.

Acting on that authority Mr. Cushing has employed Ira C. Cochran, of Pittsburgh. The operations of the new traffic department will be begun Sept. 15. Mr. Cochran was for fifteen years in the employ of the Pennsylvania Railroad Co. During the last four years of his service with that company he was employed in the coal traffic department. More recently Mr. Cochran has been in the service of Weston Dodson Co., Inc.

In traffic cases there are three essential stages. The first is the collection of the facts and the preparation of the case. The second is the presentation of the case with these facts as its basis. The third is preparation of an appeal, if it should be necessary. Mr. Cochran will follow that procedure in all matters which apply to the wholesale industry generally. In addition he will gather data on all transportation matters which have a bearing on coal.

The Board of Directors and the Executive Committee engaged in an extended discussion of the coal exchange question but reached the conclusion that no decision could be made as to the attitude of the association until more facts were available. In order to obtain this additional information a committee of three will be appointed to make a special study of the subject. This committee will be instructed to report to the Board of Directors, when it is expected that the association's policy will be determined.

C. L. Dering, of Chicago; H. J. Haywood, of Toledo, and G. H. Merryweather, of Chicago, were designated as members of a Budget Committee to arrange for the financing of the association during the ensuing year. The Board of Directors also authorized the appointment of a legal committee.

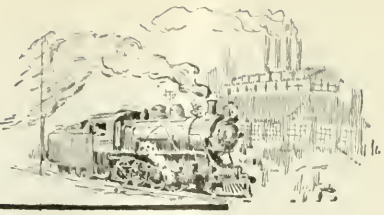
It was revealed at the meeting that the members of the association handle 90 per cent of the entire bituminous tonnage wholesaled. The members of the association handle 44 per cent of the entire bituminous production of the country. Nearly 6,000 mines depend entirely on members of the association to market their output. Members of the American Wholesale Coal Association purchased more than $800,000,000 worth of coal during the calendar year of 1920.

N. Y. Wholesale Coal Trade Assn. Suspends: Allen Resigns Secretaryship

AT a meeting of the Board of Directors of the Wholesale Coal Trade Association of New York, Inc., held on Aug. 24, 1921, Charles S. Allen, who has been the secretary since the formation of the association, tendered his resignation, to take effect Sept. 30. At the same meeting the Board, having accepted Mr. Allen's resignation, determined to discontinue the activities of the association for the present. The charter and equipment of the association will be retained and activities will be resumed when the need for the same presents itself.

Mr. Allen will resume the work in which he was engaged at the time he became secretary, representing shippers before the Interstate Commerce Commission and other Federal and State regulatory bodies. His office will be at 90 West Street.

Production and the Market



Weekly Review

LABOR DAY has the effect on coal of any holiday in that demand is increased in anticipation and lags subsequently. Production, save for this minor influence, is still hanging fire, waiting on demand. All over the country the only market with any sign of life is in domestic sizes, and even in these there is no prospect of excitement to come.

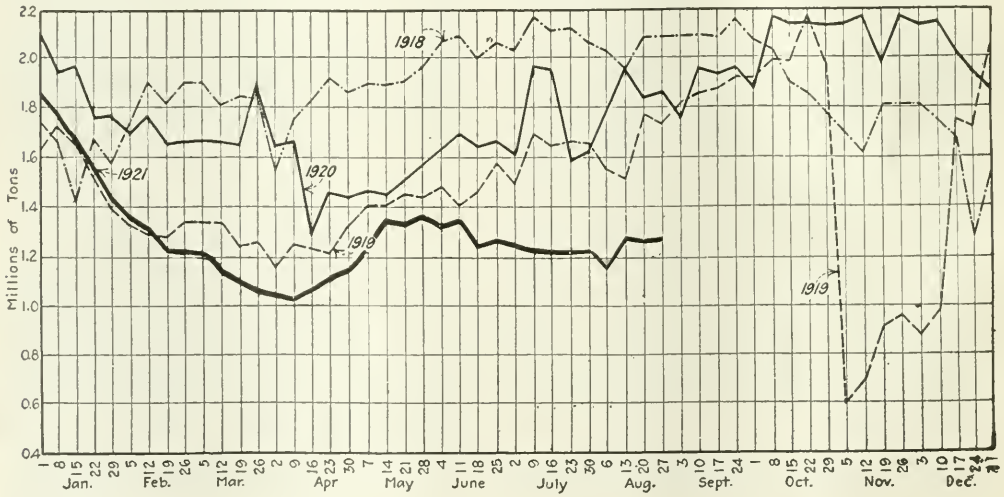
Output of bituminous coal during the week of Aug. 27 is reported by the Geological Survey as 7,755,000 net tons, a gain of 42,000 net tons over the preceding week. There is nothing in the news this week to indicate a sudden revival of industry and consequently of demand for steam coal. Meantime the seasonal increase in buying of household coal is resulting in the production of even more of the steam sizes of both hard and soft coal than can be marketed, as a consequence of which the prices on slack are down and on sizes are up, with mine-run about on a level, the net result of the whole thing being that the *Coal Age* index of spot prices for bituminous coal advanced to 91 on Sept. 6, from 90 for the week preceding.

In New England the steam-coal market is under heavy pressure, and buyers there, as elsewhere, seem to doubt the stability of prices, rather holding to the hope if not belief that something is sure to break before winter. The all-rail movement holds up as well as it has in the face of continued low price offering of Hampton Roads coal only because fully one-third is railroad fuel under contracts. In New York and some of the other markets further south and west inquiries for October delivery are disclosing an encouraging firmness, with prices advanced over present levels. Purchasing agents are said to favor covering their requirements by contracts for the remainder of the coal year. Dumpings over the piers at Hampton Roads are the lowest in months, having been but 183,000 gross tons in the week ended Sept. 1, compared with 269,525 tons the week previous.

Upturn in Steel May Bolster Coal Demand

Production is low in the Pittsburgh district but signs of gains in the steel market are expected to help the demand for coal, while in eastern Ohio the slump in Lake business that kept wheels turning a month ago is now nearly offset by better steam demand. The labor trouble in West Virginia has deflected business to eastern Kentucky and rumors of a strike on the railroads have given some stimulus to the Chicago market, where Pocahontas, desperate for an outlet, is pushing local coals in the domestic and apartment-house trade to such an extent that bituminous prices of Illinois coals are likely to suffer.

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

Anthracite, being largely a domestic fuel, is gaining as winter approaches. Dealers along the coast are quite generally absorbing the regular small additions to circular prices, fearing to frighten off hesitant purchasers. Meanwhile they have filled their yards to overflowing with coal at summer prices, on which they will realize the advance later, after the householder has lost his opportunity. In other words, the coal has been available, if the consumer wanted it, at summer prices. But those who did not elect to carry the coal over until winter will pay the retailer for having done so, and there can be no criticism of the dealer who marks up his coal when demand gets brisk.

BITUMINOUS

Production of soft coal appears to have found a level for the time being at about seven and three-quarters million tons a week. According to the Geological Survey, the total output during the week ended Aug. 27 was 7,755,000 net tons, as compared with 7,713,000 the week before. Usually at this time of the year production is on the upturn, but it is apparent that even for domestic sizes there is not the normal activity which marks the approach of autumn. Preliminary reports indicate no great change during the following week, Aug. 29 to Sept. 3—loadings on Monday and Tuesday were 52,154 cars, a decrease of 622 cars when compared with the corresponding days of the week preceding.

The movement of soft coal to New England via all-rail declined during the week ended Aug. 27. A total of 2,670 cars were forwarded over the Hudson compared with 2,982 cars the week before.

CARS OF COAL FORWARDED OVER THE HUDSON TO EASTERN NEW YORK AND NEW ENGLAND

	1921		1920	
Week Ended:	Anthracite	Bituminous	Anthracite	Bituminous
Aug. 13	2,313	2,560	2,230	6,124
Aug. 20	2,460	2,982	2,926	5,369
Aug. 27	2,425	2,670	3,435	5,292

Westbound movement of coal through the canals at Sault Ste. Marie, Mich., and Ontario for the month of August, 1921, was 1,698,068 net tons of bituminous and 489,142 tons of anthracite. As the movement to the interior increases, the upper docks are enabled to discharge more rapidly the cargoes sent up the Lakes, although lack of space has necessitated a curtailment of shipments from ths heavier volume which prevailed earlier in the season. Total dumpings at the lower ports during the week ended Sept. 3 increased slightly to 585,577 net tons—564,847 cargo coal and 20,730 vessel fuel—as compared with 712,064 tons the week preceding. Cumulative movement for the season to date is 16,735,687 net tons, which is in excess of 1919 and 1920 but, owing to the slump during August, 1921, is now nearly three-quarters of a million tons behind 1918.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

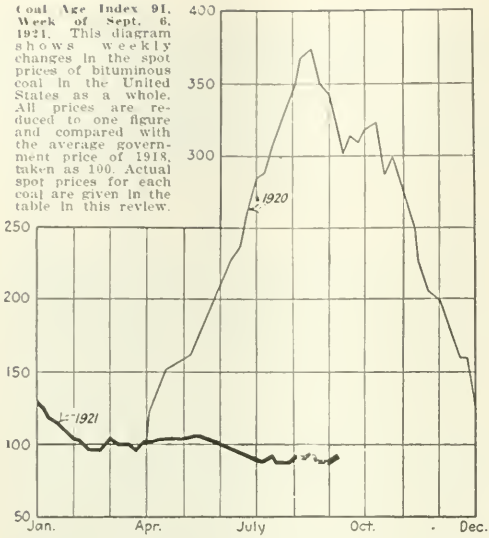
Low-Volatile, Eastern	Market Quoted	Aug. 2, 1921	Aug. 23, 1921	Aug. 30, 1921	Sept. 6, 1921†
Pocahontas lump	Columbus	$5 25	$5 25	$5 30	$5 15@$5 50
Pocahontas mine run	Columbus	3 15	3 10	3 15	3 00@3 25
Pocahontas screenings	Columbus	2 40	2 45	2 40	2 15@2 45
Pocahontas lump	Chicago	5 40	5 00	5 00	**4 75@5 50**
Pocahontas mine run	Chicago	3 00	2 75	2 75	2 55@2 75
*Smokeless mine run	Boston	5 60	5 45	5 15	5 00@5 25
Clearfield mine run	Boston	1 90	1 75	1 80	**1 65@2 20**
Cambria mine run	Boston	2 70	2 45	2 45	2 40@2 65
Somerset mine run	Boston	1 75	1 60	1 70	**1 45@2 00**
Pool 1 (Navy Standard)	New York	3 15	3 20	3 25	3 00@3 50
Pool 1 (Navy Standard)	Philadelphia	2 80	2 95	2 95	2 85@3 00
Pool 1 (Navy Standard)	Baltimore	2 40	2 50	2 50	2 50
Pool 9 (Super. Low Vol.)	New York	2 60	2 55	2 50	2 45@2 65
Pool 9 (Super. Low Vol.)	Philadelphia	2 40	2 35	2 35	2 25@2 40
Pool 9 (Super. Low Vol.)	Baltimore	2 20	2 30	2 25	2 15@2 25
Pool 10 (H. Gr. Low Vol.)	New York	2 35	2 35	2 15	**2 10@2 25**
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2 20	2 05	2 05	1 90@2 15
Pool 10 (H. Gr. Low Vol.)	Baltimore	2 00	2 15	2 00	2 00
Pool 11 (Low Vol.)	New York	1 95	2 05	1 90	**1 90@2 15**
Pool 11 (Low Vol.)	Philadelphia	1 90	1 80	1 80	1 75@1 85
Pool 11 (Low Vol.)	Baltimore	1 75	1 85	1 80	1 75@1 85
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1 75	1 95	1 90	1 75@1 85
Pool 54-64 (Gas and St.)	Philadelphia	1 75	1 70	1 70	1 60@1 75
Pool 54-64 (Gas and St.)	Baltimore	1 50	1 65	1 60	1 50@1 70
Pittsburgh sc'd gas	Pittsburgh	2 70	2 70	2 65	2 55@2 75
Pittsburgh mine run (St.)	Pittsburgh	2 10	2 10	2 25	2 20@2 30
Pittsburgh slack (Gas)	Pittsburgh	1 70	1 70	1 70	1 65@1 75
Kanawha lump	Columbus	2 90	3 45	3 50	3 50@3 65
Kanawha mine run	Columbus	2 00	2 15	2 15	2 00@2 25
Kanawha screenings	Columbus	1 35	1 55	1 30	1 20@1 40
Hocking lump	Columbus	3 15	3 15	3 20	3 00@3 40
Hocking mine run	Columbus	2 15	2 15	2 15	2 00@2 30
Hocking screenings	Columbus	$1 30	$1 60	$1 35	$1 20@$1 40
Pitts. No. 8 lump	Cleveland	3 25	3 25	3 25	3 00@3 50
Pitts. No. 8 mine run	Cleveland	2 30	2 30	2 30	2 25@2 35
Pitts. No. 8 screenings	Cleveland	1 45	1 85	1 20	1 80@1 70
Midwest					
Franklin, Ill. lump	Chicago	3 55	3 55	3 65	3 25@4 05
Franklin, Ill. mine run	Chicago	3 15	2 80	2 90	**2 40@3 50**
Franklin, Ill. screenings	Chicago	1 90	1 90	1 95	1 80@2 65
Central, Ill. lump	Chicago	2 50	2 50	2 70	2 40@3 00
Central, Ill. mine run	Chicago	2 25	2 40	2 40	2 00@2 75
Central, Ill. screenings	Chicago	1 60	1 85	2 25	1 25@2 25
Ind. 4th Vein lump	Chicago	3 60	2 95	2 95	2 35@3 50
Ind. 4th Vein mine run	Chicago	3 10	2 50	2 50	**2 35@2 75**
Ind. 4th Vein screenings	Chicago	2 15	1 60	1 70	1 25@2 15
Ind. 5th Vein lump	Chicago	2 90	2 25	2 90	2 50@3 25
Ind. 5th Vein mine run	Chicago	2 45	2 40	2 40	**2 25@2 75**
Ind. 5th Vein screenings	Chicago	1 65	1 75	1 75	1 35@2 15
Standard lump	St. Louis	2 25	2 65	2 45	**2 25@2 75**
Standard mine run	St. Louis	1 70	1 85	1 85	1 75@1 90
Standard screenings	St. Louis	1 00	1 00	0 95	0 85
West. Ky. lump	Louisville	2 95	3 25	3 10	2 85@3 25
West Ky. mine run	Louisville	2 35	2 65	2 45	2 25@2 40
West Ky. screenings	Louisville	1 65	1 65	1 50	1 00@1 50
South and Southwest					
Big Seam lump	Birmingham	3 55	3 25	3 75	**3 40@4 30**
Big Seam mine run	Birmingham	2 15	2 15	2 10	2 00@2 25
Big Seam (washed)	Birmingham	2 40	2 40	2 35	2 25@2 50
S. E. Ky. lump	Louisville	3 50	3 65	3 65	3 50@3 75
S. E. Ky. mine run	Louisville	2 35	2 35	2 30	**2 25@2 40**
S. E. Ky. screenings	Louisville	1 50	1 55	1 55	1 50@1 60

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advance over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	Aug. 23, 1921 Independent	Aug. 23, 1921 Company	Aug. 30, 1921 Independent	Aug. 30, 1921 Company	Sept. 6, 1921† Independent	Sept. 6, 1921† Company
Broken	New York	$2 61		$2 50@$2 75		$2 50@$2 75		**$7 60@$7 75**
Broken	Philadelphia	2 66	$2 50@$8 20	7 65@7 85	$2 50@$8 20	$7 65@7 85	**$7 60@$8 20**	**7 75@7 85**
*Broken	Chicago	5 62	12 75	12 65	12 75	12 65	12 75	12 65
Egg	New York	2 61	2 40@2 75	2 50@2 75	2 60@2 75	2 50@2 75	**7 75@8 15**	**7 60@7 75**
Egg	Philadelphia	2 66	7 60@8 20	7 65@7 85	7 60@8 20	7 60@7 85	**8 10@8 35**	**7 75@7 85**
*Egg	Chicago	5 62	12 80	12 65	12 80	12 65	12 80	12 65
Stove	New York	2 61	7 80@8 35	7 80@8 10	7 80@8 50	7 80@8 10	**8 25@8 50**	**7 90@8 10**
Stove	Philadelphia	2 66	8 00@8 35	7 95@8 25	8 00@8 35	7 95@8 25	**8 25@8 60**	**8 00@8 35**
*Stove	Chicago	5 62	13 40	12 90	13 40	12 90	13 40	12 90
Chestnut	New York	2 61	2 35@2 80	7 80@8 10	7 60@8 00	7 80@8 10	**7 75@8 15**	**7 90@8 10**
Chestnut	Philadelphia	2 66	7 75@8 00	7 95@8 25	7 75@8 00	7 95@8 25	**8 20@8 75**	**8 05@8 25**
*Chestnut	Chicago	5 62	13 10	12 90	13 10	12 90	13 10	12 90
Pea	New York	2 47	4 50@5 25	6 05@6 45	4 50@5 75	6 05@6 45	**5 00@5 35**	6 05@6 45
Pea	Philadelphia	2 38	4 50@5 50	6 80@6 40	4 50@5 50	6 10@6 40	4 50@5 50	6 15@6 25
*Pea	Chicago	5 62	11 10	11 00	11 10	11 00	11 10	11 00
Buckwheat No. 1	New York	2 47	2 25@3 50	3 50	3 00@3 50	3 50	2 50@3 50	3 50
Buckwheat No. 1	Philadelphia	2 38	2 50@3 00	3 50	2 50@3 00	3 50	2 50@3 00	3 50
Rice	New York	2 47	1 25@2 50	2 50	2 00@2 50	2 50	1 50@2 50	2 50
Rice	Philadelphia	2 38	1 75@2 00	2 50	1 25@2 00	2 50	1 25@2 00	2 50
Barley	New York	2 47	1 00@1 50	1 50	1 25@1 50	1 50	1 00@1 50	1 50
Barley	Philadelphia	2 38	0 75@1 25	1 50	1 00@1 25	1 50	1 00@1 25	1 50
Birdseye	New York	2 47		2 50		2 50		2 50

*Prices and freight rates, net tons; quotations f.o.b. cars, Chicago.
†Advances over previous week shown in **heavy type**, declines in *italics*.



Coal Age Index 91, Week of Sept. 6, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.

With the recent decline in Lake and export movements has come a proportionate decline of the bituminous output contributed by the Northern and Middle Appalachians, from 65 per cent in the last week of June to 57 per cent in the third week of August, which is only 68 per cent of the weekly average in 1920.

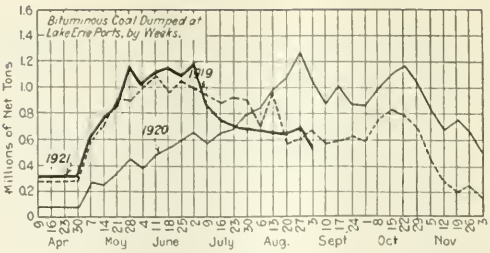
WEEKLY PRODUCTION BITUMINOUS COAL, INCLUDING COAL COKED, IN THE NORTHERN AND MIDDLE APPALACHIANS

Current Output, 1921		Weekly Average, Past Years	
Week Ended:	Net Tons	Calendar Year:	Net Tons
Aug. 6	4,221,000	1918	6,815,000
Aug. 13	4,601,000	1919	5,600,000
Aug. 20	4,403,000	1920	6,456,000

ANTHRACITE

Production of anthracite during the week ended Aug. 27 was 1,893,000 net tons, according to the Geological Survey. This is a recovery of over 300,000 tons as compared with the preceding week's figure, which was low because of a religious holiday, and was more than 100,000 tons in excess of the most recent week of full-time operation.

Sept. 1 saw the last seasonal monthly advance of the companies, varying from 10c. to 25c. per ton. Independent producers are again obtaining a better premium with the increasing demand for household sizes. Movement from Buffalo was lighter—135,900 net tons during the week ended Aug. 30, as compared with 172,400 the week preceding. Pea coal is weak and some distress prices were quoted in the New York market last week. The steam trade is picking up a trifle.



COKE

Production of beehive coke was 51,000 net tons during the week ended Aug. 27, a decline of 6,000 tons when compared with the week ended Aug. 20. Connellsville production declined 3,000 tons because of strikes at the ovens of one of the largest independent producers. The market is in better shape, as inquiries are increasing. It is now difficult to find distress lots of coke and Connellsville furnace prices have stiffened. Spot furnace is quoted $3@$3.25 and foundry $4@$4.50.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY

(NET TONS)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921 Week	1921 Calendar Year to Date	1920 Week	1920 Calendar Year to Date (a)
Aug. 13b	7,771,000	241,605,000	11,813,000	320,807,000
Daily average	1,295,000	1,271,000	1,969,000	1,683,000
Aug. 20b	7,713,000	249,318,000	11,039,000	331,846,000
Daily average	1,286,000	1,271,000	1,840,000	1,688,000
Aug. 27c	7,755,000	257,073,000	11,383,000	343,229,000
Daily average	1,293,000	1,272,000	1,897,000	1,694,000

(a) Less two day's production during New Year's week to equalize number of days covered for the last two years. (b) Revised from last report. (c) Subject to revision.

ANTHRACITE

Week Ended	1921 Calendar Year to Date	1920 Calendar Year to Date
August 13	1,772,000	1,851,600
August 20a	1,529,000	1,640,000
August 27b	1,893,000	57,486,000	1,868,000	57,713,000

(a) Revised from last report. (b) Subject to revision.

BEEHIVE COKE

Week Ended Aug. 27, 1921(a)	Aug. 20, 1921(b)	Aug. 28, 1920	1921 to Date	1920 to Date(c)
51,000	57,000	419,000	3,776,000	14,055,000

(a) Subject to revision. (b) Revised from last report. (c) Less two days' production during New Year's week to equalize number of days covered for the last two years.

Foreign Market And Export News

Coal Paragraphs from Foreign Lands

PORTUGAL — The Government has renewed its proposals in the Chamber of Deputies for a credit of 50,000,000 escudos ($25,000,000 at normal exchange rates) to purchase coal, wheat, cotton and other products.

INDIA — The coal market is steady. The prevailing Bombay quotation is in the neighborhood of 35 rupees. It is understood that the Government has contracted with Africa and Japan for the purchase of 1,000,000 tons of coal.

BRAZIL — Coal imports at Rio de Janeiro during June, 1921, were 81,464 tons as compared with 88,640 tons in May and 49,317 tons in June, 1920.

SPAIN — Labor unrest continues in the Asturian coal region and a strike is still feared. Barcelona quotations, including a freight rate to the port of 19 to 20 pesetas, are; screened, 120 pesetas, cobbles, 110 pesetas and smalls, 85 pesetas.

ARGENTINA—*Commerce Reports* conveys the impression that considerable trade can be built up with the establishment of an adequate sales agency in the Argentine. The report also gives much valuable data covering the qualifications necessary to compete for that trade.

BIDS ARE REQUESTED by the Direccion de Navegacion y Puertos, Buenos Aires, on 10,000 tons of coal for delivery in October.

Continental Coal Markets at a Standstill

Production of Great Britain, France and Ruhr Sufficient for All Europe's Needs—Prices Generally Weaker—Hampton Roads Dumpings Decline

Production of coal in Great Britain appears to be going forward on an even keel at around 4,500,000 tons a week, or at a level for this time of year just above that of 1919 and below that of 1920. In the week of Aug. 20 the output was 4,334,000 gross tons, a decrease of 203,000 tons from the previous week. Prices are generally weak. The export market is dull, notwithstanding some show of strength in Cardiff prices, where quotations on Admiralty coal, as cabled to *Coal Age*, are slightly up. Newcastle prices are either unchanged or down.

A striking evidence of the world trend in coal prices is found in the September bunker prices on Welsh coal as cabled to *Coal Age* and shown in these columns this week. Everywhere prices are down. Even bunker prices at American ports are declining, though it had been supposed the bottom had long ago been reached.

British exporters are offering freely on the Continent, especially in France. but demand is so slight that little business can be done. Production of coal in Germany is holding up, the Ruhr having an output of 1,791,579 metric tons in the week of Aug. 20, a gain over the weeks immediately preceding. France is subsisting on reparation coal and home production. As shown in the report from our Paris correspondent in another column, imports of coal into France in June were less than a million tons, mainly from Germany and Belgium.

It is reported that many of the smaller unions of employees engaged in and about the mines will break away altogether from the Miners' Federation of Great Britain. Such an instance is afforded by the National Federation of Colliery Enginemen and Boilermen. This union will take a ballot on the question of a break-away from the miners. According to the union's secretary the result of this ballot is a foregone conclusion, the only matter left for settlement being whether or not they will come to some working arrangement with the miners. This situation has arisen through the members' objection to dictation from the miners, and, in the event of another stoppage, they wish to be free themselves to decide on what policy they shall adopt.

Pier and Bunker Prices, Gross Tons

(Foreign Bunker Quotations by Cable to Coal Age)

PIERS

	Aug. 27	Sept. 3†
Pool 9, New York	$5 75@$5 90	$5 75@$5 90
Pool 10, New York	5 40@ 5 60	**5 50@ 5 65**
Pool 9, Philadelphia	5 80@ 6 00	5 80@ 6 00
Pool 10, Philadelphia	5 40@ 5 70	5 40@ 5 70
Pool 71, Philadelphia	6 00@ 6 25	6 00@ 6 25
Pool 1, Hampton Roads	5 00@ 5.25	*4 90@ 5.15*
Pools 5-6-7, Hampton Roads	4.50@ 4.75	*4 50@ 4 75*

BUNKERS

	Aug. 27	Sept. 3†
Pool 9, New York	$6 00@$6 20	**$6 20@$6 30**
Pool 10, New York	5 70@ 5 90	**5 95@ 6 05**
Pool 9, Philadelphia	6 10@ 6 30	6 10@ 6 30
Pool 10, Philadelphia	5 70@ 6 00	5 75@ 6 00
Pool 1 Hampton Roads		5 10@ 5 25
Welsh, Gibraltar	55s. f.o.b.	*50s.* f.o.b.
Welsh, Port Said	74s. f.o.b.	*64s.* f.o.b.
Welsh, Singapore	102s. 6d. f.o.b	102s. 6d. f.o.b.
Welsh, Rio Janeiro	90s. f.o.b.	*75s.* f.o.b.
Welsh, Algiers	55s. f.o.b.	*50s.* f.o.b.
Welsh, Malta	67s. 6d. f.o.b.	*60s.* f.o.b.
Welsh, Lisbon	85s. f.o.b.	*57s. 6d.* f.o.b.
Welsh, La Plata	80s. f.o.b.	*70s.* f.o.b.
Welsh, Madeira	65s. f.a.s.	*57s. 6d.* f.a.s.
Welsh, Teneriffe	65s. f.a.s.	*57s. 6d.* f.a.s.
Welsh, Genoa	69s. t.i.b.	*58s.* t.i.b.
Durham, Newcastle	35s. @ 37s.	35s.@37s.
Belgian, Antwerp	135 fr.	*110* fr.

C.I.F. Prices, American Coal

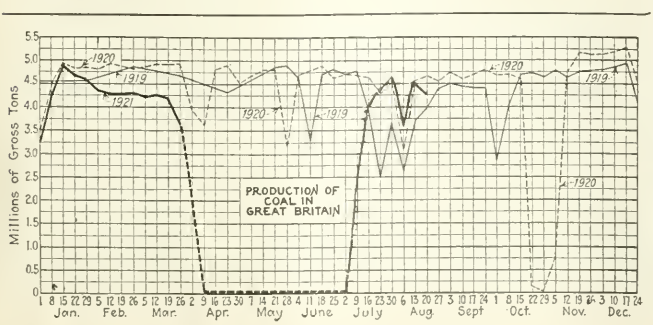
(In Gross Tons)

	Aug. 27† Low Vol.	Aug. 27† High Vol.	Sept. 3† Low Vol.	Sept. 3† High Vol.
River Plate	$11 40	$10 90	*$10 85*	*$10 25*
French Atlantic	10 10	9 75	*9 75*	*9 25*
United Kingdom	10 15	9 60	*9 75*	*9 30*
West Italy	11 70	10 50	*10 15*	*9 65*
Scandinavia	10 70	10 35	*10 50*	*9 95*
Rotterdam	9 90	9 40		
Cuba			7 25	7 00

Current Quotations British Coals f.o.b. Port, Gross Tons

Cardiff	Aug. 27	Sept. 3†
Admiralty Large	32s. 6d.	**32s. 6d.@33s. 6d.**
Steam, Smalls	17s. 6d.	**18s. 6d.@19s. 6d.**
Newcastle:		
Best Steams	30s.	*27s. 6d.@30s.*
Best Gas	30s. @ 33s.	*28s.*
Best Bunkers	27s. @ 28s.	*27s.@28s.*

† Advances over previous week shown in **heavy type**, declines in *italics*.



Hampton Roads Quiet; No Export Business; Price Cuts on Large Tonnage

Practically no coal was moving at the end of August, a total of 1,119,389 tons having been dumped during the entire month.

Prices of coal, however, remain at the same figure as last week. Pools 1 and 2 are selling $4.90@$5.15, although lower prices can be obtained in many instances for substantial cargoes.

Vessel tonnage awaiting cargo at the end of the week was somewhat larger, although not sufficient to justify expectations of a revival of the export business to any considerable extent.

Only seven vessels cleared from Hampton Roads this week with coal for foreign ports. Bunker business is steady, although the falling off in general shipping has had a tendency to cut down this feature of the trade.

Ocean freight rates remain at approximately the same figures as have obtained during the last few months, only slight deviations being made

PIER SITUATION

	Week Ended— Aug. 25	Sept. 1
N. & W. Piers, Lamberts Point:		
Cars on hand	2,303	2,105
Tons on hand	122,247	115,449
Tons dumped	134,173	72,802
Tonnage waiting	4,200	11,350
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	1,848	1,776
Tons on hand	92,400	104,200
Tons dumped	79,296	73,202
Tonnage waiting	2,380	6,000
C. & O. Piers, Newport News:		
Cars on hand	2,233	2,181
Tons on hand	99,050	109,050
Tons dumped	56,056	37,086
Tonnage waiting	2,500	9,000

United States July Exports of Coal and Coke by Customs Districts

Exports of coal and coke by customs districts from the United States in July, 1921, as reported by the Bureau of Foreign and Domestic Commerce, were as follows in gross tons:

	Coal: Anthracite	Coal: Bituminous	Coke
Customs Districts:			
Maine & N. H.	170	25	32
Vermont	1,786	290	341
Massachusetts	3	....	....
St. Lawrence	96,195	133,451	976
Rochester	51,395	40,982	....
Buffalo	202,555	200,614	5,063
New York	25,788	4,011	621
Philadelphia	3,312	57,315	534
Maryland	....	330,559	2,614
Virginia	2,614	850,760	108
South Carolina	....	59,833	....
Florida	....	26,737	99
Mobile	....	90	75
New Orleans	....	951	118
Sabine	9	....	55
San Antonio	1,073	1,279	3,249
El Paso	....	12,956	3
San Diego	2	8	....
Arizona	90	51	57
San Francisco	5	....	230
Washington	....	656	....
Alaska	....	5	....
Hawaii	....	10	....
Dakota	252	2,140	117
Duluth & Superior	27	1,212	....
Michigan	51	80,232	4,655
Ohio	2,714	845,818	182
Porto Rico	....	4	....
Total	388,041	2,649,989	19,129

BUNKER COAL SUPPLIED TO STEAMERS
(In the foreign trade)

Customs Districts:	Tons
New York	287,141
Philadelphia	30,202
Maryland	44,427
Virginia	292,521

French Coal Imports Gained in June

Market Dull — German Coals in Abundance and French Mines Are Stocking Heavily — No American or British Coal Being Bought

(Special Correspondence to Coal Age)

Industrial conditions in France are as depressed as ever, and the unexpected outcome of the Paris conference—as a result of which it was hoped that the near future would come out a little brighter on the so-clouded background of the present general situation—has done away with any reasonable chance of immediate revival.

Only the domestic section, as a result of the passing of the abnormal heat, shows some activity, but not to the extent prevailing at this time in past years.

The market is flooded with offers emanating from British exporters, but on account of the summer holidays and the lack of inducement to be present in Paris, there is no real business done.

French production goes on satisfactorily as far as output is concerned, but the mines are again heavily stocking coal for which there is no demand.

The German situation is unchanged. Some prices have been fixed on a new basis, particularly for industrial coke, and it is expected that this will have a helpful influence on metallurgical production.

Imports of coal into France in June were 957,000 metric tons, compared with 775,000 tons in May and more than 2,000,000 tons in January. The figures for June as cabled to *Coal Age*, with those for May, are as follows:

IMPORTS OF COAL INTO FRANCE

(In metric tons)

Source	June	May
Great Britain	44,000	102,000
Belgium	173,000	127,000
United States	25,000	39,000
Germany	606,000	443,000
Sarre district	65,000	45,000
Other countries	44,000	19,000
	957,000	775,000

During the first five months of 1921 France imported 5,908,000 tons of coal, as shown in the following table:

FRENCH IMPORTS OF COAL, JANUARY-MAY, 1921

(Metric Tons)

Imports from:	
Sarre	254,000
U. K.	1,886,000
Belgium	435,000
U. S.	716,000
Germany	2,549,000

During these five months exports were 464,000 tons, of which 254,000 were shipped in May. Of this total, Great Britain received 88,000 tons, as against 225 tons for the first four months. Belgium absorbed 55,000 tons of French coal, of which nearly 50,000 tons were shipped in May, Italy receiving 13,500 tons and Luxemburg 73,000 tons.

May production of coal and lignite was 2,162,000 tons. Adding imports during the same month—775,000 tons—and deducting exports—245,000 tons—it will be seen that French consumers received 2,692,000 tons during May.

During the first five months of this year imports of coke were 1,471,000 tons, of which 233,000 tons were received in May. Of the total imports, Germany supplied 1,432,000 tons from January to May, of which 227,000 tons were received in May. Imports of patent fuel (briquets) for the first five months were 405,000 tons, of which 74,000 were delivered in May. Belgium supplied 25,000 tons and Germany 45,000 tons. Exports were only about 5,000 tons.

German deliveries in May were 443,000 tons of coal and 227,000 tons of coke. Figuring the coke in tons of crude coal this represents a total of 717,000 tons of coal. The Reparations Commission had put the amount of coal to be supplied by Germany during each of the first five months of the year at 2,200,000 tons, of which France was to get four-fifths, or approximately 1,760,000 tons.

Mr. Grosclaude, about whom much has been printed in American papers at the time of his visit to the United States to study the coal question, still goes on advocating the purchase of American coals, at least to an extent sufficient to permit French buyers to keep in touch with the market to be able to call for larger supplies in case of an emergency. He mentions the probability of future insufficient production of the British coal mines. He also calls attention to the possibility of a simultaneous strike in the United Kingdom and the German districts at present supplying coals to France, and questions what the country's situation would be should this happen.

A new agreement has just been made under the terms of which France will deliver 3,500,000 tons of Saar coal annually to Germany.

American Coal Quotations are Firm in Holland and Italy

Cable advices to *Coal Age* show that American and British coal quotations are unchanged in Holland and Italy. In Rotterdam, American gas coal is firm at $7 and British steam at 38s. When the higher c.i.f. prices quoted this week by American exporters are considered, it is apparent that this $7 figure must be on "distress" coal.

Cardiff steam firsts are unchanged on the Genoa market at 270@280 lire, f.o.b. wagons; American steam is 250 @260 lire.

Export Clearances, Week Ended Sept. 1

FROM HAMPTON ROADS:

	Tons
For Africa:	
Br. SS. Heathfield, for Dakar	7,040
For Atlantic Islands:	
Dan. SS. Gorm, for Trinidad	3,164
For Brazil:	
Dut. SS. Colaeno, for Buenos Aires	4,759
Grk. SS. Issofiglu, for Rio de Janeiro	5,374
For Canada:	
Am. SS. Hilton, for Three Rivers (Que.)	4,411
Br. Schr. Nettie C., for Livingston	650

FROM PHILADELPHIA:

For Atlantic Islands:	
Nor. SS. Banan, for Kingston	

FROM BALTIMORE

	Tons
For Cuba:	
Br. SS. Blackheath	4,523
For France:	
Jap. SS. Yayoi Maru	7,587
For Sweden	
Sw. SS. Chilijwatch	6,727

Reports From the Market Centers

New England

BOSTON

No Material Change—Pocahontas and New River Agencies Dominate Market—Pennsylvania Shippers Resigned to Dull Business—Certain Anthracite Sizes in Fair Demand.

Bituminous—This week there are few new developments to report. The market continues under the same extraordinary pressure to move coal that has been characteristic since mid-July. In certain industries there is a better line on future business, but the average manufacturer does not yet feel warranted in producing more goods than the market can readily absorb under present conditions. There is nothing to indicate any faith in current prices, except on the narrow ground that the bottom may have been reached. Few consumers have much confidence that offerings will turn out to be sufficiently few to justify purchases. It may be a wrong attitude—but it is the only one most buyers seem to have.

The shippers of Hampton Roads coals continue to be the chief factors in the territory that is now accessible via re-handling piers at Boston, Portland and Providence. The low range of marine freights, especially in large sailing vessels, has materially enlarged the scope of the smokeless coals, for at points like Manchester, N. H., where the inland freight from Boston is $1.68 per gross ton, the combined charges by rail and water from the Pocahontas district in West Virginia are only slightly in excess of the $5.70 rate all-rail from central Pennsylvania. At Lowell and Lawrence, Mass., the differential is very much in favor of the Southern coals. With smokeless slack

being offered at prices well down toward $1 per net ton at the mines in West Virginia it is easy to see how restricted is the opening for fair to medium grades from Clearfield and Cambria.

Receipts all-rail via the Hudson River gateways continue on a very light average. Even more than the usual one-third is for locomotive supply, although the railroads here are holding down most of their contractors to minimum monthly quotas.

Whole groups of operations in Pennsylvania are closed down, and where there is active mining but a given number of cars per day is produced, these to be absorbed when and where the selling agents are able to place them. Off-shore inquiry is reduced to small volume, and bunker business is also light. Whole fleets of barges are tied up because of the lack of orders, and it remains to be seen whether the pendulum will swing back to any extent during September. At Hampton Roads, certainly, it is recognized that whatever opening there is for spot coal is in New England, and there is still a tendency to force cargoes on the market rather than pay car service at the piers.

Undeniably, the marine freight market is easy at a low level as compared with rates that have prevailed since 1915. Sailing vessels and barges are not offering quite so frequently, however, at $1 flat, Hampton Roads to Boston, and the occasional charterer finds it somewhat more difficult to cover on short notice than was the case a fortnight ago.

Anthracite—For stove size, particularly, and to a less extent egg, are in somewhat better request than early in August. There is beginning to be a better realization on the part of retailers that producers cannot furnish the more desirable sizes in unlimited quantities, and it is expected that with cooler weather later in the month there will be less difficulty over moving chestnut. Buyers have seen, too, that purchases cannot be deferred too long without taking the risk of unlooked-for delay. The usual monthly advance of 10c. per ton on the domestic sizes was announced by the old-line companies, effective Sept. 1.

Tidewater—East

BUFFALO

Slight Increase in Demand—Not Much Real Improvement — Seasonal Demand Aids Anthracite—Lake Clearances Still Heavy—Coke Dull.

Bituminous — Shippers report a small increase of orders and think the better demand will go on. It is too small however, to be of much account. The effort to force a resumption of business continues, but it will hardly come to much while things remain as they are. It is reported that the Lackawanna Steel Co. will soon open full force. The real adjustment, a bringing of all costs down to about the same level, is still delayed. When that happens the buyer will spend his money for building and other things and business will be normal again.

Prices are not very steady. Quotations are; $3 for Youghiogheny gas lump, $2.75 for Pittsburgh and No. 8 steam lump, $2.50 for Allegheny Valley mine run and $1.75@$2 for slack, adding $2.36 to Allegheny Valley and $2.51 to other coals to cover freight.

Anthracite — Demand improves slowly. Retailers say that they have sold as much as usual, but they are very anxious to do more business and save themselves the expensive work of delivering coal in snow.

Prices are due to advance, but the move in that direction is not at all uniform. Some companies have ordered an advance of 10c., according to former practices, others have no advices on the subject, while some independents announce that no advance at all will be made. There is an added uncertainty on account of the various Pennsylvania special taxes. One retailer reports that he was charged a 40c. advance for a load of coal at the trestle.

Lake—Shipments are not quite as heavy but are keeping up well. Clearances for the week ended Aug. 30 were 135,900 tons, of which 45,900 cleared for Chicago, 26,400 for Duluth and Superior, 17,800 for Milwaukee, 11,000 for Fort William, 9,500 for Escanaba, 7,500 for Green Bay, 7,300 for Port Arthur, 6,500 for Ash'and and 4,000 tons for Marquette. Freight rates remain unchanged.

Coke—Jobbers find it hard to make sales of any amount. When the furnaces want coke they can buy of the ovens direct at about their own price, as has been done of late. There is talk of some of the local byproduct furnaces starting up soon. Prices continue at $4.25 for 72-hr. Connellsville foundry, $3.25 for 48-hr. furnace and $2.75 for stock, to which add $3.64 for freight to Buffalo.

NEW YORK

Anthracite Domestic Demand Increases — Companies and Independents Advance Prices — Bituminous Market Quiet — Inquiries for Future Increase.

Anthracite—There has been a noticeable improvement in conditions. Demand for all sizes is on the increase and an active fall is looked for. The big producers are getting full circular for all coals and the independents are quoting, and in most instances receiving, premiums for their egg, stove and chestnut. Pea coal is the lame duck in the market.

The attention of the trade was centered on the announcement of the companies as to prices for September. With one exception, the usual advance of 10c. per ton for broken, egg, stove and chestnut was made. One company deferred their announcement until after Labor Day, while one or two of the companies did not make any change in the price of pea.

The effect of the closing down of several collieries in the Scranton district, because of the workings of the Kohler mine cave law, has not yet been felt here. Considerable of the coal produced by this company comes to this market.

Stove coal continues most in demand, but egg and chestnut are moving easily because of the willingness of retail dealers to take these coals if given the first named. Pea coal is the trouble maker. There is considerable around and some shippers have difficulty in moving it. Some distressed cargoes were quoted at $4, but the quotations for fresh mined independent coal ranged $5@$5.35 at the mine.

Barley is the strongest of the steam coals. Quotations showed considerable variation, but there is comparatively little of it being quoted below $1.10. The independents are trying to bolster the market for buckwheat and rice, the latter holding its own and being quoted at about the company circular for the better grades. Current quotations for company and independent coals are reported in the Weekly Review.

Bituminous — There are indications that the market is on the climb. Operators are already receiving inquiries for October shipment and some are showing their optimism by quoting 20c. above the present market. These inquiries are, of course, for the better coals.

Purchasing agents appear in the field more often, but principally for inquiry. While some orders are being placed for immediate delivery there is a tendency to contract for the balance of the coal year.

Locally the demand shows little change. The market is spotty. Call for the better coals is fairly strong, while the cheaper grades, of which there is little here, move slowly. Early in the week there was a tendency to stronger prices, but this was short-lived.

This month promises to show more business than last. Operators and shippers look for more activity especially after the middle of the month and some say they have already booked more business than they had in August.

Slack continues to show strength, but this is attributed in most circles to its scarcity. The quotations range $1.85@$2.10. Current prices are given in the Weekly Review.

PHILADELPHIA

Anthracite Prices Advanced — Retail Trade Fair — Buckwheat Trifle Stronger—Bituminous Gives Some Indication of Betterment — Prices Unchanged.

Anthracite—New prices were issued by all companies Sept. 1. The companies making 10c. monthly advances continued this, with what is expected to be the last of the season. One company, which had made no spring reductions, but had intimated to their

customers an increase would be likely on Sept. 1, failed to make this increase. An important independent reduced prices 10c. on every size including pea; of the remainder, a couple made no increase, while others raised from 10c. to 25c. The new wholesale prices have had little effect at retail, as the yards carry heavy stocks bought at the lower prices.

There continues to be a fair consumer demand. As the warm spell cannot be of long duration this time of year, the general expectation is that September will be a good coal month.

At this time shippers are showing more anxiety about outstanding accounts. Retailers were known to be giving heavy credits, and now with the active coal buying season not far away the producers are taking advantage of the occasion to remind their customers that they must be in good standing to get shipments later when the rush arrives.

Buckwheat, at least, is a trifle better taken, although not to the point where there is any difficulty to get it. Rice and barley are unchanged.

Bituminous—There seems to be some measure of improvement, at least in the matter of inquiries, and a few houses report slightly heavier sales. There is unquestionably some new buying for storage. The consumer is more than reluctant to tie up much money in coal, even though some of the best grades can be had at bargain prices. It is when the buyer figures up the total outlay, including freight, which latter item is now such a big factor that he finally decides to rely on his policy of minimum outlay for material.

Prices on the whole remain unchanged. There is still a moderate amount of distress tonnage on the market, some fair coals of this kind recently being offered around $1.50.

Railroads are not taking anything like their habit of other years. They have some coal in storage, yet the fact that they do not take more would seem to imply a belief by them that they are not going to need anything like they formerly did in winter.

Tide business is not satisfactory, with an extremely small number of foreign cargoes clearing. Interests consulted see little chance for improvement in the near future, probably not during the entire winter season.

Northwest

MILWAUKEE

Market Tone Improving — Deliveries Approaching Normal — Lake Receipts Increase.

The market is steadily improving in tone, and before September is over deliveries will have reached a normal stage for the season. There is a temporary shortage of anthracite stove, but chestnut, or the fuel of the masses, is in slow demand, due to the unemployment situation and the universal judgment that coal is too high. The September advance of 10c. in anthracite and $1 in coke will go far toward convincing consumers that they can not expect lower prices before the coming spring.

There has been a spurt in Lake receipts, and the dock yards are reasonably busy again. Receipts for August thus far aggregate 121,502 tons of anthracite and 287,886 tons of soft coal, making 646,917 tons of the former, and 1,756,854 tons of the latter, since navigation opened.

The district is in no danger of a shortage for next winter. Fires have developed here and there among the dock piles. The coal is being shipped as fast as possible, which seems to be the only remedy, as water has little effect on smouldering coal.

MINNEAPOLIS

Steady Buying Improvement — Dock Supplies Pile Up—State Urges Radical Legislation.

From the coal man's standpoint, things have been gradually but steadily improving. The docks have received constant tonnage during the season of navigation until now they are fairly well filled. In fact, some of them are so well stocked that cargoes have had to be delayed in unloading until room could be made for them.

While the deliveries from the docks to the interior could be a great deal heavier without breaking any records, the movement is fairly constant, and indicates that the trade is finally accepting the inevitable as to prices. It would be better for all concerned, if the movement had started a month or so earlier, since the situation now is that an early fall will surely find some sections without adequate fuel. The "strike" has been between consumer and retailer, between retailer and wholesaler. Hence the stock going out to the retail trade is steadily going out to consumer. No one is stocking to any extent, except the dock companies.

While buying has been resumed to a degree, it has been under protest, and with a feeling that the ruling prices are too high. This feeling is accentuated from time to time, by various pronouncements from different sources. The latest is the report to the governor of Minnesota, upon the coal situation as regards the consumers of Minnesota for the coming winter. It is reassuring in that it anticipates no serious shortage, but it implies extravagant charges for coal, and urges supporting radical legislation to control coal selling.

The coal trade may well congratulate itself upon the showing that has been made this season in the furnishing of dock coal for the Northwest. Without the intervention of fuel administrators, either official or ex-official, without the stimulus of any outsider, the dock receipts to Aug. 1 were 266 per cent of the totals for 1920, when all the various intermediaries were in action if not in evidence.

With the improved demand from the interior, the all-rail trade is selling more Illinois and Indiana coal in the Northwest. The all-rail business is largely a matter of immediate consumption, for almost none of it can be stored. In fact some of the large steam users find difficulty in carrying some of it for even a reasonable length of time, because of the danger of spontaneous combustion. So this trade will not pick up materially until colder weather is at hand.

DULUTH

Inland Movement Increases—Lake Receipts Lower — Anthracite Price Changes—Higher Boat Rates Seen.

Generally increasing business is the feature of the market, with indications that coal will move in even larger quantities as soon as the money situation loosens. Financial reasons are given by dock men and dealers as the only ones for the absence of a flood of business, as dealers cannot afford to carry their customers who are in monetary difficulties.

An increase of 10c. a ton went into effect on anthracite Sept. 1, but no increases in bituminous have been recorded. Prices all along the line are firmer, however, with lump at $7, run of pile at $6.25 and screenings at $4. The advance in hard coal is the last regular increase of the season. A cut of $1 a ton in the price of buckwheat is the only change of note in the anthracite field. This was necessitated by the lack of demand and a healthy supply. Buckwheat is now at $7.50 a ton from the docks, stove and nut is $13, pea $11, and egg $12.75.

A cutting down of bottoms, due to the shortage of ore cargoes, seems imminent. Thirty-three cargoes came into the harbor last week, of which eleven were anthracite.

Rumors have been prevalent of an increase in rates for carrying from lower ports. These seem unfounded at present. It is possible that an increase may be named in October, to continue until the closing of navigation. The outward movement has provided space on the docks for cargoes arriving and all fear of a dock tie-up has faded away.

Inland West

CHICAGO

Domestic Demand Keeps Up—Eastern Coals in High Favor—R.R. Strike Talk Temporarily Bolsters Steam Market—Heavy Anthracite Stocking.

Demand for domestic coal is not only keeping up, but improving. Eastern coals, quite lately, have taken a prominent place in the Chicago market. This especially refers to Pocahontas. A

high grade Illinois lump coal will cost the dealer approximately $6.25 per ton f.o.b. Chicago. It is no trick at all to buy good Pocahontas mine run on a basis of $6.40, Chicago, and as Pocahontas is primarily a higher grade coal than the Illinois product, it can be seen that Eastern producers are coming into our own markets and cutting us out.

It is expected, however, that prices on Illinois and Indiana coals will be reduced further. Chicago operators are putting up a strong fight and basing their argument almost entirely on service, as they claim they can take care of the retail dealer during the winter months, when coal is very hard to get, far better than can an operator with mines in the East.

The steam market is lamentably weak, although there was some little improvement brought about during the week, caused probably by the threatened strike on the part of some of the railroad brotherhoods. An Eastern operator offered some very high grade Elkhorn mine run as low as $1.90 a ton, but was unable to find any takers at this figure, which, by the way, represents a selling price considerably below cost. Unemployment is as general as ever, if not on the increase, and it is not expected that the situation will show any signs of radical improvement during the winter months.

Some dealers look upon the prediction as a certainty that there will be a long strike in the anthracite fields next spring, and are picking up all the good hard coal they can on the open market. They are particularly interested in bargain coal, and are able to buy small tonnages from time to time at prices below the list.

CLEVELAND

Domestic Buying Exceeds That of Corresponding Period Last Year—Shipments to Lake Decrease — Little Gain Seen in Industrial Demand.

Buying for domestic purposes is at a better rate than during the corresponding period a year ago, when it was restricted because of priority Lake shipments. The improved demand for domestic coal does little to stimulate production. A number of Ohio mines have cut down or ceased operations within the last week.

There is little increased industrial activity in Ohio. Sentiment, however, among manufacturers is decidedly more cheerful and the coal trade believes that the next few weeks should see somewhat of a revival in the demand for industrial coal.

Operators see a silver lining in the clouds. Sales forces which have been in the background for the last few months have been producing results in orders, although prices are so low as to leave little margin for profit.

There has been a decided slowing up of shipments to the lower Lake ports. The movement for the season up to Aug. 29 was 15,649,413 tons, compared with 10,282,873 tons for the corresponding period in 1920, 15,111,200 tons in 1919, and 16,111,105 tons in 1918.

Retail dealers announce the following prices for delivered coal: Anthracite, egg, and grate, $14; chestnut, $14.15; stove, $14.20. Pocahontas, shoveled lump, $11.25; mine run, $9.50. Domestic bituminous, West Virginia splint, $10; No. 8, Pittsburgh, $8.15; cannel lump, $12.15. Steam coal, No. 6 and No. 8 slack, $5.75; No. 6 and No. 8 mine run, $6, and No. 8¾-in. lump, $6.

Bituminous receipts for the week ended Aug. 27 were 660 cars, of which 433 went to Cleveland industries and 227 to retailers. These figures represent a decrease of ninety cars to industries and sixty-two cars to dealers under receipts for the previous week.

DETROIT

Domestic Coal Showing Only Slight Improvement — Steam Demand Continues Inactive—Shipments Are Small.

Bituminous—Users of steam coal are not manifesting the interest that should be apparent at this time of the year, if an adequate fuel supply is to be provided. Much of the business is made up of offerings at distress prices. Because of the lessened consumption, it has been possible for steam plants to supply current requirements by purchases in the spot market of smaller lots than would be required under normal conditions. This has encouraged a belief among certain users that they will be able to get coal at any time as it is needed, without the necessity of placing orders for direct shipment. Although the volume of domestic business is not large, it is regarded as an encouraging development.

Ohio 3-in. lump is quoted at $3.25, 2-in. at $3, egg, $2.75, mine run $2.15, nut and slack $1.50; West Virginia 4-in. lump is $2.25, 2-in. lump $3, egg $2.75, mine run $2.25, nut and slack $1.50@$1.60. Smokeless lump and egg is $5.25, mine run $3, nut and slack $1.65.

Anthracite—So far, retail dealers have distributed only a small portion of the normal winter requirements of household users. Despite reiterated warnings, many consumers are apparently still looking for a price reduction on prepared sizes.

ST. LOUIS

Domestic Aetivity Noted in Some Grades—Country Demand Fairly Good —Higher Grades Move Slowly.

The domestic trade is buying the middle-grade coal to some extent, although purchasing has not been resumed generally. Anthracite, coke and smokeless is moving slowly, with coke in the lead on account of extensive advertising.

Carterville is in light receipt, with very little demand. Mt. Olive is taking on fairly well, with Standard trailing behind.

There was an advance of 25c. per ton on Sept. 1 on Carterville lump because this was taken out of storage. Shippers are insisting that lump orders be accompanied in most instances with orders for egg and nut and rather than do that the dealers are using their storage lump.

Steam demand locally is unusually slow. Country steam call is better, especially to Chicago and the Northwest.

CINCINNATI

Better Line of Inquiry Developing—Heavier Output Depresses Bituminous Prices—Retail Advance Seen.

The loss of production and the agitation in the Mingo mine war zone during the past week has shown a reflection here, not so much in price but as a disturbing element. A better flow of inquiries have been received and some offers to contract, not for a couple of months but up to April. This, however, is not looked upon favorably as most of such offers are naming spot prices.

Some good quality mine run has been offered at $1.50 as well as some of the poorer grades from both West Virginia and southeastern Kentucky. Top grades ran all the way up to $1.85. Kentucky slack ranged $1.10@$1.25, West Virginia, $1.25@$1.50. Block sold $3@$3.25 from both states.

Smokeless was practically featureless with last week's prices quoted. Certain signs indicate a slight advance for September deliveries.

There has been no change in the retail market. Some dealers are talking of advances that may be necessary should the rush for coal that comes about mid-month develop. Somkeless lump is quoted $9.50@$10.25; mine run $7.75; slack $6.25. Bituminous lump is $7.75@$8.25; mine run $6.75, and slack $5.

COLUMBUS

Better Domestic Demand—Steam Business Continues Quiet — Lake Trade Is Slowing—Production Slightly Increased.

The better domestic demand is surely a lifesaver as there is practically no steam trade. Householders are now putting in their winter stocks and the movement is gradually expanding. The principal demand is for the better grades as New River and Pocahontas, but there is also a fair run of orders for Ohio-mined coals.

Retail stocks are fairly good, although some have been depleted and dealers are ordering for replenishment. No change has taken place in retail prices.

The Lake trade is rather quiet. Some coal is being shipped from eastern Ohio and a small quantity from Pomeroy Bend. Congestion on the Upper Lake docks is increasing rather than diminishing and this presages an early closing.

The steam trade is slow in every way, although some shippers profess to see a little more activity. The best customer at this time is the public utility which is using a considerable

tonnage of screenings. With a better production of lump, screenings are increasing and consequently prices have fallen from the high points which prevailed in August.

Production in Ohio fields is slowing, although some better records have been made in the Hocking Valley and Pomeroy Bend fields, which are producing slightly better than 25 per cent of normal. Crooksville and Cambridge are credited with 23 to 25 per cent. Other fields are not showing up much better than formerly.

West

DENVER

Production at Low Ebb—Winter Shortage Feared—Prices Close to Production Cost.

With Colorado's decrease 2,003,068 tons to Aug. 1, over a corresponding period last year, operators are going along at an uncertain measure. Production in the first seven months this year totaled 6,962,577 tons, against 4,959,509 in 1920. There can be no surplus coal under such conditions to catch up with the winter demands later on.

Prices allow but a narrow margin for handling. Lump bituminous at the mines sells at an average of $6 in the southern field. The lowest unskilled worker on the surface at the mines gets $6.65 for eight hours, and some properties have a minimum wage of $6.75. Mule drivers, track layers, and others working underground, are receiving a minimum of $7.75; hoist engineers, $8, and diggers are able to make $300 to $400 a month if they can get in full time.

Production for the week ended Aug. 20 was 147,598 tons of a possible full-time output of 326,032 tons. Of a 55 per cent loss of tonnage from all causes, more than 36 per cent is charged to lack of orders.

South

LOUISVILLE

Steam Market Weak — Domestic Demand Stronger—West Virginia Situation Making for Better Market for Kentucky Coals.

With just a slight increase in domestic demand and production, the screenings market has weakened, as the industrial demand is not improving rapidly enough to take up even a small gain in output. Railroad consumption is slightly better, but not over contract allotments of the roads.

The West Virginia situation is such that some of the jobbers have been unable to get any coal from Logan or Kanawha for some time. This should result in somewhat better demand on the mines in eastern Kentucky and adjoining fields, which are operating. It is said that already a little buying is being diverted to Kentucky.

A number of mining companies in eastern Kentucky are reported to be charging extra for shipping coal in flat bottom cars over shipments in hoppers, in view of the shortage of flat bottoms, which are being demanded by retailers and small industrial concerns. Some of the jobbers and all buyers are decidedly disgusted with this extra charge idea, as it is considered to be a case of taking a downright advantage. Some producers are ignoring this idea, and will probably profit by so doing, as a lot of buyers claim that they will not pay it.

BIRMINGHAM

More Active Inquiry and Some Increase in Business — Domestic Improves, but Still Blocked by Dull Demand.

The volume and extent of inquiry for steam coal is more encouraging than it was a week ago, although buying has not gone beyond the needs for immediate consumption. There has been some improvement in the industrial channels, as plants in operation are gradually increasing working time, and there has been resumption at a number of industries in the territory which have been idle for some months. Bunker trade has been better than usual the past ten days and shipments to the ports of Mobile, New Orleans and Pensacola were heavier than for some time past. Quotations on steam coal have not changed materially.

Inquiry for domestic coal is somewhat improved. The retail market has not loosened up enough as yet to allow dealers to accept full deliveries against contracts. Quotations for September have not been announced so far, but most mines will carry an increase of 10c. to 15c. over the figures for August.

Operations continue on a basis of two days per week as an average, but it is expected that market developments within the next few weeks will enable an improvement in working schedules.

Southwest

KANSAS CITY

Steam Market Dormant—Impossible to Fill Lump Orders — Oil Competition Keen.

Because of the light consumption of steam sizes the market is practically at a standstill. Operators have orders for lump coal which they are unable to fill because of inability to dispose of the fine coals.

Mines are working approximately 35 per cent of capacity. Oil is still making inroads on the steam business but since the prices on Kansas steam sizes have been reduced to $2.50@$2.75, coal men feel that they will be able to hold future business.

Prospects for the immediate future are not encouraging. Operators are urging consumers to take mine run in lieu of lump as they fear a rush domestic market if the steam trade continues in its present sluggish state.

News From the Coal Fields

Northern Appalachian

ANTHRACITE

Operating Conditions Better — Kohler Law Closes Some Mines—Companies Protest.

Operating conditions have improved considerably and mines are running regularly. When the Kohler mine cave law went into effect several mines were forced to close down. All of the companies, with the exception of the Hudson Coal Co., have filed maps as required under the provisions of the act. The companies, however, in most cases filed them under protest.

UNIONTOWN

Market Quiet, but Firmer Tone Seen—Wage Scale Adjustment Made.

A wage increase of approximately 10 per cent has been granted 1,200 employees of the Superior Connellsville Coke Co. The increase brings the scale up to the present Frick scale.

The increase in wages was announced a few days after striking employees of the W. J. Rainey, Inc., had made an effort to invade the Superior plant. The men were turned back by Sheriff I. I. Shaw and a force of deputies without any disorder.

There are no developments in the Rainey situation, the plants remaining closed following refusal of employees to accept the recent wage reduction.

The Marion plant of the Southern Connellsville Coke Co. resumed operations this week, having secured a coke contract for a thirty-day period, but it was announced that operations at the plant would be continued indefinitely. Neither the destination nor the price was announced.

There is a firmer tone in the furnace market, but sales continue small. Inquiries, however, are of a more definite nature and there is no doubt that the market is now more active than at any time during the summer.

The coal market presents no change, there being little demand. Prices are dependent largely upon individual transactions, and range $1.60@$2.

PITTSBURGH

Demand Scarcely Improved, but Prospects Distinctly Better—Miners Indisposed to Consider Wage Scale Revision.

Operators are adhering to the higher asking prices noted in last report, although there has been little actual in-

crease in demand. Prospects, however, have become distinctly more favorable. Industries are reviving to an extent, and the steel industry in particular, while still operating at a very low rate, is now turning out nearly one-half more tonnage than at its low point at the middle of July.

There has been a distinct improvement in tonnage in the nearby non-union fields, which have been able to undersell the Pittsburgh district right along, so that there is a chance of the other districts becoming fairly well filled with business, allowing some to flow back to the Pittsburgh district.

Operators who expected the union miners to propose a reopening of the wage subject in order to get employment have largely abandoned that expectation. The theory of the miners' leaders seems to be that business will so revive by next April as to justify rates not far from those in the present scale, ignoring the fact that if businsss revives it will be due largely to wage rates in general having come down.

FAIRMONT AND PANHANDLE

Conditions Unchanged — Better Business in Prospect — Export and Lake Orders Nil.

Fairmont

Not much change in conditions occurred during the week ended Aug. 27. Tidewater shipments were light and Lake tonnage little better. Less railroad fuel than usual was being moved. Inquiries were fewer in number and producers were unable to take in many orders as they could not meet the prices of non-union fields.

Northern Panhandle

Production remained at about 55 000 tons for the week, additional inquiries not yet being productive of much new business. Export and Lake shipments were a thing of the past and contract orders were few.

EASTERN OHIO

Spot Market Quiet — Industrial Improvement Fails to Bolster the Market —More Inquiries Received—R.R. Tonnage Heavier.

Production for the week ended Aug. 27 was 363,845 tons or a little better than 58 per cent of rated capacity. This represents a slight increase over the output of the preceding week, but reveals a rather wide variation in daily operations when compared with the peak period in May at which time daily production was running over 70,000 tons. Tonnage mined for the year to date is 11,474,923, which is 54 per cent of capacity. Operating time lost account "no market" is running around 55 per cent.

Demand from other avenues of consumption is not sufficient to offset the abrupt cessation of Lake shipping. No improvement is looked for until there is greater activity at the upper docks in shipping coal to the interior. The railroads at the lower ports now have less coal on hand than at any time since the movement started in good shape, the figure being less than 10,000 cars.

While reports from various industrial centers throughout the state are optimistic, especially in iron and steel, the improvement has not been reflected to any appreciable extent in the steam demand. However, the railroads are increasing their fuel requirements and a larger percentage of the output is now being taken by them.

There is a better tone in the retail market and dealers report more orders and commitments from their domestic consumers. Aside from a tendency to slightly lower figures on slack, the range of spot prices remains the same.

CENTRAL PENNSYLVANIA

No Wage Scale Developments—U. M. W. Meeting Expected to Disclose Miners' Intentions.

Nothing further has been done about the proposed conference between operators and miners, relative to wage scale conditions. According to John Brophy, president of District No. 2, U. M. W., if the miners were to discuss the scale it would upset the contract situation all over the country.

So far as the operators are concerned, it is not likely that any effort will be made to meet with the U. M. W. Everything indicates that the attempt to secure a conference on the wage scale is a closed incident. The national convention of the U. M. W. meets in Indianapolis on Sept. 20, and will decide a policy for the union miners all over the country, and the convention of District No. 2 meets at Du Bois on Oct. 18 and, of course, will ratify the action of the national convention. The operators of central Pennsylvania have not indicated any movement to break with the U. M. W.

CONNELLSVILLE

Prices Slightly Higher—Prospects Improved—Rainey Strike Aids Market.

The coke market is distinctly stiffer as to prices, and prospects are improved. It is learned positively that the American Rolling Mill Co.'s contract went to the Hillman Coal & Coke Co. at $3.10, the contract covering 9,000 tons a month for September, October and November. By the same token, a month's supply could probably be picked up at $3, while a contract to the end of the year would take a price of about $3.25.

All spot prices below $3 have disappeared, partly on account of the strike at Rainey plants against a wage reduction not contemplated by other producers, and partly from improved prospects, since the trend now is for furnaces to get into blast instead of active furnaces blowing out. The Shenango Furnace Co. will blow in one furnace at Sharpsville about Sept. 9 and is in the market for a coke supply, its regular source being filled with business. Spot furnace is $3@$3.25; spot foundry, $4@$4.50.

The *Courier* reports production in the week ended Aug. 27 at 12,700 tons by the furnace ovens, and 21,160 tons by the merchant ovens, making a total of 33,860 tons, a decrease of 3,090 tons.

UPPER POTOMAC

Non-Union Competition Prevents Resumption of Work — Contract Orders Holding Fairly Well.

There was nothing encouraging about the situation in the Upper Potomac and Georges Creek regions, with no orders in sight and with the prevailing low prices in the non-union Pennsylvania fields precluding producers from securing any spot business. Very little coal was mined except a light tonnage on contracts.

Middle West

MIDWEST REVIEW

Domestic Demand Improving—Glut of Steam Sizes Feared—Non-Union Coal Taking Trade—Labor Upset Seen.

The domestic market continues to show signs of strength, in fact, it is now impossible to get good southern Illinois 6-in. lump at any price off the list. Day by day the demand for domestic coal improves and will continue to improve as the fall advances. All-rail coal from the East to points in the Northwest and Middle West has had some little setback, particularly on account of the reduced rates in effect on coal from the docks at Duluth and Superior to points in Minnesota, the Dakotas, and some stations in Iowa.

Operators and wholesalers are beginning to wonder what effect the renewed domestic demand is going to have on the steam market. The steam market, in spite of low production all summer, has not been strong enough to absorb what little tonnage has been produced, and now that the demand for domestic coals has picked up, it is expected that steam coals will suffer a decline to even lower levels. Some operators are holding firm and are refusing to be influenced by the numerous predictions that the steam market will be glutted. The basis of their opinion is the fact that the car supply is going to prove inadequate as soon as the demand gets anywhere near normal; with the car supply in bad shape and with winter coming on, they believe that industry will easily absorb what steam coal is produced, and at a good price.

It appears that a great deal of Eastern coal is now moving in through this territory at considerably below the prices which must necessarily be obtained for Illinois and Indiana coals. Eastern operators in non-union fields can afford to sell their coal cheaper as they have already reduced wages. By those closely in touch with labor it is predicted that the United Mine Workers are planning on making a very strong effort to unionize all non-union districts.

This will tend to restore the old differential between Eastern and Western coals. As it is today, Pocahontas can be purchased f.o.b. an inland Illinois town at about 25c. over the price obtained on a car of high grade southern Illinois coal.

In Illinois, labor conditions are fairly settled, although there is an underlying spirit of unrest which will have to be reckoned with some time, even if not before April 1 next year. The labor difficulties which have been in existence for some time in the southern part of Indiana have now been smoothed over to some extent although the situation in the affected districts is far from normal.

WESTERN KENTUCKY

Screenings Weak—Mine Run Steady—Production Holding — Domestic Movement Gains.

Production is holding up fairly well, the demand for prepared sizes being a little better than it has been, but still much below expectations. Retailers really have more coal in stock than is generally thought.

Screenings are weak, selling down to $1 per ton, although nut and slack is quoted $1.35@$1.50. While some operators are asking 25c. a ton extra for coal shipped in flat bottom cars, due to a shortage of such equipment, the western Kentucky operators have not started that idea as yet, feeling that it is taking an unfair advantage of the buyer. However, there is no doubt that many buyers would accept coal in hoppers if they had to pay a premium for flat bottom equipment.

SOUTHERN ILLINOIS

General Conditions Improving—Steam Sizes Still Weak — Car Shortage in Evidence—Prices Show Strength.

Carterville conditions are considerably improved on domestic sizes. Screenings, however, have gone backward. Ranging $1.25@$1.35, last week, they are down to $1@$1.10. Some mines are several weeks behind on lump shipments. The independents are gradually getting to the association prices on lump, but not on other sizes. Many foreign cars on the trunk lines indicate a shortage of local equipment. Railroad tonnage shows some improvement

The Duquoin situation continues to improve both as to price and working time, and this also applies to the Jackson County field. These prices range about the same as independent prices in the Carterville district. In the Big Muddy field around Murphysboro domestic sizes are $4.25@$4.55, while screenings are down to $1@$1.25.

Mt. Olive shows increased tonnage. Considerable of this is moving to the Northwest, some to St. Louis, and Chicago is getting a fairly good proportion. All steam is going to Chicago and on contract. Domestic sizes range from $3 in St. Louis to $3.75 in the country.

Standard working time and tonnage is somewhat improved. Here and there a mine resumes operation that has been idle for several months. This, however, just throws that much more steam coal on the market and screenings are down to 85c. Nut coal is $2 and up and 2-in. lump is $2.25, with 6-in. $2.50@$2.75. A good tonnage is going to the country and railroad movement is fairly active.

Middle Appalachian

HIGH-VOLATILE FIELDS

Logan Invasion Causes Idleness — Market Dull, but Inquiries Increase—Tide and Lake Inactive.

Kanawha

Kanawha production almost ceased during the week ended Aug. 27, owing to the large number of miners who left to participate in the armed invasion of Logan County. Mine idleness, growing out of a dull market, was therefore very much aggravated by labor trouble. Although inquiries were becoming more numerous spot buying was not on a much larger scale than during the preceding weeks.

Logan and Thacker

The threatened invasion of Logan County failed to effect production to any extent. Although much of the output was produced for storage, some was moving to Detroit and other markets. Very little coal was being shipped to Tidewater or the Lake, and market conditions remained unchanged.

There was little spot business available in the Williamson field and much of the production was either for railroad fuel account or for storage. However, inquiries were increasing and more orders appeared to be in sight.

Northeastern Kentucky

Although orders were not as numerous as inquiries, nevertheless it was apparent that buyers were showing more interest in the market. Retail buying was on a slightly larger scale. There was a distinctly better tone to the industry and more gas and by-product coals were being moved than had been the case for some time.

Virginia

Lack of market was responsible for losses aggregating about 125,000 tons. No coal was moved except on contract, there being no spot buying worth mentioning, although inquiries were picking up, leading to the belief that business might soon be on a larger scale.

LOW-VOLATILE FIELDS

Pocahontas Outlook Brightens—Western Markets Offset Tide Slump — Car Shortage Appears.

Pocahontas and Tug River

Pocahontas operating conditions were somewhat better during the week ended Aug. 27 than they had been during the early part of the month. With but little coal destined to Tide except for bunkerage, larger tonnages were going to Western markets. Both car and labor shortage losses were somewhat larger, although not materially affecting the output. Slack was still weak in price and hard to move.

Tug River mines were working little more than half-time with a prospect of some improvement because of the resumption of activities in the steel trade. Much of the output went to Western markets, only a small portion being sent to Tidewater. Spot buying was on a slightly larger scale.

New River and the Gulf

Poor Tidewater conditions precluded larger operations in the New River field. It was almost impossible to dispose of slack coal. Production was also affected by some of the miners joining the march on Logan and Mingo.

Idleness was very marked in the Winding Gulf field owing to a general absence of spot business. There was no demand at Tide and contract orders only kept some of the mines running.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Domestic Tonnage Increases — Steam Drags—Southern Industrial Conditions Improving.

Little or no change is reported in the situation during the past week, but inquiries seem to be on the increase and the outlook for fall is much improved. Domestic coal continues to move better, with mine run and screenings dragging.

Southern cotton mills are taking more coal and demand from fertilizer and brick plants in the South is better. Of all the "hard hits," cotton seems to have fared worst and a minimum of coal has been shipped into that territory this season. Prices are shown in the Weekly Review.

West

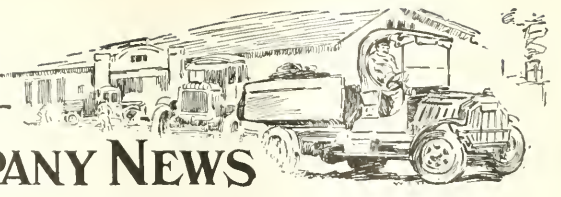
UTAH

Retail Reductions Fail to Bring Business—Steam Demand Unimproved.

Quite a stir was caused in Salt Lake City recently when one of the large retail agencies came out with a cut of $1.25 a ton on a mixture called "Domestic Lump." Competitors immediately reduced their prices 50c. for pure grades. Business, which had been improving up to this time was immediately shot to pieces, as there was a belief that further reductions would soon be made. Within three or four days prices went back to normal, i.e., $10 for lump and $9.50 for nut. Dealers are having not a little trouble in explaining the situation to their customers.

The industrial condition is still unsatisfactory and demand for steam coal is far from normal. The coast trade is holding its own and is expected to increase with the construction of special coaling barges in San Francisco Bay.

MINE And COMPANY NEWS



ALABAMA

There is some development work going on in the coal fields, which will enable increased production when demanded. the Central of Georgia Ry. having under way a long spur track to the proposed new mine of the **Alabama Fuel & Iron Co.** in the Cahaba River basin. This line will also serve the **County Coal Co.**, which is now handling its product by truck. It is understood that the **Brilliant Coal Co.** will open a new mine near Calumet, Walker County, and that a spur track from the Northern Alabama Ry. will be constructed to reach this operation.

The coal bins at the Port of Cordova, on the Warrior River, which were constructed for the Mississippi-Warrior River service of the Federal Government, have been completed and accepted by the engineers in charge of waterway traffic. The bins are of 2,000 tons' capacity, the coal being unloaded into them from railroad cars by a belt conveyor. The new improvements will greatly expedite the handling of coal and loading of barges at this point and a much heavier movement of coal will result when the trade again becomes active.

The Fourth Alabama First Aid Contest was held at Woodrow Wilson Park, Aug. 6, and was participated in by thirty-eight teams from industries in the district. The meet was held under the auspices of the local station of the Bureau of Mines, Alabama Coal Operators' Association and the Alabama Safety Association.

COLORADO

Directors of the **Colorado Fuel & Iron Co.**, recently declared the regular dividend of 2 per cent on preferred stock, but passed the dividend on common. The board authorized a reduction of about 10 per cent in the compensation of all employees working on a weekly or monthly salary basis.

Employees of the **Colorado Fuel & Iron Co.** at the Pueblo plant, who lost their homes or furnishings in rented houses as a result of the recent flood, will have an opportunity to buy new homes at cost. The residences will be erected by the company.

ILLINOIS

The Illinois Coal & Coke Co., operating at Virden, recently purchased two more new mining machines. This makes a total of eight machines now in operation at the mine. Another large electric generator was also put in service. At the present time the mine is working practically every day.

A contest has just closed at Glen Carbon to see who could make their home most attractive in the mining town. The contest was originated by the **Madison Coal Corporation** of St. Louis, operating mines throughout the Standard field. The company offered cash prizes for the most attractive and beautiful surroundings of the miners' homes.

The tipple of the London mine operated by the **London Coal Co.**, at Pinckneyville, was recently destroyed by fire. It is the general belief the sparks from a switch engine caused the fire, which was not discovered until it had gained much headway. The mine is an old one and is pretty well worked out. It is not known if the tipple will be rebuilt.

Extensive explorations are being made in the vicinity of Carpenter, northeast of Edwardsville, and there are prospects that the **Mount Olive and Staunton Coal Co.**, of St. Louis will open another large mine in that vicinity. It is said that the company has taken options on a tract of 5,000 acres.

Owners of the **Litchfield Coal Mining Co.**, have a proposition before them from a St. Louis firm which may lead to the reorganization of the company and the rehabilitation of the mine. The St. Louis company, engaged in jobbing coal, states that it will rebuild the mine and resume operations if 5,000 tons of coal can be sold in Litchfield. Every possible effort will be made by Litchfield people to provide for the opening of the mine.

INDIANA

Plans for the development of industrial and agricultural electrification of Indiana to a point where more than a million people will be served with electricity generated in the coal fields and transmitted over high-tension lines became public recently with the filing of articles of incorporation by the **Indiana Electric Corporation.** Simultaneously a petition was filed with the Public Service Commission for permission to consolidate the Merchants Heat & Light Co., of Indianapolis; the Indiana Railways & Light Co., of Kokomo; the Elkhart Gas & Fuel Co., of Elkhart; Valparaiso Lighting Co., of Valparaiso; Wabash Valley Electric Co., of Clinton; Putnam Electric Co., of Greencastle; Cayuga Electric Co., of Cayuga. The incorporation of the Indiana Electric Corporation and the movement to consolidate all these Indiana companies marks the first step in the plan of Joseph H. Brewer, utility operator, to link up a hundred towns and cities in the state on one power loop over which electricity generated at the coal mines will be transmitted hundreds of miles and laid down at the meters of industrial plants with all the savings that are possible from the economies of large operations. Most of the properties to be consolidated are already either connected or within a few miles of each other, and the most important immediate transmission link is to be built between Greencastle and Danville, thereby making a direct transmission line from Clinton, in the heart of the coal fields, to Indianapolis.

The J. K. Dering Coal Co., of Chicago, has purchased a set of Nolan Automatic Cagers to be installed in the No. 8 mine at Clinton. This is the fifth set to be installed by this company.

KENTUCKY

Fred M. Sackett, of the Bell Jellico Coal and the Pioneer Coal Companies, became interested in a transaction a few weeks ago whereby he and his associates acquired 6,000 acres of coal land and also the Black Mountain R.R.

Several of the mining plants of the Elkhorn field are resuming operations. Especially is this true of the **Southeast Coal Co.** at Seco and Millstone. It is said that these mines are now working every day in the week for the first time in several months. Another resuming full time is the **Logan Elkhorn Coal Corporation** at Parsons and Whitaker. **The Imperial Elkhorn Coal Co.** at Sergent is making steady improvements. **The Amburgy Coal Co.** at Dalna, is resuming after being idle for months undergoing repairs and tipple construction.

The Coldwell-Blythe Coal Co. has been organized at Yerkes, Perry County, by S. C. Coldwell, M. W. Blythe, both of Yerkes, and J. W. Craft, of Hazard. Leases have been closed and plans practically completed for the beginning of a new coal development, it is said. The development will be on the main line of the L. & N.

MARYLAND

Coal land in the Cumberland section will be developed by John F. Sommerville, Duke W. Berger and William S. Berger, who have chartered the **Berger Smokeless Coal Co.**, with a capitalization of $500,000.

Coal land development in the Bloomington district is planned by the **R. J. Ross Coal Mines Co.**, chartered by Grant Harshbarger, of Bloomington, and Joseph P. Guy, of Western Port.

OHIO

The Dixie Floor, Feed & Fuel Co., is the name of a $150,000 retail concern chartered recently in Hamilton. The incorporators are L. C. Seward, Charles Lamm, B. L. Vinnedge, W. W. Vinnedge and M. P. Lintner.

The Warren Cartage and Coal Co., of Warren, has been chartered with a capital of $30,000 to do a retail business by John C. Mederer, Carter C. Christiancy, William A. MacRea and others.

The Chestnut Hill Coal Co., of Nelsonville, has been chartered with a capital of $30,000 to mine and sell coal. The incorporators are T. H. Wilson, C. F. Stratton, E. R. Tucker, P. Shough and Eliza Hellyer.

The Cannon Elliott Coal Co., is the name of a new retail concern in Columbus, which has taken over the yard of the **Cosgrove Coal Co.** The concern is a partnership composed of M. J. Cannon and P. J. Elliott.

PENNSYLVANIA

The Anthracite Oil, Gas & Coal Co. has notified the State Department at Harrisburg of an increase in its capital stock from $25,000 to $50,000. Charles E. Jones, Northumberland County, is treasurer.

The Maher Coal & Coke Co. has made an actual increase in its capital from $75,000 to $225,000, Thomas Maher, Allegheny County, being treasurer.

The Berwind-White Coal Mining Co. has awarded a contract to the Windber Lumber Co. to erect forty double frame dwelling houses at Erneka mines No. 36, 37, 40 and 42. These homes will have concrete cellars, bathrooms and fitted for electricity.

The C. A. Hughes Coal Co. plans to erect ten new houses west of Lilly for the accommodation of miners. Mr. Hughes, with offices in Philadelphia, owns two mines up the Lilly branch and one at Cresson.

A petition was filed in court in Uniontown recently for the dissolution of the **Domestic Coke Co.** James Dunn is president of the company and Marshall D. Brooke is secretary.

WEST VIRGINIA

The Glenola Coal Co., of Philadelphia, has just been organized for the purpose of developing coal lands in West Virginia. Closely identified with the new company are: George H. Grone, H. B. Grone, Charles Grone and M. E. Patterson, of Philadelphia, and L. O. Knipp, of Glenside, Pa.

Word has been received in Morgantown of the purchase of 1,500 acres of coal land in the Pittsburgh seam, in Dunkard township of Greene County, the purchase price being about $90,000. This property was sold at public sale to satisfy a creditor's lien against the estate of the late J. M. Hustead. The property was secured by the **Piedmont Coal Co.**

The Alpha Coal & Land Co. has been organized with a view to developing coal property in the neighborhood of Branchland in Lincoln County, general offices of the concern to be at that point. It is capitalized at $200,000. The following coal people are interested: Hohm A. Broaddus, of Branchland; James R. Branch, M. Lillian Branch, of Jupiter, Fla.; E. C. Curry and D. A. Curry, of White Sulphur Springs.

Plans are progressing for the development of coal lands at three different points, following the completion of the organization of the **Huntington Coal & Mining Co.** C. N. Morrison has just been elected president of this company which will develop a coal tract at Ferguson in Wayne County.

Traffic News

In the complaint of the **Meyersdale Smokeless Coal Co.**, the commission decides that the refusal of the B. & O. from May 1, 1917 to Dec 28, 1917, and of the Director General of Railroads from Dec 28, 1917, to Aug 1, 1918, to furnish, upon reasonable request, cars to complainant at Casselman Pa., for transportation of coal while furnishing cars to other shippers similarly situated, was an undue prejudice to the complainant.

In the complaint of the **Northern West Virginia Coal Operators' Association**, an I. C. C. examiner recommends that the practice of the Pennsylvania and the Pittsburgh and Lake Erie from March 1, 1920, to Jan. 1, 1921, in the distribution of coal cars to mines on the Monongahela Ry and the Morgantown and Wheeling Ry., were not unreasonable.

A special train carrying officials of the **Louisville & Nashville R.R.**, including B. M. Starks, general manager, made a recent trip through the eastern Kentucky sections of the road, inspecting improvements that are being made in several coal field sections, where larger yards, sidings, roundhouses, etc., are being installed.

In the complaint of the **Cedar Rapids Gas Co.**, the commission decides that the rates for transportation of bituminous coal from Jenkins and McRoberts, Ky., to Cedar Rapids, were not unreasonable.

In the complaint of the **Old Ben Coal Corporation**, an I. C. C. examiner recommends that the rate of $1 per ton on rock or shale dust from West Frankfort, Ill., to Christopher and Sesser, Ill., is unreasonable.

In the complaint of **Stetson, Cutler & Co.**, an examiner recommends that the rate from Van Buren, Me., to Griswold, Me., on bituminous coal, originating at St. John, New Brunswick, was unreasonable.

In the case of the **Wm. E. Dee Clay Mfg. Co.**, an examiner recommends that certain intrastate rates during Federal control on coal between Indiana points were unreasonable.

The commission has suspended until Dec. 2 proposal of the railroads to eliminate the present rates on coal from Western Maryland Ry. mines to points on the B. & O. and its connections over the route through Cherry Run, W. Va., and Westport, Md., making applicable instead combination of locals via these routes, and establish instead, in connection with the present through rates, specific routing via Cumberland and Bellington, W. Va.

In the complaint of the **American Smelting and Refining Co.**, the commission decides that the demurrage charge and average free time at Baltimore on carload shipments of coke for export, moved on domestic bills of lading, between Feb. 10 and Dec. 31, 1918, was not unreasonable.

The opening of the new Illinois Central yards in Clinton, Ill., means a vast change in the routing of coal shipments from the fields of southern Illinois into Northern Illinois, Iowa, Wisconsin, Minnesota and the Northwest. In the past coal has been shipped very largely from the Southern Illinois fields on the Illinois Central through Champaign and Kankakee to Chicago and thence distributed to the Northwest through the various belt lines surrounding Chicago. The opening of the larger Clinton yards means that coal will be routed more direct and in such a manner as to miss the Chicago belt lines. The new route also means quicker and cheaper coal distribution to scores of towns and cities throughout the Northwest.

The traffic bureau of the Indiana Public Service Commission has received a request from the I. C. C. asking that the hearing on the proposed abandonment of the "coal road" of the **Chicago & Eastern Illinois R.R. Co.** be postponed until September. The company is seeking to abandon service on the line, which runs between Morocco and Brazil. The company alleges that the operation of the road is unprofitable.

In the complaint of the **Green Rock Coal Co.**, an examiner recommends that the rates on bituminous coal from Riceville, Ky., are unreasonable, because they exceed rates from group five district of the C. & O.

An examiner recommends that the rates on coke from Mt. Pleasant, Garwood Works, and Newell Scales, Pa., to California points are unreasonable, in the complaint of the **Tuffli Bros. Pig Iron & Coke Co.**

In the complaint of the **Sloss-Sheffield Steel & Iron Co.**, an examiner recommends that the rate on coal from Dora, Ala., to Sloss, Ala., is not unreasonable, but that the rate from Dora to Ruffner, Ala., is unreasonable.

In the complaint of the **Lehigh & Wilkes Barre Coal Co.**, the I. C. C. decides that the rates on mine props from points in Maryland, Virginia and Delaware to Plymouth, Pa., are unreasonable because they exceed 14.5c from points north of New Church, Va., and 17c. from all points on the New York, Philadelphia and Norfolk R.R. in Virginia, New Church to Cape Charles inclusive.

Personals

Frank E. Herriman, president, Clearfield Bituminous Coal Corporation, Grand Central Terminal, New York, has been elected president of the Chicago & Harrisburg Coal Co., succeeding **Bertrand Walker**.

Charles Beuglet, sales agent for the Northwestern Coal docks at Duluth, has returned from his vacation, which he spent at Lake Vermillion.

H. E. Smith of St. Paul, vice-president of the M. A. Hanna Coal & Dock Co., was in Duluth recently.

W. H. Groverman, who recently resigned as secretary of the Dock Operators' Association, in Minneapolis is now connected with the Berwind Fuel Co. His wide experience in coal will be found a valuable asset in his new connection.

W. B. McIlquen, formerly with W. A. Marshall & Co. and later identified with other coal firms, is now making his headquarters with the Industrial Coal & Coke Corporation, New York City.

A. D. Thompson has joined the forces of Pattison & Bowns, Inc., New York City. Mr. Thompson was general manager of the Majestic Coal Co. and during the existence of the old Tidewater Coal Exchange was the Deputy Commissioner. At one time he was connected with the Pennsylvania Coal & Coke Corporation and is well-known throughout the coal trade.

H. A. McCoy, superintendent of the mines of the Dexcar Pocahontas Coal Co., at Twin Branch, W. Va., has been spending his vacation at Virginia Beach. Mrs. McCoy accompanied him. **J. H. Custard**, Bluefield manager for the same company, has been in Norfolk recently.

Professor William Peterson, geologist, employed by the Utah State Board of Equalization in a coal capacity, has returned from an inspection trip in Uinta, Duchesne and Carbon counties.

Frank Holyoke, who was manager of the Cincinnati office of the Holley Stover Co., until it was closed recently, is now with the Raleigh Smokeless Coal Co. as its Cincinnati sales manager.

Charles Y. McIntire has resigned his position as chief engineer of the International Coal Products Corp., to enter the field of consulting engineering in association with A. Stephen Knowles, 66 Broadway, New York City, to specialize in byproduct coke oven work, low temperature distillation of coal processes and other systems pertaining to the preparation and treatment of coal.

The Tidewater Coal Exchange, Inc., announces the appointment of **C. Tracy Ryan** as deputy commissioner for the Port of New York, with offices in the Central Square Bldg., New York City.

F. M. Sackett, of the Byrne & Speed Coal Co., Louisville, Ky., and head of several operating companies, has gone to Washington on business.

M. S. Barker and **A. G. Stith**, of Louisville, large holders in the Liberty Coal and Coke Co. were recent visitors at the mines in Straight Creek.

Martin Bolt, Springfield, Ill., has been selected for reappointment as assistant director of mines and minerals.

Arthur J. Hoskin, Denver, Col., has been appointed research assistant professor of mining engineering at the experiment station of the University of Illinois. Mr. Hoskin is a graduate of the University of Wisconsin and has had several years practical experience in mining engineering.

Jos. W. Simpson, vice-president of the Milwaukee Western Fuel Co., has been honored by having a steamer named for him. The steamer was formerly the Manchester. This makes four steamers which bear the names of men connected with the Milwaukee Western Fuel Company, viz., **Edw. A. Uhrig, Alexander B. Uhrig, Edw. C. Deutmer and Jos. W. Simpson.**

Allan Russell, of Fairmont, secretary of the Fairmont and Cleveland Coal Co., spent the first part of August at Potomac Beach.

Association Activities

National Association of Cost Accountants

At the Second International Cost Conference under the auspices of the National Association of Cost Accountants, to be held in Cleveland Sept. 14, 15 and 16, one session—on Thursday morning, Sept 15—is to be devoted to a discussion of uniform cost methods as used by the Trade Associations.

This subject has received a great deal of attention during the past few months as a result of the various investigations which have been made of the activities of the Trade Associations. There is a great deal of popular misapprehension as to the purposes and methods of uniform costing. It will be the object of this session to thoroughly discuss all phases of the subject. It is hoped that as a result of this discussion some of the uncertainty as to how far it is legally possible to go in the matter of uniform accounting methods will be removed.

American business men who have been following the development of the Trade Association movement during the past few years will be interested in the results of this session. No previous attempt has been made on such a large scale to actually get at the results which may be obtained from these systems.

Coming Meetings

The Huntington Coal and Industrial Exposition will be held in the Chamber of Commerce Building, Huntington, W. Va., Sept. 19 to 24 inclusive. Chairman of committee, Thomas A. Palmer, Huntington Chamber of Commerce, Huntington.

American Institute of Mining and Metallurgical Engineers will meet at Wilkesbarre, Pa., Sept. 12 to 15. Secretary F. F. Sharpless, 29 West 39th St., New York City.

National Association of Cost Accountants will hold its annual convention at Cleveland, Ohio, Sept. 14, 15 and 16. Secretary, S. C. McLeod, 130 West 42d St., New York.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The twenty-fourth annual convention on Oct 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers will hold its annual meeting at Huntington, W. Va., on Sept. 29 to 23. Secretary-treasurer, Herbert Smith, Huntington W. Va.

New York State Coal Merchants' Association, Inc., will hold its annual convention at Richfield Springs, N. Y., on Sept 8, 9 and 10. Executive secretary, G. W. F. Woodside, 250 Arkay Bldg., Albany, N. Y.

Canadian Institute of Mining and Metallurgy will hold its annual Western meeting at Edmonton, Alberta, Canada Sept. 14, 15 and 16. Convention secretary, T. H. Williams, 10,610 83d Ave., Edmonton, Canada.

American Manufacturers Export Association will hold its twelfth annual convention at the Waldorf-Astoria, New York City, Oct. 5 and 6. Secretary A. W. Willmann, 160 Broadway, New York City.

National Safety Council will hold its annual congress at the State House, Boston, Mass., Sept. 26 to Sept. 30 inclusive. Secretary, S. J. Williams, Chicago, Ill.

The Coal Mining Institute of America will hold its annual meeting at Pittsburgh, Pa., Dec. 7, 8, and 9. Secretary H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

An Industrial Relations Conference for all industries in the State of Pennsylvania has been arranged for October 24 to 27 at Harrisburg, Pa., by the Commissioner of Labor and Industry, C. B. Connelly.

The sixth annual convention of the **National Association of Purchasing Agents** will be held Oct. 10-13 at Indianapolis, Ind.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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The Importance of Details in Cost-Keeping

TRAINING in statistical control, if tempered by an adequate appreciation of local peculiarities and if not carried to an extreme which substitutes statistics for judgment instead of using them as aids to judgment, should equip the coal operator the better to meet his local problems. Certain fundamental principles should have application universally. Certainly nothing is more fundamentally important than an accurate knowledge of facts.

The above, save that the words coal operator have been substituted for railroad manager, are those of William J. Cunningham, of Harvard University, writing in the *New York Evening Post* on the J. J. Hill system of cost-keeping as the basis for control of railroad operations. Practically everything he says with respect to the use of knowledge in operating railroads applies with equal force to operating coal mines. Our attention recently has been focused on this subject by a communication from a coal operator who says that too few companies have a supply account to which supplies are charged when purchased and by means of credits to which the supplies are charged out to operating costs as they are used. It is argued that heavy purchases last year were carried into current costs although not used at once, with the result that costs were inflated, and that today, using those materials, costs are figured too low, thereby impairing the judgment of the operator in the matter of what he should be getting for his coal.

Operators, basing contract prices on such cost figures, will find themselves at a disadvantage when they again have to restock. Those who have kept books to show actual supplies sent below are not being fooled although they may be quoting just as low prices as the other fellow. Without question, the general practice prior to 1916-1917 was to charge a great many items of equipment and supplies to capital account which now, under Treasury rulings, are charged to current operation, because they "do not reduce cost or increase output." Business men, in the coal industry and in other lines as well, quite generally made liberal investment in supplies and equipment during the periods of high prices for their product, both because they considered the possible need of the material and because the tax policy of the government encourages such a course.

Professor Cunningham lays emphasis on the importance Mr. Hill gave to details and ascribes much of his success as a railroader to his ability to inspire every official and employee to respect the little things that go to make up the big whole. It may be that the purchase of hay for mine mules, for instance, is a small detail of costs, but if the payment for three months' requirements is charged into one month, costs are at once thrown out of line. We do not argue that a producer of coal should never sell his coal below what it costs him—the point is not debatable—but we do stand with those who contend for better cost-keeping even in such apparently small matters as material accounts, for if one sells with a full knowledge of book costs as well as actual out-of-pocket costs, he is a progressive, modern business man.

The Coal Industry Might Be Worse Off

STATISTICS of employment in selected industries in June, recently published by the Bureau of Labor Statistics, show that ninety-four bituminous coal mining companies employing 24,654 men in June, 1920, had 23,462 men on the payrolls in June, 1921, a decrease of 4.8 per cent. Of the fourteen industries for which similar data are shown, all but four made a worse showing. Cigar manufacturing recorded a decrease of less than 1 per cent, and three branches of the textile business, cotton manufacturing and cotton finishing had decreases of less than 1 per cent, while the woolen industry showed an increase of nearly 4 per cent in employees on the payrolls. Metal, leather and paper lines reported declines in employment, compared with a year ago, ranging from 13 to 41 per cent.

The same companies that reported a decrease of less than 5 per cent in number of men employed showed during June of this year as compared with the same month of last year a decrease in total payroll of 21.6 per cent, from $1,861,533 for the half month to $1,460,027. Since but three of the ninety-four coal companies reported wage reductions, the decrease in per capita earnings of the coal-mine employees of 17 per cent was due to shorter working hours, the result of lessened demand for coal.

Comparing June with May, bituminous coal showed the largest increase in dollars paid, from $1,249,629 to 21,390 men in May to $1,396,982 to 22,467 men in June, a gain of 5 per cent in number of men and 11.8 per cent in payroll cost. Men's ready-made clothing and leather were the only industries to show larger gains in men at work. The per-capita earnings in June were 6.4 per cent greater than in May, despite the fact that the entire forces at two of the mines included in these figures had wage reductions of 20 and 15 per cent. In the iron and steel industry wages from May 15 to June 15, 1921, were reduced from 10 to 21 per cent; some of the automobile plants reported wage decreases of 7 to 10 per cent.

As the evidence accumulates it is becoming more apparent that the coal industry, taken as a whole, has suffered no worse in this business depression than the average, and in many respects has fared better. The unfortunate aspect, however, is that mine labor which has taken wage reductions in step with the requirements of readjustment is working while those who refuse to even consider the matter are idle.

Soft vs. Hard-Coal Methods

PRESUMABLY the bituminous operators who this week visited the hard-coal regions expressed many fervent thanks that conditions did not make it necessary or advisable at present to erect such formidable structures as breakers for the preparation of their coal. A bituminous coal preparator, producing a comparatively unprepared product, is a relatively simple contrivance compared with the stupendous structures that deliver anthracite to market in ten different sizes. The bituminous operator experiences difficulty enough in keeping a balance with three or four sizes which at different periods of the year have such a variant demand. In fact many wish that they were back to the old run-of-mine days, when an order for coal meant an order for the whole product coming to the surface and not an order for part and too often little or no sale for the rest. To them the fact that slack is in slow demand brings sad memories of the good times when coal was coal and they had no call for special sizes which their mines could only produce by virtue of bringing out a lot of coal of the no-market variety.

Certain it is, however, that the manufacture of sizes brings a better price for the sizes more greatly desired and so pays for the breaker that prepares them and interest for the storage. The public wants its hard coal sized and meticulously cleaned and has to pay for it whether it will or no, and perhaps it may soon demand that its bituminous coal undergo the same discriminating treatment. Should it do so the price will have to be made so that the operation of such preparation equipment will be profitable.

Economical burning requires standardization of product. Extremely fine coal mixed with coarse, under forced draft is blown out of the stack, as can be seen by the most negligent observer who travels on a train hauled by a locomotive burning run-of-mine coal. The draft need not be as heavy when a sized product is used and much coal and acres of forest land will be saved. Large lumps are not desirable for use in a furnace even when hand-stoked, and it is cheaper and easier to crush them in a pair of rolls than to do it with a sledge. Large lumps of soft coal will burn and will break, but still the fact remains that they do not burn efficiently or break automatically, and it would be better to deliver what the consumer needs rather than what he can put up with. Slack will burn in an ordinary fire but it does not give either maximum efficiency or maximum capacity when mixed with lump coal. In short, soft coal does not have to be sized, but in almost all cases it would do better work if it were reduced to a product of uniform size. Hard coal *must* be graded but for best results soft coal *should* be graded also.

Time was when bituminous operators looked askance at the picking table, viewing it as a new and unnecessary device loaded on them by the exigencies of competition. But the public had to be pleased, and the picking table stayed and prospered, especially in times when, because buyers were few and sellers many, the buyer was master. Quality of product is going to count more and more, and it is useless to be the last to seek to satisfy the public need.

Freight rates are high and it is becoming more and more necessary to pay for freight more than for coal. Consequently slate and bone are being thrust out of commerce. As it becomes more essential to clean the coals, and as picking must be more carefully performed, all sizes must be cleaned, picking by machine, by water or by air becomes more and more necessary. This is the really significant matter about this year's meeting of the American Institute of Mining and Metallurgical Engineers in Wilkes-Barre and the presence of bituminous operators at its sessions.

DENYING THAT HENRY FORD has wrought a miracle in the management of the Detroit, Toledo & Ironton R.R., *Railway Age* summarizes the facts about the road in part as follows:

"From September to December, 1920, inclusive, after the present railway freight rates were fixed, the D. T. & I. handled an average of 49,246,000 ton-miles of revenue freight per month and had freight earnings averaging $493,800 a month. In the months of April, May and June, 1921, the road handled an average freight business of 37,093,000 ton-miles a month and earned from it an average of $694,203 a month. In other words, its average freight business in these three months was *almost 25 per cent less* than in the last four months of 1920, while its average monthly freight earnings were *over 40 per cent greater*. In the last four months of 1920 its average rate was 1c. per ton per mile. The average rate per ton per mile in April, May and June, 1921, was 1.88c., *88 per cent greater* than in September, October, November and December, 1920. The average rate of all the railways in the country is only 1.23c.

"If no change whatever had occurred on the D. T. & I. except this enormous increase in its average rate per ton per mile its financial results would have been revolutionized. To what was this remarkable increase in the average rate per ton per mile due? Chiefly to two things: First, to a great change in the character of the traffic handled. Mr. Ford began giving his railway practically all of his freight business; and the freight handled directly and indirectly for his motor works consist largely of relatively high-grade commodities which pay a rate much higher than the average. Meantime, the amount of coal handled by the railroad greatly decreased. Coal being a bulky and cheap commodity, it pays a rate much smaller than the average. This change in the character of the traffic alone would have caused a large increase in the railway's average rate.

"Secondly, the D. T. & I. has been able to use the large volume of traffic originated by the Ford interests to secure larger divisions of the through rates on all traffic hauled partly over its line and partly over other railways, and the great bulk of the D. T. & I.'s business consists of this through traffic.

"Furthermore, the management of the D. T. & I., in common with all the other railways, was able, partly because of the smaller traffic handled by it and partly owing to other causes, to make large reductions in its operating expenses.

"The only really great change which had been made on the D. T. & I. up to July 1 was in the conditions which determined its average rate per ton per mile. But how about the reduction of 20 per cent in its local rates and the advance in the wages of its employees which have been so widely advertised? Neither of these went into effect until July 1 or later, and therefore neither of them had anything whatever to do with the increases of the railway's net earnings."

Automatic Substations Save Labor, Act Promptly and Insure Equipment Against Roasting*

Placing Substations Near Pumps or Hoists Saves Labor but Causes Neglect of Substation and Often Copper Waste or Voltage Loss—Use Automatic Reclosing Circuit Breaker in Place of Several Contactors, Each Cutting Out Part of Resistance

By R. J. Wensley†
East Pittsburgh, Pa.

THE use of small substations for the supplying of 275-volt energy to the locomotive and cutting machines in coal mines is a well-established practice. A few years ago, when labor costs were lower, these substations were located as near to the load as possible, and an operator was provided for each station. This practice has now become so expensive that substations are being located with reference to other mining machinery, such as hoists or pumps, so that one operator can look after both.

Sometimes the substation is operated by one whose duties make him traverse quite a large area. In such cases the interruption of alternating-current supply may produce a long interruption in the direct current, as the station cannot resume service until this man reaches it. Such interruptions interfere seriously with production and may easily counterbalance the supposed saving gained by such operating methods.

Grouping of Service May Cause Copper Loss

The grouping of substations for convenience in operating may also result in excessive copper loss and consequently poor trolley voltage with its attendant evils of low locomotive speeds and increased locomotive motor maintenance. The speed of the coal-cutting machines also will be reduced. By relieving the substation of its burden of the operating labor cost, the most economical location, from an electrical standpoint, may be chosen.

The matter of machine insurance also should be considered. If an attendant is caring for several kinds of equipment, he cannot watch the machine continually for signs of trouble; therefore continued overload, phase failure, low alternating-current voltage, bearing trouble, etc, may result. Some partly automatic equipments have been installed; these have protection against low voltage, reverse current and bearing trouble and are provided with automatic reclosing circuit breakers. This is a step in the right direction but it does not go far enough to give first-class machine insurance.

The saving in maintenance costs often is the smallest item, when considering the automatic substation as machine insurance. In most instances when the coils in a machine are roasted out, due to continued overload or to operation under abnormal alternating-current conditions, the cost of the loss in production will easily exceed the repair bill. Where the mine is not too deep, automatic control allows the substation to be installed above ground, but the location depends largely on local conditions.

In some cases the topography of the country is such that an inside station would be much more accessible than an outside one, and vice versa. The most economical method of getting current into the mine is by the use of overhead lines and drill holes directly above the desired point of feed. If the substation is installed in the mine, there will be a triplex cable in the drillhole, usually working at 2,200 volts, although a few mines use higher voltages. If the substation is installed on the surface, the direct-current cable is placed in the hole

The surface location has many advantages, one being the lower installation cost. Inside installations usually require concrete and steel work and in many cases considerable excavation of rock. The substation location must be such as to receive an ample supply of cool, fresh air. The control wiring must be carefully done and usually with lead-covered cable, for sulphur water often is present. The installation of the machine is frequently difficult as it must be dismantled so that the largest piece can be handled by the hoist or to pass through the available openings. If the substation be placed on the surface, an inexpensive house may be used and the machine may be set on the floor just as

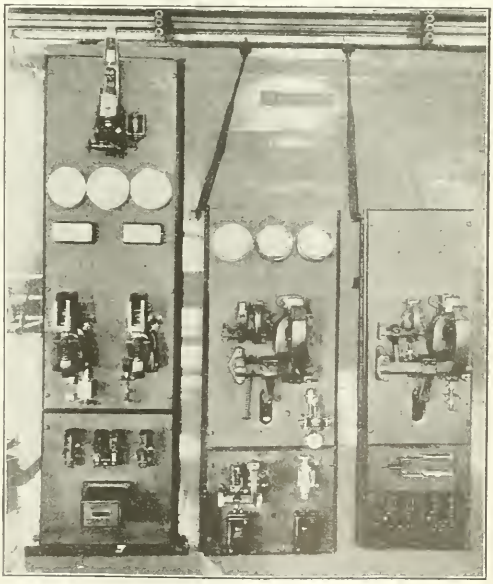


FIG. 1. FRONT OF CONTROL EQUIPMENT AT THE AUTOMATIC SUBSTATION

Equipment is not large or costly that replaces an attendant, and it has the advantage that it is screwed into the switchboard, where its duty lies, and can't wander away from the point of duty.

*Article entitled "Automatic Substations Used in Coal Mining," read before the American Institute of Mining and Metallurgical Engineers at the Wilkes-Barre meeting, Sept. 12 to 15.

†Switchboard Engineering Department, Westinghouse Electric & Manufacturing Co.

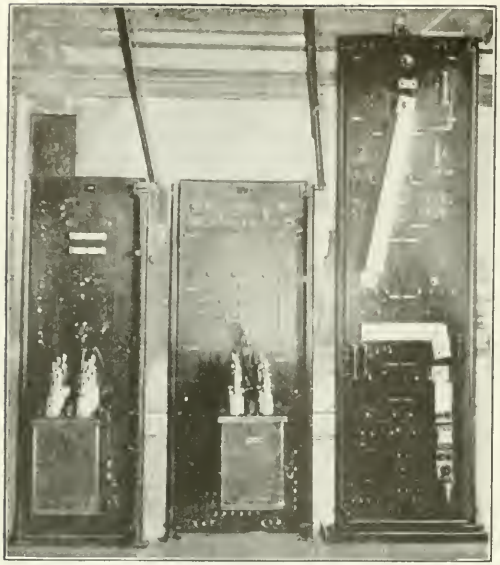


FIG. 2. REAR OF CONTROL EQUIPMENT AT THE AUTOMATIC SUBSTATION

Seen from behind, the regulating equipment is even less imposing than from the front.

it comes from the factory. There will be no dampness to cause deterioration of the equipment, and no ventilation difficulties; also expensive runs of high-tension cable are avoided, as the lines may be run overhead.

The most convenient method of automatic operation is by remote control through the high-tension feeder. For the most reliable operation, it is necessary that each substation have an independent feeder. Then the stations may be started by closing the oil switch at the point of origin of the feeder; an ammeter installed at this point will show the attendant what is happening at the substation.

If to reduce the first cost it is necessary to put more than one station on one feeder, a series of time-element relays can be used to start the machines at short intervals, so as to avoid the surge otherwise caused by simultaneously closing the starting switches of several sets. The stations may be started also by voltage relays connected to the trolleys and shut down by undercurrent relays in the machine circuits. This is a more expensive method and is warranted only when the power cost is high.

If desired, time switches may be used to start the stations according to a definite schedule. Control may be had from pilot wires run to convenient points where attendants are always available. The simplest method is the use of a starting button at the door of the substation, to be operated by the first man in and shut down by the last man out. This method, while inexpensive, is cumbersome and not to be recommended except in special cases.

In designing automatic equipment for mining service, the manufacturer must take into account the usual lack of technical training in the maintenance crew and must seek extreme simplicity. The installation of a mining substation usually is of a semi-permanent character and operators are reluctant to install expensive or complicated equipment that, in a relatively few years, must be moved to a new location or scrapped.

At first the tendency of the manufacturers was to offer an elaborate equipment of the railway type, modified only as to voltage; later, as the operating conditions were not as severe and the standard of service was not as high as in the railway field, a special line of automatic control was developed for mining service.

For the control of a 200-kw. synchronous motor-generator set this equipment is on two panels. The wiring is self-contained so as to avoid the necessity of complex control circuits apart from the panels. The only wiring, apart from the main motor and generator leads, is the control circuit from the control transformer and the bearing thermostat connections. The panels are wired at the factory so as to reduce the installation cost to a minimum and to avoid errors.

Reclosing Circuit Breaker Protects Line

This equipment is designed to operate on an individual high-tension feeder; it starts whenever alternating-current is thrown on the line and is shut down by opening the alternating-current feeder. The direct-current generator is connected to the line through an automatic reclosing circuit breaker, which opens on short-circuit or excessive overload and recloses when the cause of the trouble is removed—as, for instance, when a broken trolley wire is picked up or removed from the rails or the locomotive operators throw off their controllers.

It is possible to substitute for this breaker the standard railway equipment, consisting of a number of contactors each short-circuiting a portion of a current-limiting resistance. These contactors are arranged to open one at a time until the overload is limited to within the commutating capacity of the machine. By using this scheme, the locomotives are kept in motion at reduced speed until the current drops below the setting of the overload relays, when the contactors will again close, thus cutting the resistors out of circuit. This equipment costs somewhat more than the type using the automatic reclosing breaker and therefore will not be in as great demand.

Special Feeders for Coal-Cutting Machines

In large operations, the best service insurance is obtained by the use of a series of automatic section switches to isolate portions of the trolley, thus allowing the remainder of the operation to proceed. Where feasible, additional reliability may be insured by running separate direct-current feeders from the substations for the coal-cutting machines. This will prevent stoppage of the actual mining operations in any given section in case of trouble with the trolley.

There is a feeling among coal operators that automatically-controlled substations are too expensive for the average mine. This is not at all true. A 200-kw. set with 2,200-volt 60-cycle synchronous motor and 275-volt direct-current generator with manual switching would sell at the present time for approximately $6,150. The same machine with the simplest type of automatic control will sell for approximately $8,350. This difference of $2,200 capitalized at 20 per cent per year will give an annual charge of $440, which is far less than the wages of a man to operate the station for even one shift per day. If the operating labor is kept below this point by giving only occasional attention to the station, serious interruptions are invited, as previously

mentioned. The saving is not only in the wages but also due to the fact that the automatic station does the right thing at the right time much better than could possibly be done by manual operation.

The first coal mine to adopt automatic control for substation equipment is that of the Lincoln Coal Co. at Nanty Glo, Cambria County, Pa. This is a 200-kw. synchronous motor-generator set located in a room about two miles from the mouth of the drift and about 500 ft. under the surface. The 2,200-volt three-phase power is supplied from the surface through a 5-in. drill-hole in which a triplex cable is installed. The station is started by the first locomotive runner in the morning and is shut down by the last man trip out at night. This is accomplished by a single small knife switch. It operates continually during the day. If alternating current should fail, it will shut down, but immediately after the alternating-current service is restored, the station will start and go on the line in a few seconds. This one feature alone, in a busy mine, warrants the slight extra investment in the automatic equipment. Figs. 1 and 2 illustrate the front and rear of the control equipment of an automatic substation installed during the summer of 1921.

Development of Ingenious Methods by Which Anthracite Is Cleaned of Impurities and Sized for Market—II*

Picking Tables and Jigs Have Been Supplemented by Mechanical Pickers, Which Are Chutes with Gaps Into Which the Slower-Moving Slate Falls, and Steeply-Inclined Belts Down Which the Coal Rolls

By Dever C. Ashmead
Kingston, Pa.

ABOUT 1870 the picking table was introduced, being first used at the Hill & Harris colliery at Mahanoy City, Schuylkill County. The introduction of these tables for use in coal preparation was the result of a series of experiments by the firm above named. After a thorough trial of the old methods and many new ones, they adopted the table as the most perfect and reliable means they could find. The exact type of table selected is not stated, although it is probable that it had some positive movement and was driven by machinery.

The next important improvement in the preparation of coal was the introduction of the mechanical picker. This was a jig and was introduced in 1871 or 1872. The jig did not force its way into the Wyoming field until a much later date. This was because the coal in the upper region was much cleaner and drier than that produced in the middle and lower fields. The operators did not look with favor upon the wetting of their coal, for they felt that boys could satisfactorily remove what little dirt it contained. Labor was comparatively cheap, so they could not see why they should install expensive machinery that might or might not prove satisfactory.

In the lower region conditions were entirely different. Here the coal came from the working places wet and covered with fine mud, so that it was almost impossible to tell which was coal and which slate without washing off the fine material. As long as this had to be done in any case, it was determined that if possible it would be better to separate the coal from the slate at the same time that the coal was cleansed by water. This accounts for the development of the jig in those portions of the field where the measures pitch steeply.

From 1872 until some time in the 80's no inventions of merit modified the methods of preparing coal. However, the existing types of machinery were improved, and better results were obtained. In 1884 the Pennsylvania Coal Co. built the Old Forge breaker, this plant being one of the most modern of its day. Fig. 10 shows the old breaker as it was originally designed.

In this breaker the coal without separation was passed first through the rolls, going thence to two sets of revolving screens. These screens were 5 ft. in diameter and 16 ft. long. It is presumed that in these screens lump, steamboat and broken coals were separated, the fine material passing through to the pentagonal screens below, which had the same diameter as the first set and were 10 ft. long. They prepared stove, nut and pea coal, the fine coal going to the bank. This breaker is the first in which I have been able to find the use of the pentagonal screen, although it is possible that they were used before this period. This type of screen did not prove satisfactory, as it broke the coal overmuch. Even now, however, there is one set of these screens operating in a breaker near Wilkes-Barre.

As may be seen, little difference exists between the

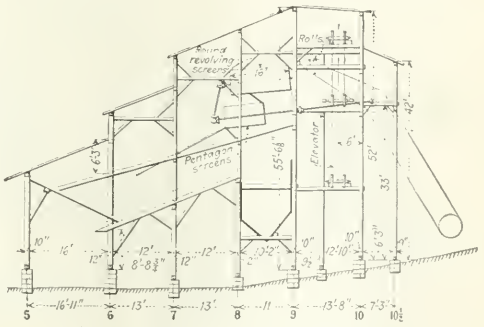


FIG. 10. SECTION OLD FORGE BREAKER OF PENNSYLVANIA COAL CO.

Coal without separation went to the rolls and thence to two round revolving screens and thence to two of pentagonal shape. It is surmised that on the first screens, lump, steamboat and broken were separated and in the second stove, nut and pea, the fine coal going to the culm bank.

*Second installment of article presented before the Institute of Mining and Metallurgical Engineers, Sept. 12, at Wilkes-Barre, and entitled "Advances in the Preparation of Anthracite."

design of this breaker and that of the old Dodson breaker which was built in 1869 and which has already been described. One detail, however, might be mentioned, namely, that an elevator was installed to raise the broken coal to the upper revolving screen after it had been prepared. It will be noted in Fig. 10 that all the machinery was gear-driven, with the exception of the rolls, which were provided with a belt drive.

Coal Screened When Received at Breaker

The next breaker to be considered was built in 1889. This is the old No. 8 breaker at Dunmore and is owned by the Pennsylvania Coal Co. This breaker (Fig. 11) embodied some new features. The coal in mine cars was brought over a trestle to the top of the structure and dumped directly onto a set of bar screens. Two sizes were separated from the rest of the coal, presumably lump and steamboat. The finer coals fell through the bars to a set of revolving screens below. Unfortunately, what sizes were prepared is not known, but whatever they were some of the coal was taken in an elevator to the top and front of the breaker and there prepared.

The lump and the steamboat coals were passed over picking chutes, where the rock was removed, being sent to the rock chute. The lump coal went either to the lump pocket or to the main rolls and was there crushed; thence it passed to a set of revolving screens for further sizing. The coal from the screens was passed through chutes, where the slate was removed by boys. The steamboat coal seems to have gone to a set of pony rolls to be recrushed, as there appears to have been no pocket provided for it. From the pony rolls the coal went to a revolving screen and was sized. At this breaker the following sizes were made in 1889: Lump, broken, egg, stove, chestnut, pea, buckwheat and bird's-eye. It is probable that the bird's-eye coal, as it was called at that time, was the same as present-day rice or No. 2 buckwheat. All coal finer than the bird's-eye went to the culm bank.

By this time the mine rake had been entirely superseded, and its functions performed by other equipment. As a matter of fact the rake went out of existence about 1875 or 1880. For a time the coal as it came from the mine was fed directly to the main rolls without previous separation of sizes. In the No. 8 breaker we see the same effect achieved as that obtained by raking in the mine. The fine sizes that needed no crushing

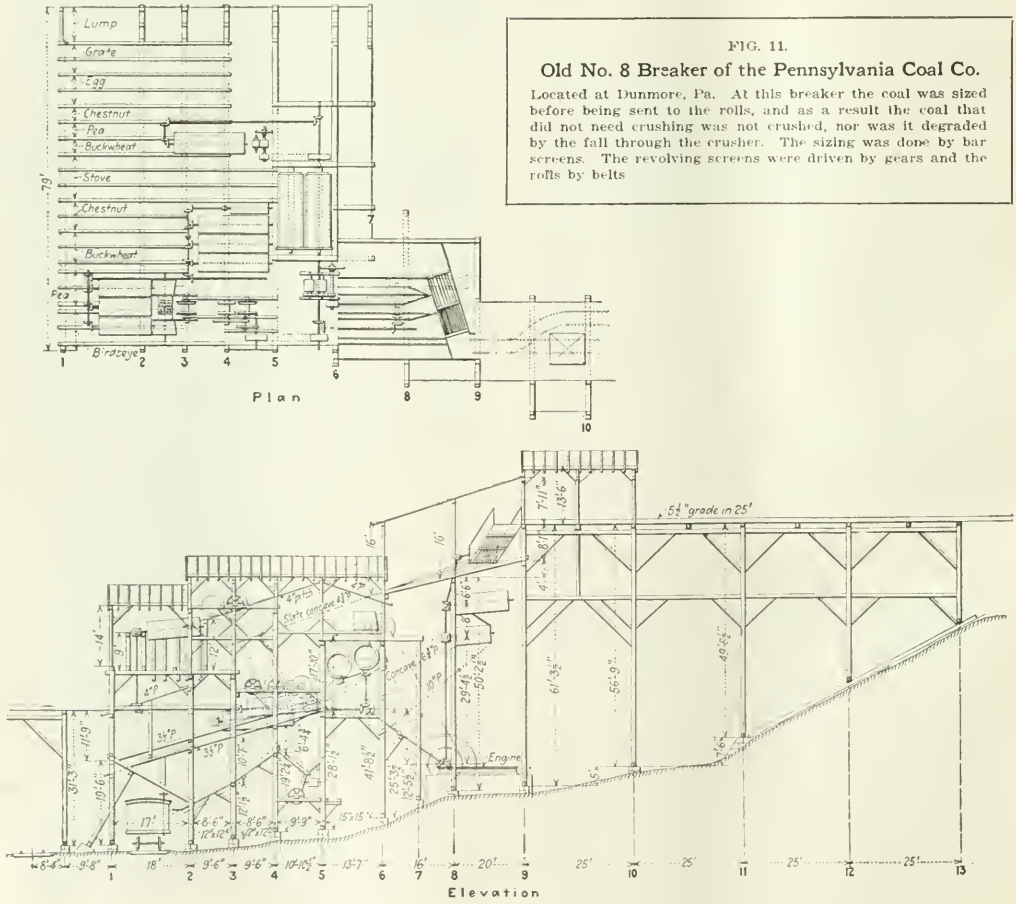


FIG. 11.

Old No. 8 Breaker of the Pennsylvania Coal Co.

Located at Dunmore, Pa. At this breaker the coal was sized before being sent to the rolls, and as a result the coal that did not need crushing was not crushed, nor was it degraded by the fall through the crusher. The sizing was done by bar screens. The revolving screens were driven by gears and the rolls by belts

were removed from the coal as soon as it was dumped and only the large sizes were sent to the rolls to be crushed. In this breaker as at Old Forge we find that all the revolving screens were driven by gears and the rolls were driven by belts. Here also the pentagonal screen was employed. In all, fourteen revolving screens were installed as well as two rolls and one set of elevators.

No provision was made to store coal at the head of the breaker so that there would be a regular supply, neither was any attempt made to feed the coal to the screen bars in a regular manner. The coal came in jerks and spurts that greatly interfered with its preparation. Although this breaker was built at a time when shaker screens were making their appearance they were not used at this operation, showing that they were not then considered to be sufficiently perfected to warrant their installation.

Coxe Screen Has Capacity and Efficiency

Just previous to the introduction of the shaker screen Eckley B. Coxe, of Coxe Bros., Inc., of Hazleton, invented the gyratory screen, which this firm used in its preparation plants for a number of years. These screens proved satisfactory as to sizing and capacity but their maintenance cost was high owing to their unbalanced vibration.

The Anthony shaker screen was among the first built but this was preceded by a shaker that was supported on rollers and operated at an extremely high speed. The Anthony shaker was hung by wrought-iron rods as are present-day shakers, but the suspension members were fastened to the shaker by a pin and the top connection was a ball-and-socket joint.

In the Parrish shaker, which is the one in common use at the present day, a rigid attachment is used. The present type of shaker was not fully developed until 1907.

About the same time that the shaker was introduced the mechanical picker was invented, and a revolution in breaker design occurred. The object sought by the mechanical picker was to obviate hand-picking. Many types of these machines were invented. The Ziegler picker, built about 1890, was the first to make its appearance. It was the forerunner of all the "jump" pickers, and from it the many other designs involving the same principle have been evolved. In order to cause the slate to fall through the slot in the picker and allow the coal to pass over, a revolving roller was first used.

Thomas Picker Uses a Slab of Slate

This device was followed by the Thomas picker, which used a slab of slate over which the mine product had to pass. Friction between the slate slab and the slate in the coal, of course, was greater than between the slab and the coal. The slate accordingly was retarded as it passed through the picker and fell through the slot, whereas the coal, not being retarded as much, leaped over it. The Thomas picker had only one slot and probably was introduced into the industry about 1895. It was followed in the next year by the Emery picker, which worked on the same principle but was a multiple-slot machine. This device has been improved from time to time and now can be regulated to handle widely-varying materials.

Other inventors have worked out pickers operating on the same principle as the Emery but embodying various improvements. Among these is the Devers picker, shown in Fig. 12. Mason and Allen in 1911

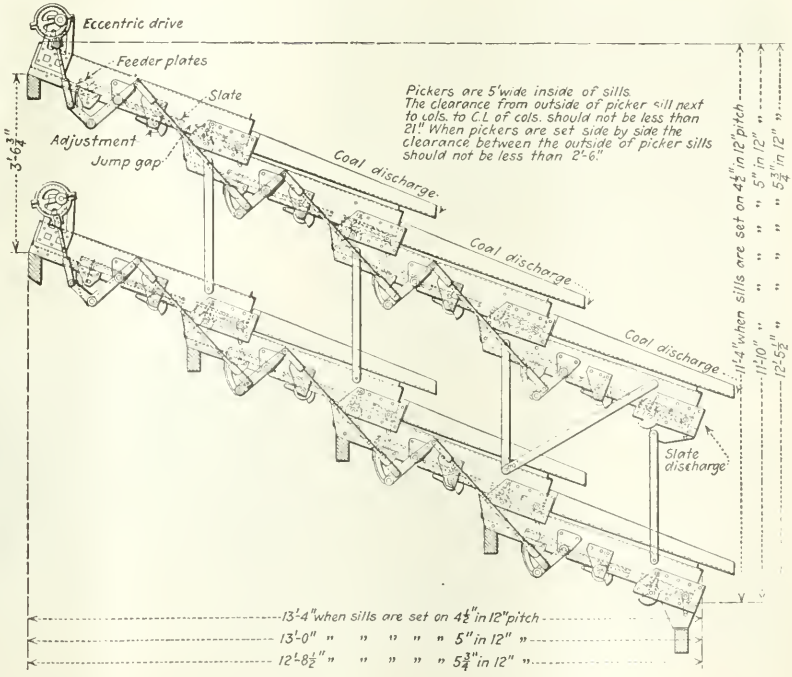

Eccentric drive
Feeder plates
Slate
Adjustment
Jump gap
3'-6¾"
Pickers are 5' wide inside of sills.
The clearance from outside of picker sill next to cols. to C.L. of cols. should not be less than 21." When pickers are set side by side the clearance between the outside of picker sills should not be less than 2'-6."
Coal discharge
Coal discharge
Coal discharge
Slate discharge
11'-4" when sills are set on 4½" in 12" pitch
" " " " 5" in 12" "
" " " " 5¾" in 12" "
11'-10" " " " " "
12'-5½" " " " " "
13'-4" when sills are set on 4½" in 12" pitch
13'-0" " " " " 5" in 12" "
12'-8½" " " " " 5¾" in 12" "

FIG. 12.

Devers Picker

This machine is a slot-type of picker, dependent on the principle that in sliding down an incline, flat material goes slowly and rounded material, rolling over and over, goes with greater rapidity. An irregular body of nearly circular shape will roll quite readily when once it begins to revolve and yet may refuse to budge when put carefully on an incline. The peculiarity of this picker is in the method of operation, the feed being raised or lowered by means of a cam. The angle of the slate slabs likewise is adjustable.

invented a picker of the Emery type as did also a Mr. Farr.

Many devices have been invented that will remove flat slate from coal. Among them is the Mowry, which is now in use at the Kingston Coal Co.'s No. 4 breaker. This picker operates as a shaker. The bottom plate is cut in a number of places, the cuts extending about half way across the shaker. The edges of these cuts are turned down, making slots. As the coal and slate pass over this plate the pieces of coal, being thick and rounded, do not pass through the slots but roll over them. The slate, however, when it reaches these slots tips up and slides through them, being thinner than the width of the opening. Of course any flat pieces of coal naturally pass through the slots along with the slate. It is necessary, therefore, to pass the flat and the rounded product of the Mowry picker over one of some other type. This machine was invented in 1905. In 1910 another flat-slate picker was invented by Colvin.

The Norman flat-slate picker differs from any so far that has been described. This device consists of a number of rollers so spaced as to permit the flat particles of slate to pass through while denying passage to the rounded coal. Each roller revolves in the opposite direction to that adjoining it. The slate is thus caused to tilt and drop through the openings. The rollers are sufficiently inclined to cause the coal to move across them endwise. These pickers are still used to some extent, but as all mechanical pickers seem to be going out of use they also are passing away.

One other device of this kind deserves mention, namely, the Ayers picker. This consists essentially of a tilted traveling belt onto one side of which the unpicked material is fed, the belt traveling in an upward direction. Meanwhile the slate, being heavier than the coal and having a greater frictional resistance upon the belt, is carried up and discharged at the top. The coal rolls down the belt and leaves it at the bottom. This picker is still being used in a few places. Probably the best known of all pickers is the anthracite spiral. This came into extensive use about 1904.

Hungarians Successfully Conduct Co-operative Mine In Kentucky, Having Two Million Dollars Invested

Bridge Had to Be Built Over Tug River—Coal Is Dumped Inside Mine and Is Brought Out by Conveyor—Employee-Shareholders Unanimously Accept 30 Per Cent Wage Reduction

By J. R. Haworth
Huntington, W. Va.

ORGANIZERS, officers, directors and employees of the Himler Coal Co., operating in Martin County, Kentucky, agree with one voice that that company has solved the labor problem. With the coal-producing industry distraught in its struggle for years with this question, with this plan and that expedient, this theory and that system attempted and abandoned as impractical and unavailing one after the other in an impressive array of failures in final solution of the labor question, the cheerful pronouncement of the Himler company that the answer has been found is intriguing, at least.

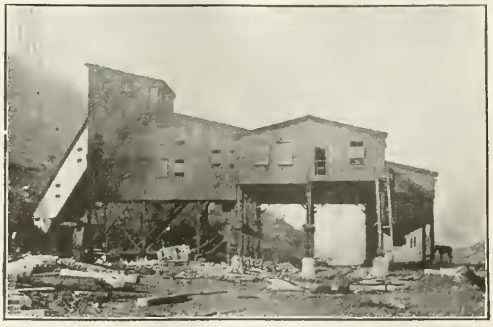
The company claims for itself the distinction of being the only co-operative coal-mining company in America. To prove that the company has solved its labor difficulties it points to its history covering a period of two years, and recites the difficulties already overcome.

Stockholders Vote for Lower Wage Scale

The history of industry is littered with the wreckage of co-operative schemes of various sorts which have failed and have been forgotten. Yet the Himler plan, its sponsors say, has been a success for two years —a recent stockholders' meeting, in fact, voted unanimously for a 30-per-cent reduction in wages following submission of a report of the treasurer, and the company continues not only to mine coal at the low market price but has increased its capital to $2,000,000 for extension of its operations.

Few less promising places in the United States could be found at this time for an experiment in labor problems than Himlerville, Ky., the home of the Himler Coal Co. Himlerville is being built in the hollow formed by Buck Creek, which flows into Tug River at Warfield, Ky., about two miles from Himlerville. Warfield is a village on Tug River opposite Kermit, W. Va., and Kermit is on the selvage of the Williamson coal field, about twenty miles from the town of Williamson itself.

There are windows in the village of Kermit shattered from recent volleys from the hills on the opposite side of Tug River, a phase of the fierce industrial struggle which has torn the Williamson field for the past two



HIMLER COAL CO. TIPPLE WITH ITS 45-DEG. SLOPE

This shows the tipple before it was entirely completed. The slope is so steep and short as to be what our metal-mining brethren would call an inclined shaft.

BOARD OF DIRECTORS OF THE HIMLER COAL CO.

The president, Martin Himler, is the third from the right in the rear row. He has a black tie and white shirt. Martin Himler as editor of a Hungarian newspaper in New York, the *Magyar Munkaslap*, was greatly attracted by mining men, capitalist and mine worker alike, and was much interested in the efforts of his fellow countrymen to better their condition. This experiment in co-operative mining is the result.

years. In the intense fight for unionization on the one hand and resistance to unionization on the other, the Himler operation has been untroubled. The story is not uninteresting.

A little more than two years ago Martin Himler, a naturalized Hungarian, conceived the plan of organizing a co-operative coal-mining company. Following up this idea, he formed the Himler Coal Co., capitalized at $50,000. Stock was sold to men of his own native land. A small mine in Mingo County, West Virginia, was purchased, and operations were begun. The mine had been a failure for previous owners. The seam was thin and working conditions were difficult. Yet the new company, employing its own stockholders, made money from it, and ultimately sold it at a profit.

Seeking larger fields, the company invaded Martin County, Kentucky. That county therefore had been a veritable wilderness. Tug River blocks its only outlet to a railroad. The obvious thing to do was to bridge the river. The new co-operative company, the laughing stock of coal operators throughout the Williamson field, faced its problems with optimism. A reorganization increased the capital stock of the company from $50,000 to $500,000, and the new stock was promptly subscribed by nearly fifteen hundred stockholders in the United States and in Europe.

A tract of approximately twelve hundred acres, in which lay the Warfield, or No. 2 gas, seam was under lease. An opening was started; contracts were let for erection of forty-five houses; attention was turned to bridging the river. Difficulties encountered in this project included the discovery of beds of quicksand where solid rock should have been. The original estimated cost of the bridge was $25,000. The structure was finally completed at a total cost of about $300,000. First shipments of coal were hauled over the new structure on July 1.

Meanwhile the new tipple was being built. Erected by the Link-Belt Co., it contains novel features, among these being the installation of a scraper-type conveyor running on a 45-deg. slope to the loading pit in the mine entry. The company declares no other successful installation of a scraper-type conveyor has yet been made on such a steep slope.

The novel features, however, are not confined to the physical equipment of the company. Its organization is unique.

Stockholders All Citizens or Naturalized

Stock in the company is sold only to Hungarians, native or naturalized. One of the bylaws of the company provides, however, that no stockholder may seek employment with the company until he has undertaken naturalization as an American citizen. According to Martin Himler, president of the company, no stockholder in the company has yet arrived in America without a firm resolution to become an American citizen as promptly as the laws will permit.

Employment by the company is not limited to stockholders, but the non-stock-holding employees must not exceed one-third the number of stockholding employees. The employment of non-stockholding employees, Himler explains, has been agreed upon by the company to take care of the resident labor.

A portion of the work of the company is devoted to Americanization, and to this end a night school has been established with a competent instructor in which the English language and the theory of American government, with a study of the Constitution of the United States, are taught employees of the company.

Himler's rules of conduct are strict, and in these his hands are upheld by his associates. On a recent tour of the property of the company, two employees were found "shooting craps." The men were promptly discharged and their stock purchased by the company. On a subsequent tour an employee who owned a small store

Stockholders' Meeting

Martin Himler in a miner's cap explaining the $1,000 insurance policies being distributed among the workmen. Eugen Lang, the secretary, the man on the extreme left in the preceding figure, may be seen in this illustration behind and on the left hand of Mr. Himler, policies in hand. Nearly every other man is a coal miner-stockholder.

on the company's land was found to have in his possession certain jars of contraband whiskey. He was discharged from the employ of the company, required to leave the neighborhood, and his store and home were purchased by the company and resold.

The company declares its plans for the company town will be a model for mining towns in America. The houses will be so constructed as to avoid the appearance of sameness, and hot and cold running water, sanitary plumbing of modern design and electric wiring are being provided for in each. In each deed or contract for a company house the owner or lessor is required to maintain flower and vegetable gardens.

At the annual meeting of stockholders the entire directorate, with one exception, was re-elected to office. The vote is regarded by the directors as an expression of approval and confidence. With the increased capitalization, arrangements for new mine openings and new tipples will be made promptly, the directors say, and the policy of the company in Americanization, education and production of coal at whatever price the market may dictate will be continued.

Plans Made for Some Rooms 60 ft. Wide

The company mines the Warfield, or No. 2 gas, seam, running from 4½ to 5½ ft., fairly level, with an excellent sandstone roof and fireclay floor. Some difficulty is encountered in keeping the rooms dry. Entering by a 45-deg. slope, lined on floor and walls with concrete, a descent of about 60 ft. is made to the loading point. The cars arrive from the mine workings linked by swivel couplings and hauled by storage-battery locomotives. These latter will be used for main-haulage purposes until the territory opened makes it advisable to use trolley locomotives, when the storage-battery machines will be used for gathering purposes. The coal is dumped on a rotary dump in a hopper, where it is automatically weighed. Thence it falls into a bin 40 ft. deep with a storage capacity of twenty-five tons. Here it is fed to a scraper conveyor which raises it to the tipple, where it screens to 50 per cent lump, 20 per cent nut and egg and 30 per cent slack. Because of the excellence of the roof, the engineers' layouts for future development provide for some rooms 60 ft. wide.

Himler, president of the company, takes a fatherly interest in his men. "If the mine profits, the profit will go to the men," he says. "No employee wastes a penny's worth of material, and none will steal from the company either in money, material or time.

"I think we have found the cure for radicalism, for bolshevism, for Marxism. We have opened the way for the miner to become a mine owner himself, and I am confident that this will soon be true in every industry. I do not see how it is possible now to fail. I cannot see how any benefit can come from an everlasting struggle between labor and capital, nor can I see the necessity for such a fight.

"With our present limited resources the company is now sending two boys to college. One of these was a coal miner until he was eighteen years old. He will be graduated from Columbia University in two years. As our company grows we hope to have fifty boys in college all the time. I believe in my plan. I believe in America; we cannot fail."

In a recent signed article in the *Washington Herald*, Representative Florian Lampert, of Wisconsin, advocated government ownership of coal mines.

Plant to Prepare Small-Size Locomotive Fuel and Coal for Domestic Purposes

By C. M. Schloss
Denver, Col.

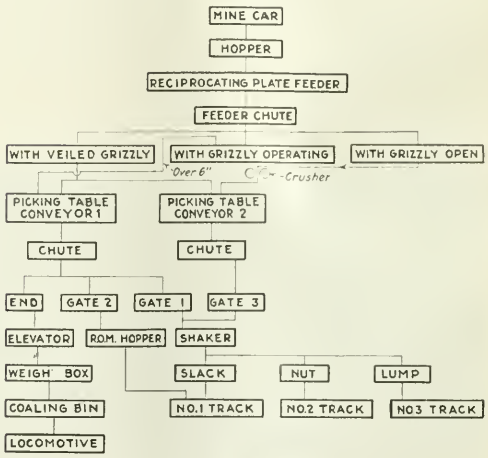
Those who visit the tipple of the Merkle Coal Co., at Belt, Mont., almost invariably are impressed with the small size yet great efficiency and adaptability of the screening plant there installed. Versatility is not altogether uncommon in large tipples, but small ones possessing this characteristic are rare. The installation at Belt belongs to this latter class.

When decision was made to make this installation, a tipple salesman, not himself an experienced designer, was called into consultation. To him the president and general manager of the coal company explained what was to be accomplished, insisting that merely a "simple little tipple" was all that was desired.

Design of this "simple little tipple" at first appeared impossible. In due time, however, it was accomplished, and the resulting plant is not as complicated as it looks. As may be seen in the accompanying illustration, pit cars are discharged by a kickback or goose-neck dump into a hopper from which the coal is fed uniformly by a reciprocating plate feeder to a chute containing a grizzly. The bars of this screen are spaced 6 in. apart. The grizzly is hinged so that it may be raised, letting the coal go through unscreened. Hinged veil plates also are provided to cover the grizzly when desired.

From the feeder chute, coal can be discharged to either the far side—No. 2—of a 60-in. double picking-table conveyor or onto both sides. The near side—No. 1—of this picking table discharges into a chute equipped with two flygates in series; one opens to the shaker screen and the other to the run-of-mine hopper; the end of the chute discharges to the elevator mentioned later. The far side—No. 2—of the picking table discharges over a third flygate opening to the screen. The elevator previously mentioned raises the locomotive coal and discharges it into a 3-ton weigh box, which in turn delivers to the coaling bin.

When it is desired to load picked run-of-mine on the



FLOW SHEET OF MERKLE TIPPLE

The Merkle tipple is one of the few bituminous coal tipples that crushes its product, in this case for locomotive use. Note the use of the grizzly or stationary screen, which in this case is used only for the larger coal.

first track, the veil plates in the feeder chute are used covering the grizzly bars. The coal flow in the first case is from dump hopper to feeder chute, to both sides of the picking-cable conveyor, through gates to run-of-mine hopper and thence to cars. If the run-of-mine thus picked is to be screened, the path of the coal is similar except that the gates are opened and the conveyor discharges onto the shaker screen.

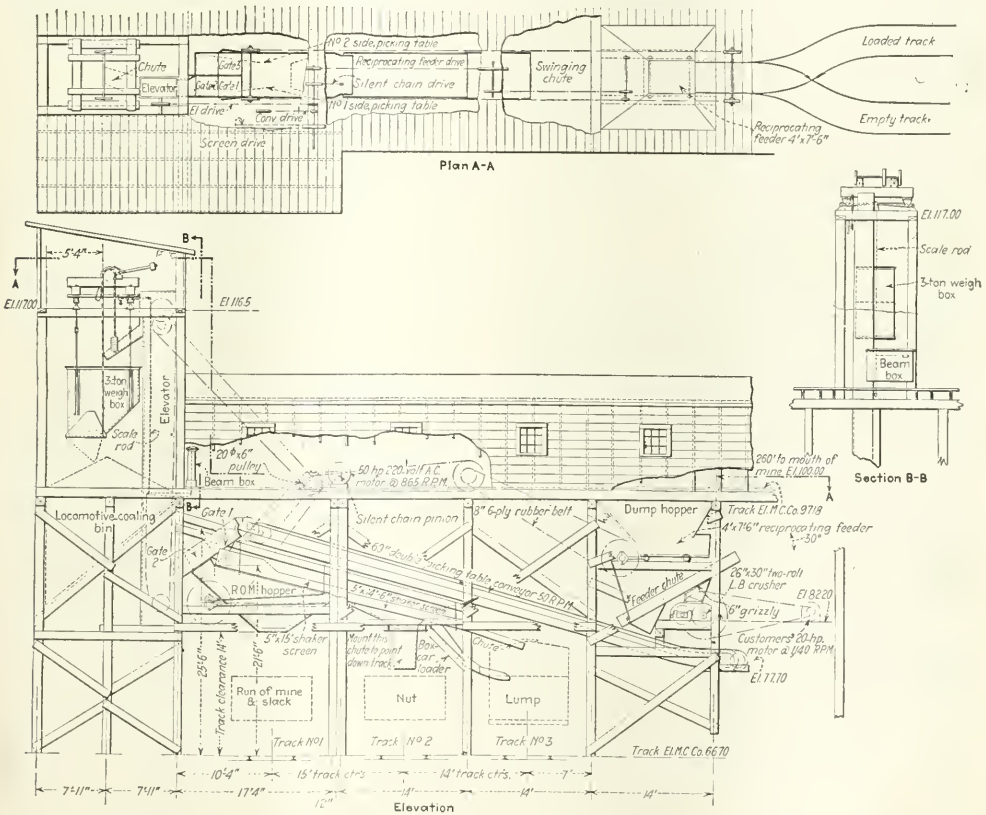
Lump coal, as a rule, is salable when the smaller grades are not. To take out the lumps and make locomotive coal of the remainder the veil plates are removed from the grizzly section. The lumps ride over the bars to one side of the conveyor; the smaller sizes fall through to the 26 x 30 in. crusher, are crushed and discharged onto the other side of the conveyor, at the upper end of which the gates are arranged so that the lump falls on the shaker and the small product goes to the elevator and thence to the weigh box.

When the demand for locomotive coal is particularly heavy the grizzly section is raised out of the feeder chute. The whole output then passes into the crusher, falls onto the conveyor, and is passed to the elevator.

The crusher is driven by an individual motor. A jackshaft furnishes power for the remainder of the machinery. This shaft is driven by a silent chain encased within a dust-tight and oil-retaining casing, running at all times in a bath of oil. Clutches are provided so that when all coal is being screened the elevator is not operated. When all coal is delivered to the run-of-mine hopper it will not be necessary to operate the elevator or screens; when all coal is being raised to the coaling bin the screens will not be operated.

This installation was made on an old structure. The narrow track centers and low height made the design difficult, as these could not be changed. Yet this "vest-pocket edition" of a preparation plant is producing clean sized coal efficiently and satisfactorily. The machinery installed was furnished by the Link-Belt Co.

FELL IN A HOLE ON ROAD HOME AND IS COMPENSATED.—Commissioner Jarrett has made an award of $12 a week to James Snyder, R. D., Dubois, claimant in a compensation case against the Rochester and Pittsburgh Coal and Iron Co., Punxsutawney, for the period from Oct. 30, 1920, to May 15, 1921. Snyder at the time at which he was injured was employed at the defendant's mine at Helvetia, Clearfield County, Pa. He was hurt by falling into an offset when on his way home from work, but while still on the company's premises.



PLAN AND ELEVATION, MERKLE COAL CO. TIPPLE AT BUTTE, MONT.

By flygates and double picking tables all kinds of combinations and separations of product can be worked out. Thus in the feeder chute on the right the coal may be separated on a grizzly, or it may be passed on without separation over veil plates, or again the grizzly may be raised and the coal dropping through may be passed to a crusher. At the far end there are three gates, two of which lead to a shaker screen, the other to the run-of-mine hopper, and if all are closed the coal goes to an elevator and presently finds itself in the locomotive-coaling bin. By such deft contriving a little tipple can adapt itself to many needs.

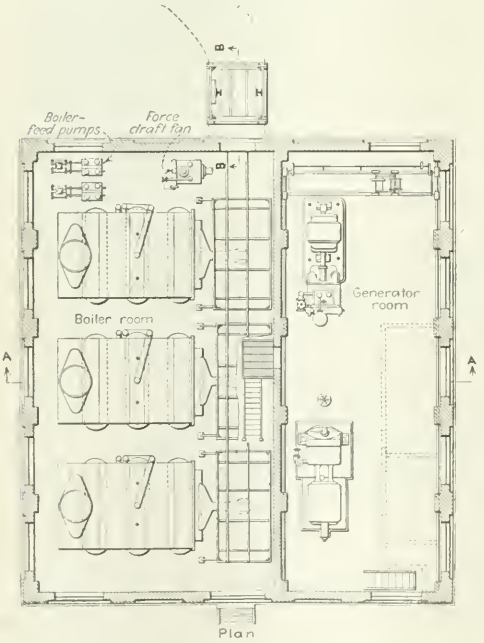
W. G. Duncan Coal Co. Will Exchange Power, Sell Current And Operate on Coal Mined in Bed Below It

Coal from Tipple Is Hauled Through a Seam Underlying Power Plant to Foot of a Small Shaft, Where It Is Hoisted and Discharged to Bunkers Ashes Are Lowered Through Same Shaft and Taken to Slate Dump

By Alphonse F. Brosky
Pittsburgh, Pa.

AT GREENVILLE, KY., in the western end of the state, the W. G. Duncan Coal Co. owns a large coal property. This firm is at present working two operations—namely, the Luzerne and Graham mines. Both are developing what is known in that region as the No. 9 seam, and the two have a combined output at present of about 4,000 tons per day. The power station together with the substations now installed are of sufficient size to supply energy for an output which some day will be much larger than that at present produced. The central power station is located at the Graham mine in Muhlenburg County, and is one of the most up-to-date installations of its kind in the country.

The foundations of the buildings and equipment are of concrete, and the power house itself is of red-face brick. The window sashes are of steel and the roof of gypsum with a three-ply waterproof covering. This building was so designed as to save a large amount of excavation and concrete work, which would have been necessary had the generator- and the boiler-room floors been placed on the same level. Ample space is provided under the turbine room for the condenser apparatus, as well as for a switchroom, storeroom and washroom.



PLANT OF W. G. DUNCAN COAL CO., GRAHAM, KY.
Three 552-hp. boilers on the left receive their coal by the track shown in the center of the building, being elevated from the mine below by the elevator shaft at the top of the illustration. One 1,000-kw. and one 2,000-kw. turbo-generator are installed in the generator room. Dotted lines from the elevator show course of the mine heading leading toward the tipple.

Two turbo-generators are installed at present, one being a 1,000-kw. Westinghouse machine with a Le Blanc jet condenser, and the other a 2,000-kw. General Electric unit with a Wheeler low-level jet condenser. At present the smaller machine is able to handle the load at all times. As the output increases the larger unit will be used during times of peak load and the smaller one will be operated when the station is under lower load and as a spare. By this arrangement the station as now equipped will be able to supply power till the mines are more fully developed. The generated potential is 2,200 volts.

Seven-Panel Switchboard Regulates Current

The switchboard is located in the generator room. It was built by the Westinghouse Electric & Manufacturing Co. and is a seven-panel set with black oil finish. It is placed on the same floor level as the generators and directly over the switchroom in which are located the oil circuit breakers, disconnecting switches, lightning arresters and other high-tension equipment. The oil circuit breakers are operated from the switchboard by means of a lever mechanism. An overhead crane installed in the generator room is of ample capacity to handle any component part of the turbines or generators.

Boiler Plant Embodies Best Standards

In the boiler room three 552-hp. class O No. 22 Stirling boilers are installed. These are equipped with superheaters, Williams automatic feed-water controllers, Williams water columns and Diamond soot cleaners. A Cochrane feed-water heater also is employed. The boiler-feed pumps comprise two 10 x 6 x 12 in. Worthington horizontal duplex pressure-pattern units. The water used in both boilers and condensers is obtained from a dam near the station. Owing to the quality of the coal that will be burned in this power plant it was decided to raise the boilers 4 ft. higher than the regular setting. This alteration was made in order to procure greater efficiency, coal having an unusually long flame being used.

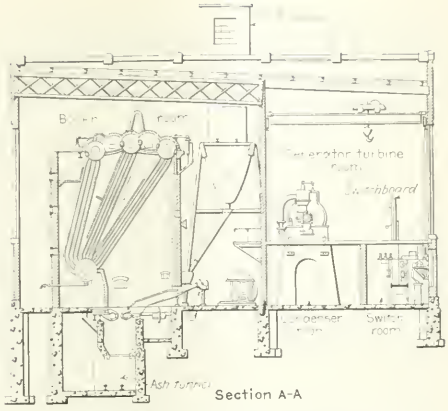
Under the boilers Westinghouse six-retort underfeed stoker furnaces are installed. These are so connected as to be driven either by a steam engine or motor, one machine of each kind being provided. The working steam pressure is 180 lb., and approximately 75 deg. of superheat is maintained at the boiler nozzle. Three self-supporting steel stacks have been built, each extending 125 ft. above the damper plate. Forced draft is used, being furnished by a No. 6 Buffalo Forge Co. fan driven either by a small steam turbine or a motor.

The method employed at this plant for the handling of coal and ashes is unusual. The No. 9 bed of coal lies beneath the station at a depth of 20 ft. and outcrops 150 ft. from the building. The tipple is about one-fourth of a mile from the power station. An entry has been driven from the outcrop to a shaft at the power plant, and a track laid from this shaft to the tipple.

No. 9 Seam May Be Mined for Boiler Use

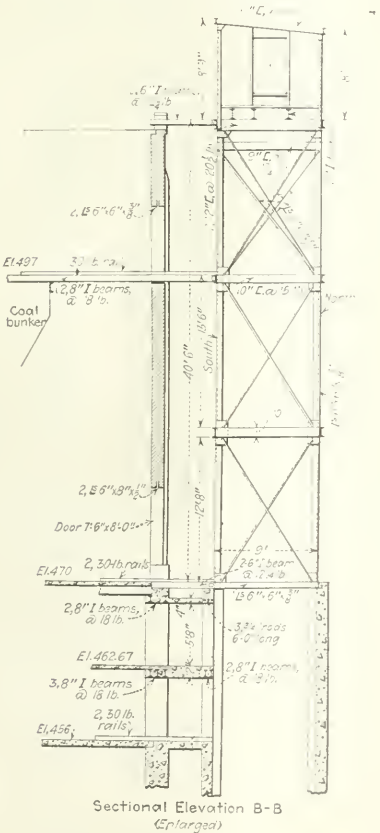
At present all coal is brought from the tipple to the station through this entry and is raised to the bunker level by a single-drum semi-magnetic control type of elevator manufactured by the Ohio Elevator & Machine Co., of Columbus, Ohio. The hoist is driven by a slip-ring induction motor. A little later a crusher may be installed, and the No. 9 seam mined for use under the boilers. The ashes are emptied from the furnace hoppers into a car which is lowered by the shaft elevator to the entry and is thence taken out to the pit mouth and the dump.

This central station is being connected in parallel with that of the St. Bernard Mining Co. by means of a line extending between the two. Excess power will be taken over by the Kentucky Utilities Co. This energy will be used at all mines within reach, as well as for town lighting and in manufacturing plants. Charles M. Means, consulting engineer, of Pittsburgh, Pa., was entrusted with the design and engineering of this power plant.



ELEVATION OF GRAHAM POWER PLANT

The coal direct from the mine enters the V-shaped bunker and runs down to the stokers of the Stirling boilers. The boilers are set much higher above the grates than is usual as the coal is long-flaming.



HEAD OF ELEVATOR SHAFT

Immediately under the penthouse is the bay from which the coal cars are pushed out over the coal bunker. There are tracks also at the floor level and at the level of the bottom of the ashpit.

Many Houses Injured by Mine Caves

MINE caves are occurring quite frequently in the northern anthracite region. Five properties, four of them in the Sibley section of Old Forge, a town located about half way between Scranton and Wilkes-Barre, and one at Taylor, a village between Old Forge and Scranton, were wrecked on Aug. 8. The first four were over mines of the Pennsylvania Coal Co. The cave is 150 ft. long and extends from the center of the street to the rear of the damaged houses.

The water mains parted and let water into the workings, cutting off the water supply to the houses beyond. The foundations settled in places 6 ft., and the houses will have to be practically rebuilt before they are re-occupied. The residents had been notified and had moved out, so no one was hurt. The Sibley mine in which the cave occurred is a part of the Old Forge Colliery, the mine having been recently taken over by the Pennsylvania Coal Co. It had formerly been controlled by an independent company.

The Taylor property, in Taylor, is over a mine of the same name owned by the Glen Alden Coal Co. The front of the house dropped several feet, and the dwelling tipped forward toward the cave.

Only a few days before this event a cave occurred at Larksville, a suburb of Wilkes-Barre near Edwardsville. This cave, which involved three double dwellings and one single house, occurred over the mine of the Hudson Coal Co. The company has stated that no further disturbance will occur, and the occupants have returned to their dwellings. The company is repairing them and will fill in the depression. The cave was unexpected, being ascribed by the company to a slide in the abandoned Five-Foot bed. Water mains, asphalt roads and sidewalks were damaged, and the street cars suspended operation temporarily.

COMPENSATION RATES ARE LOWERED IN OHIO — The Ohio Board of Awards, which has now been merged into the Department of Industrial Relations of the State of Ohio, under the reorganization plan of the state government, has reduced the basic rate on workmen's compensation insurance for coal operators, beginning July 1 from $4.25 to $3.95. This is a reduction of approximately 7 per cent.

Fixed-Carbon Gradients in West Virginia as Indicated By Analysis of Lowest Coals in Any Given Location

Gradient, while Relatively Flat in Northeastern West Virginia, Where the Fixed-Carbon Percentage is Low, Increases Rapidly Toward the Pocahontas Region — Oil and Gas Mostly Found Where Fixed-Carbon Content is at a Minimum

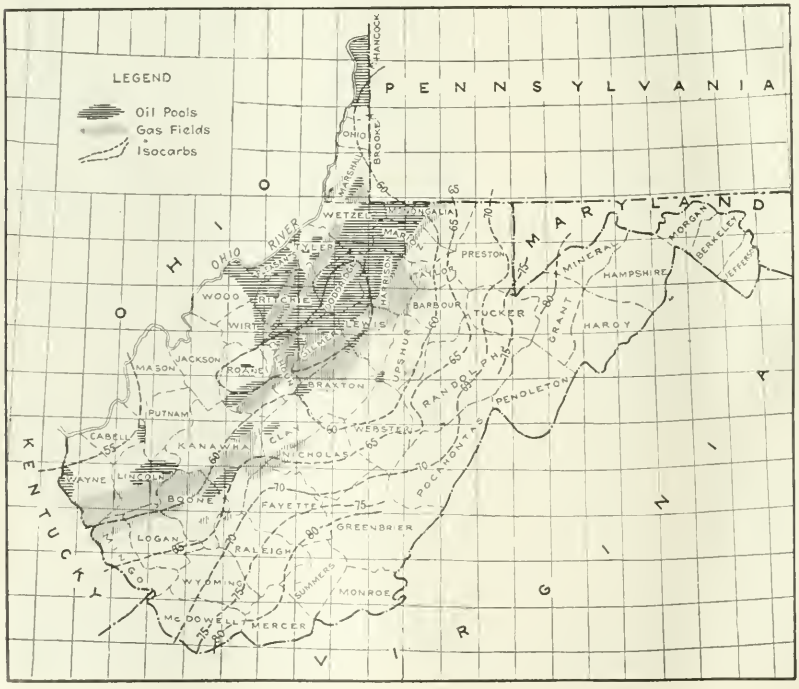
IN A paper by David B. Reger, of Morgantown, W. Va., assistant geologist of the West Virginia Coal Survey, entitled "Carbon Ratios of Coals in West Virginia Oil Fields" and read before the American Institute of Mining and Metallurgical Engineers is contained the accompanying map showing "isocarb" lines. These lines delineate the points at which any one given fixed-carbon percentage on the "pure coal basis" is to be found. Thus, along the line marked 80 the percentage of fixed carbon in the coal is that of the figure named. The term "isocarb" has been suggested by David White. The line might be viewed as an "isovol," its value being based on the volatile constituent per cent of "pure coal substance." It would then be marked 20 instead of 80 and it would, of course, follow the same course.

The term "carbon ratio," as used by Dr. Reger, is applied to the percentage of carbon in pure coal after the water evaporated below 100 deg. C. and the ash have been eliminated. As a comparatively small number of analyses have been made on this basis, it is usually necessary to compute the ratio by dividing the fixed carbon by the sum of the fixed carbon and volatile matter, using the figures of the proximate analysis.

Many thousands of these have been made by the West Virginia Geological Survey, covering every county in which coal is found. Many others have been made by the U. S. Geological Survey and the U. S. Bureau of Mines, but as uniformity of methods of analysis can alone produce comparable results the best plan is to adhere to one set of analyses. For this reason the tests of the West Virginia Survey have been used exclusively.

In preparing the map, it has been necessary to use analyses ranging from the Dunkard (Permo-Carboniferous) coal down to, and including, the Pocahontas Group of the Pottsville (Pennsylvanian) as, with certain exceptions, there is a progressive rise of strata from the Appalachian geosyncline southeastward to the Allegheny Mountains where the coals disappear above the summits.

The Dunkard coals, being much different from those of the Pennsylvanian, have been used only in one county (Tyler). With certain minor exceptions, in each county analyses from the oldest coal seams have been employed, in order to secure the nearest possible approach to underground conditions. In following this rule two or more seams have been used for different portions of counties where the measures pitch more or less heavily.



Isocarbs of West Virginia

Lines figured and broken show where the "pure coal substance" is of any given fixed-carbon percentage. Of course, where, as in the extreme northeast of West Virginia, coal is absent the lines had to be omitted. This is also true in Monroe and parts of Summers and Greenbrier Counties in the extreme southeast of the state. The gas and oil fields are shown because it is found that these earth products are usually if not always associated with high-volatile coal if coal be present. Perhaps the most rapid change in volatile content is found in Greenbrier County.

TABLE OF ANALYSES AND CARBON RATIOS OF CERTAIN WEST VIRGINIA COALS

County	Locality	Coal Seam and Group	Number of Analyses	Volatile Matter, Average Per Cent	Fixed Carbon, Average Per Cent	F.C. ÷ V.M., Nearest Per Cent
Hancock	.....	L. Kittanning (Ca.)	3	37 91	53 00	58
Brooke	.....	Pittsburgh (Cm)	15	34 20	56 08	62
Ohio	.....	Pittsburgh (Cm)	6	35 92	55 17	60
Marshall	.....	Pittsburgh (Cm)	7	38 40	50 97	57
Wetzel	.....	Uniontown (Cm)	1	37 07	53 07	59
Tyler	.....	Washington (Cd)	3	34 27	47 92	58
Pleasants						
Wood						
Jackson						
Mason	.....	Pittsburgh (Cm)	5	38 79	49 33	56
Cabell	.....	Little Pittsburgh (Cm)	1	39 82	46 83	54
Wayne	.....	No. 2 Gas (Ck)	1	40 02	55 42	58
Lincoln	.....	No. 2 Gas (Ck)	1	39 29	55 81	58
Putnam	.....	Pittsburgh (Cm)	6	38 53	51 40	57
Roane	.....	Brush Creek (Cm)	1	37 20	44 12	54
Wirt	.....	Bakerstown (Cm)	1	33 43	42 75	56
Ritchie	.....	Pittsburgh (Cm)	1	37 45	52 50	57
Doddridge	.....	Uniontown (Cm)	3	39 36	45 29	53
Monongalia	East	L. Kittanning (Ca)	4	30 47	57 53	65
	West	Pittsburgh (Cm)	8	36 47	54 86	60
Marion	East	L. Kittanning (Ca)	2	33 90	49 83	59
	West	Pittsburgh (Cm)	43	36 62	55 73	60
Harrison	East	Harlem (Cem)	45	35 81	49 11	58
	West	Pittsburgh (Cm)	56	38 24	53 53	58
Lewis	North	Pittsburgh (Cm)	2	41 92	51 08	55
	South	L. Kittanning (Ca)	8	34 52	53 41	60
Gilmer	.....	Pittsburgh (Cm)	..	41 84	49 49	54
Calhoun	.....	Pittsburgh (Cm)	2	34 99	56 95	61
Clay	.....	Coalburg (Ck)	6	36 62	55 73	60
Kanawha	Northwest	Pittsburgh (Cm)	14	40 06	51 48	56
	Southeast	Eagle (Ck)	7	31 22	63 09	66
Boone	Northwest	No. 5 Block (Ca)	13	37 31	55 73	59
	Southeast	Eagle (Ck)	6	34 98	57 55	61
Logan	.....	Campbell Creek (Ck)	9	34 92	59 27	62
Mingo	.....	Eagle (Ck)	5	30 45	63 86	67
McDowell	East	Eagle (Ck)	3	31 29	62 44	66
	East	No. 3 Pocahontas (Cp)	14	17 90	76 13	80
Wyoming	West	Gilbert (Ck)	4	27 84	63 61	69
	East	Sewell (Cnr)	5	23 31	72 76	75
Raleigh	West	Eagle (Ck)	23	29 29	65 02	70
	East	Fire Creek (Cnr)	5	20 56	77 37	79
Fayette	West	Eagle (Ck)	16	28 25	66 61	70
	East	Fire Creek (Cnr)	18	19 29	75 42	79
Nicholas	North	L. Kittanning (Ca)	17	35 33	53 97	60
	Central	Eagle (Ck)	24	33 43	59 74	64
	South	Sewell (Cnr)	29	29 10	65 73	69
Braxton	North	Pittsburgh (Cm)	7	39 68	51 78	56
	South	L. Kittanning (Ca)	3	37 02	56 02	60
Upshur	North	Redstone (Cm)	12	38 36	54 35	58
	South	L. Kittanning (Ca)	5	35 36	51 78	59
Barbour	Northwest	Pittsburgh (Cm)	10	36 90	55 63	60
	Southeast	L. Kittanning (Ca)	18	30 77	56 85	64
Taylor	West	Pittsburgh (Cm)	10	37 01	55 19	59
	East	L. Kittanning (Ca)	5	29 90	58 96	66
Preston	West	U. Freeport (Ca)	43	27 25	62 52	69
	East	L. Kittanning (Ca)	12	29 49	59 42	66
Tucker	North	U. Freeport (Ca)	6	22 05	70 20	76
	South	Sewell (Cnr)	1	24 81	68 18	73
Randolph	Northwest	M. & L. Kittanning (Ca)	8	32 14	55 63	63
	Southeast	Sewell (Cnr)	15	30 35	61 80	67
	Central	Sewell (Cnr)	9	26 73	60 84	69
Webster	North	L. Kittanning (Ca)	7	32 47	54 08	62
	Central	Eagle (Ck)	6	35 45	54 04	60
	South	Sewell (Cnr)	17	30 07	62 08	67
Greenbrier	West	Sewell (Cnr)	1	26 96	66 77	71
Summers						
Mercer	.....	No. 3 Pocahontas (Cp)	17	19 85	66 48	77
Pocahontas	West	Gilbert (Ck)	1	29 73	56 21	65
Grant	.....	U. Freeport (Ca)	1	18 46	68 64	78
Mineral	.....	U. Freeport (Ca)	4	15 50	73 46	82

NOTE.—Group abbreviations are as follows: Cd-Dunkard (Permo-Carboniferous); Cm, Monongahela; Cem, Conemaugh; Ca, Allegheny. Ck, Kanawha; Cnr, New River and Cp, Pocahontas (last six Pennsylvania). L = lower; M = middle and U = upper.

The table shows in detail the various coals used in preparing the map. Few analyses of coals above the Pittsburgh have been employed.

The purpose of the author is to show that the gas and oil fields are all to be found in those areas where the fixed-carbon percentage is low and where conversely the volatile percentage is high, it being found in general that where the coal is devolatilized the shales are similarly freed of their bituminous content and that the oil and gas have likewise been driven off and lost. For this reason the oil- and gas-producing areas have been placed on the map, and they quite fairly substantiate the theory just enunciated.

As Mr. Reger points out, the main oil pools lie west of the isocarb 60 where the fixed carbon percentage is 60 or lower but, as he states, there are notable exceptions in the Cabin Creek pool of Kanawha and Boone counties, the southwestern limit of which is not yet fully defined, and in certain pools in eastern Kanawha and Clay counties. There are some other exceptions besides these to which Dr. Reger makes reference.

Irregular as the isocarbs are they show clearly the gradient in fixed-carbon percentage from northwest to southeast, from Ohio toward Virginia, the frontiers of which states with regard to West Virginia are roughly parallel.

Book for Candidates for Mine Inspector

ONE may be permitted to question whether "cram books" of various kinds have any legitimate place in technical literature; whether, indeed, at mining examinations, for instance, men should not be so saturated with the facts of mining as to make it unnecessary for them to plug upon the questions, and those only, that have already been asked and on the answers to them. But whether the practice is approved makes little difference. The books always exist side by side with other books which cover the whole field, and if the operator is looking for a book that will help some poor fellow who has entered himself unsuccessfully year after year for examination to scrape through and some bright fellow to brilliantly surmount all obstacles and pass the examination with flying colors then "Pennsylvania Bituminous Mine Inspector's Examination Questions and Answers," by William G. Duncan, is the book. It is published by the Mine Safety Appliances Co. of Pittsburgh, Pa.

Cursory examination shows it to be quite reliable. The only statement the reviewer has found to question is: "This dust [coal-dust in suspension in the mine air] being acted upon by the flame of the explosion distills carbonic oxide gas (CO), which is itself combustible," and even that *may* be true. Perhaps some carbon monoxide is distilled, but, as a matter of fact, the amount of carbon monoxide gas distilled is not as important as the amount that is formed by the burning of the carbon, and the progress of the explosion is not dependent on the distillation but on the combustion of the coal particles. A dust explosion is just what its name implies and not an explosion of distilled gas, either carbon monoxide or methane. No reason exists for terming carbon monoxide "carbon monoxide gas," for no solid or liquid carbon monoxide can exist except under immense pressures or extremely low temperatures.

The book contains 200 pages and measures 5 x 8 in. and is bound in cloth. It is well indexed. It answers the questions submitted to candidates for mine inspector by the State of Pennsylvania during the years 1901, 1902, 1905, 1908, 1909, 1913 and 1917.

A SIGNIFICANT DEVELOPMENT of the week ended Sept. 3 was the fact that a slight car shortage developed in western Illinois and northwestern Kentucky. Reports to the National Coal Association simply indicate that there was a shortage at certain points and it is admitted that it may be temporary. Nevertheless significance is attached to the report, because even a temporary car shortage with coal production at its present low point and before the expected heavy movement of lumber and road materials sets in, gives an indication of the possibilities of the situation later in the year.

HENRY FORD ASPIRES to be an uncommon carrier.—*Wall Street Journal.*

Depreciation as a Deduction for Income-Tax Purposes

Allowance Should Represent Actual Deterioration of Property Subject to Wear and Tear — Computation by Equal Installments or by Apportionment of Capital Over Units of Production Urged for Coal Companies

By Frederick Schwertner*

DEPRECIATION is a subject of vital importance to every coal operator in the country. It is a factor which has a direct bearing in the determination of his net income. When high rates of tax prevail, it is important that ample allowances be made for depreciation of coal properties in order to arrive at the correct amount of taxable net income. In view of the fact that the rate of tax on the net income of corporations for the taxable year 1922 probably will be 12½ per cent, as provided in the new revenue bill, the subject becomes more significant. In the past the tendency has been to charge off an insufficient rather than an excessive amount of depreciation. In charging off an insufficient amount, the true net income is not reflected, and this is opposed to sound accounting principles.

Section 214 of the Revenue Act of 1918 allows as a proper deduction "a reasonable allowance for the exhaustion, wear and tear of property used in the trade or business, including a reasonable allowance for obsolescence." The new revenue bill makes no change on this subject.

The deduction for depreciation should represent as accurately as possible the actual deterioration or loss of useful life of such physical properties as are susceptible of wear and tear. In a broad sense depreciation means a decline in value and the amount of the deduction for depreciation should be measured by the decline in value of the depreciable property as a result of the use of such property in the trade or business.

Note Cost of Improvements and Additions

The capital sum to be returned by the deduction for depreciation is the difference between the cost of the depreciable property (or the March 1, 1913, value if acquired prior to this date) and the salvage value. There should be added to this sum the cost of improvements, additions and betterments, the cost of which is not deducted as an expense, and from this sum there should be deducted the amount of any definite loss or damage sustained by the property through casualty. In case capital assets are sold during the taxable year, the cost of the property should also be deducted.

The cost of incidental repairs, which merely keep the property in operating condition, should be charged to expense and deducted from gross income. As bearing on this subject, special attention should be called to Article 222 of Regulations 45 (revised Jan. 28, 1921), which reads as follows:

> Art. 222. Allowable capital additions in case of mines.—(a) All expenditures for development, rent, and royalty in excess of receipts from minerals sold, shall be charged to capital account recoverable through depletion while the mine is in the development stage. Thereafter any development which adds value to the mineral deposit beyond the current year shall be carried as a deferred charge and apportioned and deducted as operating expense in the years to which it is applicable.
>
> (b) All expenditures for plant and equipment shall be charged to capital account recoverable through depreciation while the mine is in the development stage. Thereafter the cost of major items of plant and equipment shall be capitalized but the cost of minor items of equipment and plant necessary to maintain the normal output, and the cost of replacement may be charged to current expenses of operation.

The main object of charging off depreciation is not to provide a fund out of which to make repairs but to provide for the replacement of the depreciated property after its usefulness has ended.

The capital sum to be returned by the deduction for depreciation may be charged off over the useful life of the property either in equal annual installments or in accordance with any other recognized trade practice, such as an apportionment of the capital sum over units of production. The law does not prescribe rates of depreciation, because these depend upon the kind and class of property and upon the conditions under which the property is used, but merely provides that the allowance shall be "reasonable."

There are several methods of computing the amount of depreciation, but the methods most adaptable for coal properties are (1) by equal installments and (2) by apportionment of the capital sum over units of production.

Under the equal-installment method the capital sum to be returned is divided by the estimated life of the depreciable property, and the result is the annual depreciation to be deducted. The rate of depreciation under the installment method is, of course, affected by the life of the coal mine, as the deposit may become exhausted before the expiration of the normal life of

DEPRECIATION RATES ON COAL-MINE EQUIPMENT EXPRESSED IN YEARS OF LIFE

Equipment	Geographic Divisions a	b	c	d	e	f
Beehive ovens	....	10	10	10	10	10
Byproduct ovens	....	12	15	15	15	15
Cables and haulage	2	2	2	2	2	2
Electric equipment	7	10	7	5	10	7
Furniture and fixtures	10	10	10	10	10	10
Hand tools	1	1	1	1	1	1
Headframe	Life of Property					
Houses — Brick, Concrete, Frame	Life of property					
Locomotives	10	10	10	10	10	10
Mine cars	4	4	4	4	4	4
Mining machines	7	8	7	5	8	8
Motors	10	10	10	10	10	10
Mules and horses	4	4	4	4	4	4
Power plant	7	7	7	7	7	7
Pumps	5	10	7	5	7	7
Rails	5	10	8	5	10	10
Timbers	Life of property		6	6	6	10
Tipple — Frame, Steel	Life of property					
Washeries	Life of property					
Wires and trolleys	7	10	7	5	10	7

a Anthracite. *b* Pennsylvania bituminous, West Virginia, Illinois. *c* Kentucky, Tennessee, Georgia, Ohio, Indiana. *d* Missouri, Kansas, Iowa, Arkansas, Oklahoma, Alabama. *e* Texas, North Dakota, South Dakota. *f* Wyoming, Montana, Colorado, New Mexico, Utah and Washington.

*Of the Washington (D. C.) Bar.

the buildings, machinery, etc. Under such circumstances the rate of depreciation should be measured in such a way as will bring the property to its true salvage value when no longer useful for the purpose for which such property was acquired.

The preceding table of depreciation shows rates applicable to coal equipment in various parts of the United States. These rates are regarded by the Bureau of Internal Revenue as satisfactory. They are neither maximum nor minimum rates, and the rate of depreciation will necessarily depend upon the circumstances and conditions of each particular case.

The allowance for depreciation should be computed and charged off with express reference to specific items, units or groups of property, each item or unit being considered separately or specifically included in a group with others to which the same factors apply. While it is not essential, it is deemed advisable to keep a separate reserve account for each class of assets, such as Reserve for Depreciation of Power Plant, Reserve for Depreciation of Buildings, Reserve for Depreciation of Mine Cars, etc.

If it develop that the useful life of the property has been underestimated, the rate of depreciation should be adjusted, and the balance of the cost of the depreciable property, or its fair market value as of March 1, 1913, should be spread over the estimated remaining life of the property. This principle applies equally in the case where the useful life of the property has been overestimated.

Under the unit-of-production method the amount of the deduction for depreciation depends upon the tonnage extracted during the taxable year. It is first necessary to determine the aggregate recoverable tonnage at the beginning of the taxable year. The capital sum to be returned should be divided by the aggregate recoverable tonnage at the beginning of the taxable year. The quotient is the unit of depreciation per ton. This figure should be multiplied by the number of tons of coal extracted during the taxable year. This method is simple and is very advantageous under certain circumstances.

It is important that the amount of depreciation deducted for any taxable year should be charged off on the books of the company in order to constitute a deduction.

P. C. Madeira Compiles Economic Facts About Anthracite for Consumers

FACTS concerning anthracite, probably little known among consumers of anthracite, from a statement compiled by Percy C. Madeira, president, Anthracite Coal Operators' Association, are as follows:

Highest royalties in the anthracite field are paid to the Estate of Stephen Girard (City of Philadelphia, trustee), the average being above $1.10 a ton. One operation pays $2.40 a ton on stove and chestnut coal. Average royalty of Girard Estate in 1914 was about 42c. a ton.

Cost of mining coal varies at different collieries. At some it costs twice as much as at others. The output of *all* the mines is needed every year. The number of high-cost mines must increase as the deeper and thinner seams are worked.

More than 85 per cent of the total production of bituminous coal is shipped to the market in the condition in which it leaves the mine. All anthracite must go through a manufacturing process in a costly breaker, which produces nine sizes simultaneously, and in about the same proportion every year.

There is no difference in the cost of mining the large sizes of coal and the small sizes, but the small (steam) sizes must be sold at a loss in competition with bituminous coal. Some collieries produce as much as 60 per cent steam coal, against only 40 per cent domestic sizes.

For every ton of coal marketed in the anthracite industry about eighteen tons of water are hoisted and one-quarter of a ton of air must be pumped into the mine. For every ton of anthracite produced, 11 oz. of explosives and about seven board feet of lumber are used. In many mines, for every ton of coal hoisted, one-half ton of rock and other refuse is hoisted.

Pumps in anthracite mines have a hoisting capacity of 823,641,120 gallons of water every twenty-four hours. This is equal to the water consumption of Philadelphia every two and one-half days. It is enough water to fill the tank of every locomotive in the United States twice a day.

One careful estimate of the excavation in anthracite mines every year in new workings is 195 miles of timbered gangways and tunnels. This is equivalent to a subway from Philadelphia to New York and back. Every three years the anthracite miners remove more material than the United States Government handled in ten years at the Panama Canal.

In bituminous mines four-fifths of the employees are employed underground, most of them directly engaged in getting out coal. In the anthracite mines there are 110,000 employees engaged in preparing and handling coal, against 42,000 actually mining coal.

The cost of labor in producing anthracite is about 70 per cent of the total mining cost. The cost of supplies used per ton produced is about 80c. The total supply bill of the anthracite mines runs about $60,000,000 a year.

The U. S. Government found that in 1918 there was about $8 invested in the anthracite industry for every ton of coal produced. The interest on this investment at 6 per cent would be about 48c. a ton. A U. S. Senate committee report shows in testimony presented that the "margin" per ton of anthracite from April, 1920, to October. 1920, was 48.1c. per ton. Out of this margin—not profit—must come Federal taxes, cost of improvements, interest on borrowed money, selling expenses, and reserves for non-insurable risks, before the net profit available for dividends can be determined.

UNION MEN WILL NOT WORK WITHOUT CHARTER.—New miners at mine No. 3 of the Queen Coal Co., at Jasonville, Ind., where a faction of the old employees is objecting to the employment of men from outside the community, reported for work recently, but decided after a short conference to wait until their new local charter had been received from the international headquarters of the United Mine Workers at Indianapolis. It is expected soon. It is said that this is not an indication of dissatisfaction among the men. They are merely trying to avert the criticism that without a charter they could not be union men.

RECORD PRICE FOR INDIANA COUNTY (PENNSYLVANIA) COAL.—A two-thirds interest in the coal under the Harvey Boyer farm in Indiana County, Pennsylvania, near the village of Elderton, was sold recently to Benjamin Clark for $21,000. As there are 211 acres the rate paid is about $148 for the whole interest. The other third interest is held by the Cowanshannock Coal & Coke Co. The price is regarded as unusually high for that vicinity. Coal in the neighborhood was bought from the farmers at $60 per acre.

ILLINOIS MINE WORKERS have purchased a fine six-story building in the center of the city of Springfield, which will be used as their union headquarters. The purchase price is announced as $275,000.

Problems of Operating Men

Edited by James T. Beard

Breakage of Coal in Mines

Run-of-Mine Coal Agreement a Wasteful Measure. Caused Operators Expense to Change Tipples. No Incentive to Miners to Produce Large Coal

BREAKAGE of coal in the mine is an important item in economical production. I was pleased to see attention drawn to this matter in the editorial, *Coal Age*, July 21, p. 86. It has a bearing on the good of the coal industry that is far reaching and I hope its discussion will benefit us all.

It is now about eight years since the fight was on between the coal miner's organization and the operators, regarding the price paid the miners for coal sent out of the mine. As we all know, the result was that an agreement was entered into to pay one price, for "run-of-mine coal."

Practical Effect of Run-of-Mine Agreement on the Miner

Under this agreement it soon appeared that the miner was not interested in producing large coal. Less attention was given to the mining of shots and more powder was used to blow down the coal. It made little difference to the miner if the coal was shattered into fragments. Indeed, the smaller sizes were loaded more readily into the mine cars.

No argument is needed to show that this agreement was far from being an economical one. Not only did it put the operators to large expense to rearrange their tipples in accordance with the new basis of payment, but a large amount of coal was ground to powder and lost or rendered unmarketable at a suitable price.

Effect in the Mine

In the mine, the effect was to produce much fine dust on the roads and at the working faces. To the honest miner, the agreement was an injustice. In my own case, I estimated that my earnings were cut down $1 or $1.50 a day, by reason of the run-of-mine agreement, under which the miner was now to be paid. The man who wanted to mine and load good coal found it hard to maintain his earning capacity unless he laid aside his pick and used more powder.

It was seldom that a miner produced more large coal than was necessary to build up his car, and even these large pieces would scarcely hold together while being carried from the face to the tipple. The fine coal was all loaded in the body of the car and the larger pieces used for "topping."

Now, I am wondering what will be the next fight. To my mind, it will be on a demand that cars be only "bed-loaded." We have had a little of this already. There would then be scarcely any large coal produced and the operators would have on their hands a low-priced or unmarketable product.

Need of Greater Economy

The present industrial depression should teach us very much. It should impress on our minds the importance of adopting the most efficient and economical methods and agreements regarding the production and marketing of coal. Every agreement should consider, on an equal basis, the miner as the producer, the public as the consumer and the operator who is the "go-between" in the handling and marketing of the coal.

One important factor in agreements between the miners and the operators is the size of territory or the zone covered by the agreement. In most cases, the proper zoning is a difficult problem in an agreement. The zones are generally too large. It were better if they covered less area and the agreements adapted to the particular conditions in the areas covered.

Individual Agreements

There are mines, where the environment is such as to warrant an individual agreement covering that mine only. In other words, the operator of a mine should be able to make such an agreement with his miners as will satisfy them and make it possible for him to produce coal at a cost that will enable him to enter the market in competition with other mines more favorably located.

In the editorial I have mentioned, there are a number of things named that would help to reduce the breakage and loss of coal in the mine. There is nothing of greater importance, in this respect, than the adoption of the long-wall, panel method of mining to which attention has been called in numerous instances in *Coal Age*. Development work should be kept ahead by the use of improved coal-cutting machinery.

In this connection, let me say, that I visited a mine recently where 36 miners were employed, 8 of whom were entrymen, making the ratio of entry drivers to miners working in rooms, 1:3½. This was necessary, in that case, in order to keep the development work ahead of the miners. It shows, however, the need of more improved methods and machinery for that purpose.

Linton, Ind. W. H. Luxton.

Experience vs. Safety

Experience in mining coal a factor in mine safety. New men required by law to work under supervision of an experienced miner.

WITH much surprise, I read the letter of R. W. Lightburn, *Coal Age*, July 21, p. 101, in which he favors the employment of unskilled men in mines, claiming that they are more subject to discipline, obey orders better and are therefore safer than the average experienced miner.

For the safety of mining operations, I hope there are not many who endorse these statements of Mr. Lightburn. It is quite true that a miner who will not attend at once to a dangerous condition he knows to exist is not only endangering his own life but is a menace to his fellow workmen. On this point we can all agree; but it does not follow that an experienced miner will be unmindful of or disregard such dangerous condition existing in his place.

Experience Always the Miner's Chief Safeguard

Surely, in this twentieth century, no one in a serious mind will disparage or discredit experience in a mine worker, or claim that it makes the man less careful in the performance of his work. The man who has learned by experience how to detect a dangerous condition of roof, does not have to rely on the judgment of others to tell him when he is in danger. His experience tells him that.

Now, it is not always possible for the mine foreman or one of his assistants to be around where men are working under dangerous conditions. For this reason, the mining law in many states requires that new men employed in the mines work under the watchcare of an experienced miner, who is made responsible for their safety.

In one instance that I observed, a single experienced miner had charge of several places, firing all the shots and being responsible for the safety of the men working therein. It was his duty to see that each place was properly timbered and that the men worked under safe conditions.

My opinion is that it is not the experienced man who is most frequently

caught and injured or killed in a mine, as is so often claimed. Of course, nobody will attempt to claim that the experienced miner is immune from accident. The facts would not support such a claim. My contention is, however, that experience teaches a man lessons he does not forget; and he is a safer workman than the man who has yet to learn those lessons.

Make Each Miner Responsible for His Own Safety

Speaking of avoiding danger, the most important thing is to adopt safe rules and follow them. In the matter of timbering, one good rule is to practice systematic timbering at the working face, setting the posts in rows, at a specified distance apart. The manner of standing the posts and the distance apart should be agreed on between the superintendent and the mine foreman.

When such a system is adopted woe betide the miner who fails to post his place as required. Each miner should be made responsible for his work and keeping his place safe. He should be taught not to depend on another, but to look after his own safety.

Making every miner responsible for his own safety does not, however, relieve the mine officials of their duties in that matter. Every man employed in the mine is in charge of the mine foreman and his assistants. Failure on the part of an official to look after the safety of his men, or failure on the part of miners to regard their own safety are alike liable to prosecution. In the interest of safety, any such failure should be promptly reported to the district mine inspector, whose duty it would be to see that proper measures are taken to punish the aggressor and insure future safety.

Andrew O. Bain.

McKeesport, Pa.

Superintendent vs. Foreman

Proper organization gives no opportunity for conflict between a superintendent and his foreman. A wise superintendent, lacking practical underground experience, will depend on the judgment and experience of his foreman.

READERS of the columns in *Coal Age*, under the title "Problems of Operating Men," have undoubtedly noticed that many complaints are being registered by mine foremen, regarding the lack of experience on the part of numerous superintendents whose instructions they are supposed to follow. While it is quite likely that many of these complaints are unfounded, it is nevertheless true that the position of mine superintendent is often filled through favoritism.

One cannot but sympathize with a competent and conscientious foreman who is compelled to take orders from a superior in office who is not qualified by either education or experience to realize the dangers incident to underground operation, and who is too willing to take chances while he himself is safe on the surface.

There are many such men now in charge of important mining operations. It goes without saying that they should depend on and act according to the advice of their more experienced foremen. In most cases, I regret to say, this is not done and the average foreman is not given a free hand in the operation of the mine.

Too often it happens that a green superintendent will go about the mine, giving orders to the workmen without first consulting the foreman, much to the disgust and annoyance of the latter. Such a practice on the part of a superintendent destroys the discipline of the mine, as it detracts from the authority of the foreman and gives rise to trouble.

Superintendent's Rightful Authority in the Mine

One effect of this practice on the part of the superintendent is that the workmen quickly form the habit of going directly to him with their complaints, instead of taking them to the foreman. The superintendent listens to the complaint and promises to take the matter up with the foreman at the first opportunity. It is clear that no real harmony can exist between the superintendent and the foreman when this is done.

Where an operation is well organized, there is plenty of work for both the superintendent and the foreman, without either interfering with the duties of the other. Naturally, the superintendent is the one in authority over the entire operation. If he is wise his position will enable him to exert a powerful influence for good.

On the other hand, if he is indiscreet, domineering and meddlesome, his influence will create discord, as his personality and conduct will, to a large extent, influence every man in the organization. The habits and appearance of the superintendent will be reflected in the general appearance of the camp and about the work.

The mine superintendent, by reason of his position, exerts a great influence over the camp life and places his stamp on both the social and religious activities, which go so far to make the miner's life enjoyable. To be successful, he must be absolutely honest and fair in all his dealings, both with the company and his men, showing no favoritism but giving every man a fair and square deal.

Superintendent in Consultation With His Foreman

While the superintendent must plan and decide the general layout of the mine, if there is no regular engineering department to take charge of that work, he should do this in consultation with the mine foreman. The superintendent should make frequent visits to every working place in the mine and be familiar with all details of haulage, ventilation and drainage, which will enable him to discuss intelligently the many problems that confront the foreman.

To sum up briefly, there should be complete harmony between these two officials, if each is to have confidence in the other and order and discipline are to prevail. Where the superintendent shows a keen interest in the health, happiness and welfare of all the employees it will have its effect to make them loyal and industrious.

Many have the idea that the work of a mine superintendent is not difficult; but let me say, speaking from an experience of fifteen years, if a superintendent's duties are rightly performed he has a man's job and one requiring patience, energy and tact if the operations in his charge are to be brought to a high degree of efficiency. For that reason, operating companies should use extraordinary care in the selection of men for the important position of mine superintendent. W. A. G.

Indiana, Pa.

ANOTHER LETTER

NUMEROUS opinions have been given, by different writers, in discussing the question of the superintendent of a mine and his relation to the mine foreman. I would like to offer a few comments along the same line.

In the first place, let me say that before a man can be thought capable of supervising the operations of a mine as superintendent, he must be well fitted for the task. While he must be thoroughly familiar with the practical side of mining, it is equally important that he understand thoroughly the theory and principles of mining.

In my opinion, a mine superintendent should have passed an examination at least as thorough and difficult as that required of the mine foreman under him. Like the foreman, he should be required to have had a number of years' practical experience underground before being permitted to assume the duties of the office of mine superintendent.

Mining Success Depends on Co-operation

The first thing a wise superintendent will do when taking charge of a mine is to get in touch with the several branches of the work and the men in charge of the same, all of whom come under his direct supervision. In doing this he must seek to gain their hearty co-operation, on which the success of the undertaking depends.

The old saying has it that "A house divided against itself will fall," and in nothing is this more true than in the management of a coal mine. There must be harmony and unity of purpose and action on the part of all concerned; and the superintendent is the man in a better position to bring this about than any other person.

When a mine superintendent has caused his foreman and others to feel that he is ready at all times to listen to their suggestions and confer with them regarding any needed improvements or change of methods, he has taken a long step toward establishing good feeling among his men, and causing them to have a high regard for himself.

A superintendent must be an active man, never asking others to do what he would not care to do himself. He must keep his promises; his word to his men must be as good as his bond. Many fail in this respect and have lost the confidence of their men.

This reminds me of an incident that illustrates the difference between a superintendent who has the confidence of his men and another who has lost that regard. The superintendent of a certain mine had been laid by for a considerable time, owing to an accident that had befallen him. In the meantime, a man had been appointed in his place, as acting superintendent.

On recovery from his accident, this superintendent accompanied by the operator walked down to the mine. Arriving at the shaft, they found the acting superintendent in an altercation with one of the miners, who flatly refused to return to his work until he was paid what had been promised him.

CONFIDENCE IN A SUPERINTENDENT SENDS MINER BACK TO WORK

Recognizing the man as one who had long worked in the mine, the old superintendent called to him and asked him what was the matter. In reply to the miner's complaint, the superintendent said, "Ed, you go to work and I will look at your place as soon as I can get around; but that may be a week." Without a moment's hesitation, the miner said, "I will go in in the morning and go to work."

By past experience, the old miner knew that the superintendent would be as good as his word. He no longer refused to go to work, but was willing on a mere promise to again take up his tools in his place. The operator then went to the acting superintendent and told him how much he deprecated the treatment extended to the man, stating further that he hoped it would be a lesson to him in the future.

McKeesport, Pa. INSPECTOR.

THIRD LETTER

FOR some time past, I have been reading the various letters regarding superintendents, many of whom, it is claimed, do not possess the necessary ability and practical knowledge of mining to fill such a position. Unfortunately, these men have not been required to pass an examination like mine foremen and other officials.

In my judgment, our lawmakers are largely responsible for this lack of capability in mine superintendents. We do not have to go outside of Pennsylvania to find more than one "Silly Willie" or "Hill Billie," holding a position as superintendent of a mine. It is needless to say that these men have neither certificates, experience nor judgment that would enable them to successfully operate a coal mine, and yet they are supposed to supervise the mine foreman and instruct him regarding the work.

Since the change was made in the bituminous mine law of this state, it must be admitted that there are many mine foremen now in charge of mines who hold no certificates and are little better, if any, than the class of superintendents I have just described. It is sad to think that thousands of lives are daily in charge of such men.

Replying to the question of why such and such a foreman has not taken the examination and gotten a certificate, the answer usually given is, "Oh, the certificate won't make me any better. I could pass if I took the examination, but have been too busy to go before the board." Another will claim that he "was sick at the time." Perhaps, he will go next year.

These answers do not inspire any one with an idea that the man is capable. Take my word for it, the man is a fit subject to play a bass horn in a band, but not to take charge of a mine. As a fact, he is hiding behind that provision in the law that makes the judgment of the operator equal to that of an examining board.

No one doubts but that the operator who hires such a superintendent or foreman pays the price in the end. However, the worst of it all is the trouble that comes to the man who succeeds such a one in office. I speak from experience, having taken charge of a mine formerly presided over by an uncertified foreman.

My conclusion is that the man without a certificate holds a job down just as long as he can satisfy his employer with his gift of gab, or, in other words, can hoodwink him to believe that he is capable. When he leaves, it will be up to some man to try to make a mine out of a chopped up gobhole.

In my opinion, every mine official in charge of underground work should hold a certificate showing that he is qualified. The result would be fewer accidents, more complete extraction of the coal at a lower cost of production, better discipline in the mine, fewer prosecutions and a higher esteem for the work of the state examining board.

Let us continue to hope that the time is close at hand when the law that places the judgment of one individual—a coal operator—on a par with a competent examining board, will be wiped from the statute books. To this end, mine officials must pull together. If either the superintendent or the mine foreman is incapable the only thing to do is change or quit.

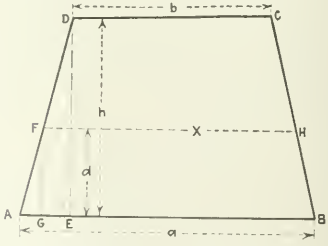
Mayport, Pa. JAMES THOMPSON.

Inquiries Of General Interest

Depth of Water in Airway

Ingenious Solution of the Problem to Find the Depth of Water in an Airway Having a Trapezoidal Cross-section, the Airway Being Half-full

KINDLY permit me to present a third solution to the problem of finding the depth of water in an airway whose cross-section is in the form of a trapezoid and the airway half-filled with the water. The two previous solutions of this problem were given in



CROSS-SECTION OF AIRWAY

Coal Age, April 15, p. 676, and June 23, p. 1125. My solution is as follows:

Denote the bottom and top widths of the airway by a and b, respectively, and the width at the surface of the water by x; and call the height of the airway h and the depth of the water d. Then,

$$x = \sqrt{\frac{a^2 + b^2}{2}} = \sqrt{\frac{9^2 + 6^2}{2}} = 7.648 + ft.$$

The depth of the water is then found by substituting this value of x in the following equation

$$d = \frac{h(a - x)}{a - b} = \frac{6(9 - 7.648)}{9 - 6} = 2.704\ ft.$$

I would like to ask if this solution is correct. A. D.

Knoxville, Ia.

The solution offered by this correspondent is both correct and ingenious. Its simplicity recommends its use in preference to either of the two solutions given previously. The correspondent should, however, have shown the development of the formulas he has used, which is as follows:

Referring to the accompanying figure, let A B C D be the trapezoid in question, the surface of the water when this section is half-filled being indicated by the line FH.

Now, draw the lines DE and FG perpendicular to AB, forming two similar triangles AGF and AED. It is evident that AG is equal to $\frac{1}{2}(a - x)$; and $AE = \frac{1}{2}(a - b)$. Also, $FG = d$ and $DE = h$.

Substituting these values, we have, from the similar triangles mentioned,

$$h : d :: a - b : a - x$$

Hence, $$h = \frac{a-b}{a-x}\,d \qquad 1.$$

Again, since the water half-fills the section, the area *ABCD* is twice the area *ABHF*, and we have

$$h\left(\frac{a+b}{2}\right) = 2d\left(\frac{a+x}{2}\right) = d(a+x) \quad 2.$$

Now, substituting for h its value in Equation 1, simplifying and remembering that the product of the sum and difference of two factors is equal to the difference of their squares, we have, finally,

$$a^2 - b^2 = 2(a^2 - x^2)$$

and $$x = \sqrt{\frac{a^2+b^2}{2}} \qquad 3.$$

Again, from Equation 1, we have for the depth of the water in the airway

$$d = \frac{a-x}{a-b}\,h \qquad 4.$$

It will be observed that Equations 3 and 4 are the ones used by the correspondent in the foregoing solution.

Examination Questions Answered

Examination. Mine Foremen and Firebosses, Lexington, Ky., May 30, 1921

(Selected Questions)

QUESTION—*What are the causes of blownout shots and what effect does such a shot have in a dusty mine?*

ANSWER—Several things may cause a shot to blow its tamping, which occurs whenever the line of least resistance corresponds to the axis of the hole. In that case the shothole has not been properly located so as to give the powder an opportunity to perform its work in breaking down the coal. If too quick a powder is used or the hole is overcharged the same result may happen. The latter condition, however, is more apt to cause what is known as a "windy shot." The same effect is produced when a shot seams out through a soft stratum of the coal. In either case, much of the force of the blast is expended on the mine air instead of being absorbed in the breaking down of the coal. If the diameter of a shothole is too large, it may result in too great a concentration of the charge. In that case, if the hole is not deep or not sufficiently tamped the shot may blow the tamping from the hole. A windy shot may result from using two grades of powder in the same hole, or from firing two shots at the same time, in a close place. The gases produced by the first shot, in a close place, will be fired by the flame of the second blast, thereby causing a local explosion. The effect is similar to an overcharge of powder.

QUESTION—*State fully the dangers arising from coal dust and what you would do to prevent accidents from the same.*

ANSWER—Where dust is allowed to accumulate at the working face or on the roads and traveling ways in a mine, there is always danger of a dust explosion by reason of the dust being raised and carried in the air current to such an extent that the air becomes explosive. In order to prevent accidents under such conditions, no accumulations of dust should be permitted at the working face, and all roads, traveling ways and airways should be cleaned at regular short intervals. Only permissible powder should be used and strict rules enforced in regard to the firing of shots. The danger of dust is increased if gas is present even in small quantities. There should be a regular and ample supply of air in circulation, and the mine should be examined and inspected by competent firebosses and safety inspectors, whose duty it is to inspect every working place while the men are at work and prevent any unsafe practices.

QUESTION—*With a pressure, at sea level, of 14.7 lb. per sq.in., and a barometer of 30 in., how far can you set a pump from water, vertical measurement, and not use rods?*

ANSWER—Assuming the pump is located at sea level and subject to a barometric pressure of 30 in., a common rule is to limit the suction head of the pump, in feet, to $\frac{9}{10}$ of the barometric pressure in inches. Thus, for a barometric pressure of 30 in., a pump should not be located more than $0.9 \times 30 = 27$ ft. above the water level in the sump, measured vertically.

QUESTION—*(a) Assuming a sump 20 ft. long, 10 ft. wide and 10 ft. deep is full of water, how many gallons will it hold? (b) How long will it take a pump, with a cylinder 4 in. in diameter and a 6-in. stroke, making 60 strokes a minute, 100 lb. pressure, to pump the sump dry?*

ANSWER—(a) The cubic capacity of this sump is $20 \times 10 \times 10 = 2{,}000$ cu.ft. Then, estimating 7.48 gal. per cu.ft., the capacity of the sump is $7.48 \times 2{,}000 = 14{,}960$ gal.

(b) A pump making 60 strokes per minute, the length of stroke being 6 in. or 0.5 ft., has a piston speed of $60 \times 0.5 = 30$ ft. per min. The piston displacement of a 4-in. pump running at this speed is $30(0.7854 \times 4^2) \div 144 = 2.618$ cu.ft. per min. Assuming a water-end efficiency of 85 per cent, the discharge of this pump is $0.85 \times 2.618 \times 7.48 = 16.64$ gal. per min. Therefore, the time required for this pump to empty the sump is $14{,}960 \div 16.64 =$ say 900 min., or 15 hr.

QUESTION — *(a) What precaution would you take as a mine foreman, in mines where electric power is used, to protect the employees from accident? (b) What voltage is the safest, 250 or 500 volt?*

ANSWER—(a) Assuming that the electrical installations have been made by a competent electrical engineer who is fully acquainted with mining conditions, and that the wires have been properly hung and safeguarded in accordance with the mining laws and so as to afford the needed protection of workmen against contact with live wires where it is necessary for men and animals to pass under or near the wires, it is the duty of a mine foreman to see that proper danger signals are used and notices posted at all points where danger exists in the mine, and to see that workmen are forbidden to tamper with the wires or employ any unsafe practices in connection with the operation of electrical machines, such as coal cutters, drills, pumps, fans and other machinery. Any violations of these rules should be promptly and suitably punished.

(b) It is often claimed that fewer accidents occur in the use of a 500-volt circuit than where 250 volts are employed, it being argued that men are more careful to avoid contact with a wire charged with the higher voltage. It cannot be denied, however, that a 500-volt circuit is more fatal to life when contact is made with a live wire than a 250-volt circuit, which is therefore generally safer for use in mines. Where it is necessary to employ a high potential for transmission of the current long distances in mines, the conductor should be either carried on the surface to a point directly over where the power is to be used in the mine, or the wires should be hung in the air-course and kept off from roads and travelingways.

QUESTION—*What precautions would you take in approaching old and abandoned workings?*

ANSWER—Old abandoned workings are liable to be filled with gas or water and become dangerous if an entry or room should break into the old works, or the water or gas be tapped with a drill. No reliance should be placed on the supposed accuracy of maps and surveys, which may prove inaccurate. When approaching old workings, a single entry not exceeding 8 or 10 ft. in width should be driven. A drillhole should be kept five or six yards in advance of the face of the heading and flank holes should be drilled at regular short intervals in each rib, making an angle of about 45 deg. with the heading. Only safety lamps should be used by the men driving the heading. A sharp watch should be kept for the first appearance of gas or water seeping through the strata, and small wooden plugs should be ready for instant use in case a drill hole tapped water or gas.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

ENCOURAGING features in the industrial situation as emphasized by the August survey of the U. S. Employment Service are the generally bountiful harvest, indications of improvement in iron and steel, marked re-employment in railroad occupations and the continued strength of textiles, particularly of cottons.

A marked increase in industrial optimism is noted, business men generally inclining to the belief that the worst part of the depression is over and that the future will witness improvement of a healthy and lasting character, even though it be somewhat slow in developing.

Industrial classifications showing increases in employment are food and kindred products, textiles and their products, iron and steel and their products, leather and its finished products; stone, clay and glass products; metals and metal products other than iron and steel; tobacco manufactures, and railroad repair shops.

Statistics are gathered each month by special agents in sixty-five principal industrial centers and transmitted by telegraph. In all, 1,428 firms each usually employing more than 500 workers, or a total of 1,600,000, are comprised in the survey. On Aug. 31 these 1,428 firms had 16,269 more employees on their payrolls than they carried on July 31, an increase of 1.08 per cent.

Below are given in tabular form the figures by industries, and, on the map, the locations of decreases and increases in August employment as compared with that in July.

Mid-Atlantic District Optimistic

Reports from thirty cities in the Middle Atlantic district indicate a more general feeling of optimism than has prevailed for several months. Here and there signs of improvement in the steel industry are evident. Building construction is fairly under way in all parts of the district. Railroads are re-employing men laid off several months ago and are beginning to repair equipment. Textiles, shoes, and clothing are fairly active.

Textiles Gain in New England

In the New England district textiles have shown a decided improvement, with bright prospects for woolens during the entire winter. An increase in building operations is indicated by reports. Shoes and leather are on a basis of about 70 per cent.

Southern Roads Take on Men

Fifteen railroad companies with headquarters in the South Atlantic district report a total of 225,912 employees July 31, compared with 205,644 June 30, a gain of 20,268. Three hundred and ten textile mills in Virginia, North Carolina, South Carolina and Georgia, which had 96,134 employees July 15, reported a total of 99,005 Aug. 15, an increase of 2,871.

North Central Districts Speed Up

Better business conditions noted in the North Central districts are directly traceable to the harvest and the movement of crops. Flour mills are operating at practically full capacity, railroad repair shops continue to increase their forces, packing plants are busy and retail sales have improved. The work-clothing industry has shown marked improvement, and boots and shoes have been increasingly busy since early spring. Some of the larger manufacturers of low-priced automobiles are operating at full capacity, but with considerably fewer men than they had in January and February, 1920. Furniture has picked up and is now operating at about 80 per cent. On the other hand, implement and equipment lines are much curtailed.

Industry Below Normal in Far West

Industry in general continues below normal in the Pacific division, though unemployment has been slightly relieved by increased seasonal activities. Lumber is operating 65 per cent of normal, with many mills and logging camps closed. Some food-preserving plants are operating on a restricted basis, due to market conditions. Increased building activities are observable in some cities. Farm labor demand is everywhere below seasonable average, though fruit harvesting is expected to require extra help.

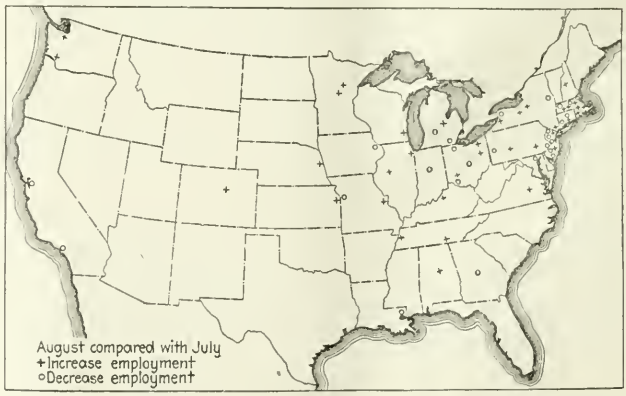
INDUSTRIES REPORTING A DECREASE IN EMPLOYMENT IN AUGUST, 1921

Industry	Amt. of Dec.	P.c. Dec.	Weight*
Liquors and beverages	130	8.4	0.09
Vehicles for land transportation	5,520	3.06	11.4
Lumber and its manufacture	639	2.8	1.4
Miscellaneous	6,604	2.4	17.5
Paper and printing	701	1.4	3.2
Chemicals and allied products	644	0.9	4.5
Total	14,238		

INDUSTRIES REPORTING AN INCREASE IN EMPLOYMENT IN AUGUST, 1921

	Amt. of Inc.	P.c. Inc.	Weight*
Food and kindred products	9,450	7.6	8.7
Stone, clay and glass	660	5.9	0.77
Railroad repair shop	3,423	5.7	4.2
Metals and metal products other than iron and steel	3,877	5.4	4.9
Leather and its finished products	2,336	4.4	3.6
Tobacco manufacture	1,238	4.0	2.1
Iron and steel products	6,726	2.2	20.1
Textiles and products	2,797	1.07	17.2
Total	30,507		

* Per cent employed August 31 to total reported employed in 14 groups.



63 Companies Submit Bids on Bituminous Steam Coal for Navy Department

BIDS on bituminous steam coal were opened by the Navy Department on Sept. 6, after the original offers made Aug. 23 had been returned to the bidders because of the elimination of a clause making the bids subject to increases or decreases in wage scales. The list of bidders given below are referred to in the text by number.

1. Alden Coal Mining Co., New York City.
2. Berwind-White Coal Mining Co., New York City.
3. C. G. Blake Co., Cincinnati, Ohio.
4. Walter Bledsoe & Co., Terre Haute, Ind.
5. Wm. C. Atwater & Co., Inc., New York City.
6. W. H. Blight, Elmira, N. Y.
7. Boehmer Coal Co., St. Louis, Mo.
8. W. H. Bradford & Co., Inc., Philadelphia, Pa.
9. Castner, Curran & Bullitt, New York City.
10. Chesapeake & Ohio Coal Agency, Boston, Mass.
11. Chicago, Wilmington & Franklin Coal Co., Chicago.
12. Chesapeake & Ohio Coal & Coke Co., New York City.
13. Chicago-Springfield Coal Co., Springfield, Ill.
14. Coalfield Fuel Co., Boncar, W. Va.
15. Commercial Coal Co., New York City.
16. Crerar, Clinch & Co., Chicago.
17. Crescent Fuel Co., New York City.
18. Crozer-Pocahontas Co., Philadelphia, Pa.
19. Davis Coal & Coke Co., Baltimore, Md.
20. Dexter & Carpenter, Inc., New York City.
21. Eastern Coal & Export Corp., Richmond, Va.
22. Eastern Fuel Co., New York City.
23. Ehrlich-Pierce Coal Co., Chicago.
24. Ender Coal & Coke Co., Chicago.
25. Eyre Fuel Co., New York City.
26. Iron Trade Products, Pittsburgh, Pa.
27. Fayette Smokeless Fuel Co., Mt. Hope, W. Va.
28. Flat-Top Fuel Co., Inc., Bluefield, W. Va.
29. Gauley Mountain Coal Co., Richmond, Va.
30. H. B. W. Haff, New York City.
31. Hall Bros., Baltimore, Md.
32. Hedstrom-Schenck Coal Co., Chicago.
33. International Coal Corp., Philadelphia.
34. Jenkins & McCall Coal Co., Baltimore, Md.
35. Lake & Export Coal Sales Corp. of Ill., Chicago.
36. Logan Coal Co., Philadelphia.
37. Majestic Coal Co., New York City.
38. W. A. Marshall Co., New York City.
39. Maryland Coal & Coke Co., Philadelphia, Pa.
40. Wassen Coal Co., Chicago.
41. Metropolitan Coal Co., Boston.
42. Morgantown Coal Co., Morgantown, W. Va.
43. Nottingham & Wren Co., Norfolk, Va.
44. O'Gara Coal Co., Chicago.
45. Old Ben Coal Corp., Chicago.
46. Peabody Coal Co., Chicago.
47. Pocahontas Fuel Co., New York City.
48. Producers Fuel Co., Pittsburgh, Pa.
49. Sangamon County Mining Co., Chicago, Ill.
50. L. A. Snead Co., Washington, D. C.
51. Standard Coal Sales Co., Inc., New York City.
52. Sterling-Midland oal Co., Chicago.
53. Thorne, Neale & Co., Philadelphia.
54. J. H. Weaver & Co., Philadelphia.
55. West Kentucky Coal Co., Paducah, Ky.
56. Weston Dodson & Co., Bethlehem, Pa.
57. Whitley & Foedisch, Philadelphia.
58. Morrisdale Coal Co., Philadelphia.
59. Georges Creek & Phœnix Mining Corp., Philadelphia.
60. Great Lakes Coal & Coke Co., Chicago, Ill.
61. Imperial Coal Corporation, New York City.
62. Roberta Coal Co., Johnstown, Pa.
63. Quemahoning Coal Co., Somerset, Pa.

SCHEDULE 8431—Class 258, 30,000 tons steaming coal, as follows:

A. For delivery f.o.b. vessels or barges under chutes at piers, N. Y. Harbor—Bid 20, $7.14 (no tax); bid 30, 15,000 tons, $7.86; bid 36, 15,000 tons, $8.11; bid 38, $7.12; bid 51, $6.39; bid 54, $7; bid 61, 15,000 tons, $6.33.

B. For delivery f.o.b. suitable lighters or barges alongside vessel, N. Y. Harbor, or at the Navy Yard Brooklyn—Bid 15, $6.89; bid 20, $7.54 (no tax); bid 38, $7.38; bid 51, $6.69; bid 54, $7.53.

C. For delivery in the harbor of New York City, in lighters to be placed alongside ships of the Navy, coal to be unloaded, stowed and trimmed in their bunkers with use of ships' winches—Bid 15, $7.84; bid 51, $7.75; bid 54, $8.63.

Class 259, 9,000 tons of steaming coal:

A. For delivery f.o.b. vessels or barges under chutes at piers, Philadelphia—Bid 15, $6.49; bid 20, $6.63 (no tax); bid 26, 2,000 tons, $6.72; bid 36, $7.93; bid 38, $6.56; bid 54, $6.43; bid 61, $6.15.

B. For delivery f.o.b. suitable lighters or barges alongside vessel in the harbor of Philadelphia or at the Navy Yard, Philadelphia—Bid 15, $6.89; bid 20, $6.83 (no tax); bid 26, $7.26; bid 38, $6.81; bid 54, $6.59; bid 61, $6.40.

C. For delivery f.o.b. cars at Navy Yard, Philadelphia—Bid 15, $6.59; bid 20, $7.21 (no tax); bid 26, $7.32; bid 36, $8.18.

D. For delivery in the harbor of Philadelphia, in lighters to be placed alongside ships of the Navy, coal to be unloaded, stowed and trimmed in their bunkers with use of ships' winches—Bid 15, $7.69; bid 54, $7.39.

Class 260, 900 tons steaming coal:

A. For delivery f.o.b. U. S. naval barges, Baltimore, for shops at the Naval Academy, Annapolis, Md.—Bid 20, $6.56 (no tax); bid 26, $6.65.

B. For delivery in supplier's barges alongside ships or alongside wharf at the Naval Academy, Annapolis, Md.—Bid 20, $7.16 (no tax); bid 26, $7.81.

Class 261, 240,000 tons steaming coal:

A. For delivery f.o.b. vessels or barges under chutes at respective piers, Hampton Roads, Va., and or into navy storage at naval fuel depot, Sewall's Point, in such quantities and at such times as called for—Bid 3, $6.16 for 60,000 tons only; bid 5, 60,000 tons at $5.18 gross ton, $90,000 tons at $5.23 and 9,000 tons at $5.28; bid 10, 25,000 tons, $5.60 and 70,000 tons at $6; bid 18, 60,000 tons, $5.88, f.o.b., Lamberts Point; bid 20, $5.84, f.o.b. Lamberts Point (no tax); bid 27, 120,000 tons $5.43; bid 26, 16,000 tons, $7.29; bid 47, $5.03 (no tax); bid 21, 50,000 tons, $5.60, for Newport News only; bid 9, $5.04; bid 12, 7,500 tons, $5.88, Sewall's Point or Newport News.

B. For additional charges on all work done, if required, on reasonable notice, in coaling from navy barges, trimming and stowing into bunkers of government-owned vessels not in position to handle their own coal, as follows:

In Hampton Roads, Va., in regular bunkers or side bunkers, in Newport News harbor, Va., in regular bunkers or side bunkers, in Norfolk harbor, Va., in regular bunkers or side bunkers—Bid 26, $1.65 straight time and $2.475 overtime.

SCHEDULE 8432—Class 262, for delivery f.o.b. hopper bottom cars at the submarine base, Submarine Base, Connecticut:

A. Three hundred tons run-of-mine coal—Bid 17, $8; bid 22, $7.87; bid 30, $3.35, f.o.b. net; bid 33, $8.44; bid 26, $7.55, $7.88, $8.15, $8.62, $7.70 and $7.98; bid 42, $7.67, $8.38, $8.18, $7.68, $8.10, $9.78 and $7.57; bid 56, $8.75; bid 62, $7.61; bid 63, $8.60.

Class 263, for delivery f.o.b. bins (truck delivery) to Naval Hospital, Chelsea, Mass.:

A. Five thousand tons run-of-mine coal—Bid 22, $7.87, f.o.b.; bid 30, $3.35, f.o.b. net; bid 41, $9.97; bid 56, $11.75; trimming 25 cents additional.

Class 266, for delivery f.o.b. hopper bottom cars to naval ammunition depot, Iona Island, N. Y.:

A. Eighteen hundred tons run-of-mine coal—Bid 6, $5.85; bid 17, $6.91; bid 15, $7.26; bid 20, $6.36 and $6.66, no tax; bid 22, $6.75; bid 30, $3.35 net, f.o.b.; bid, 33, $7.29; bid 26, $6.71, $6.87, $7.11, $7.47, $7.76 and $6.99; bid 42, $6.60, $6.69, $7.26, $7.04, $6.70, $6.98, $8.66 and $6.59; bid 25, $6.72; bid 56, $7.60; bid 59, $3.25, f.o.b.; bid 61, $6.56; bid 58, $3; bid 62, $6.71; bid 63, $7.60.

Class 267, for delivery in suitable 600-ton lighters without hatch covers alongside at the Navy Yard, Brooklyn, N. Y.:

A. Forty thousand tons run-of-mine coal—Bid 1, $7.50; bid 2, $7.25; bid 15, $6.47; bid 20, $6.39 and $6.73 (no tax); bid 22, $6.26 and $5.81; bid 30, 20,000 tons, $7.25 net; bid 37, October, $6.69; November to March 31, $7.37; bid 26, $6.51, $6.69, $6.93, $7.63, $6.51 and $6.80; bid 25, $6.54; bid 51, $6.75; bid 53, $6.59; bid 54, $7.23; bid 56, $7.50; bid 57, $6.28; bid 58, $6.50; bid 63, $7.15.

B. One thousand tons nut and slack coal—Bid 56, $8.50; bid 61, $6.25.

Class 268, for delivery f.o.b. hopper-bottom cars at navy supply depot, South Brooklyn, N. Y.:

A. Ten thousand tons, run-of-mine coal—Bid 6, $5.85; bid 17, $6.61; bid, 15, $7.24; bid 20, $6.48 and $6.82 (no tax); bid 22, $6.75; bid 30, $3.45 net f.o.b.; bid 33, $7.54; bid 38, $7.40, $6.84 and $6.94; bid 26, $6.83, $7.01, $7.23, $8 and $7.15; bid 48, $6.95; bid 42, $6.41, $6.31, $8.66, $6.98, $7.26, $6.42 and $7.04; bid 25, $6.95; bid 53, $7.05; bid 54, $7.51; bid 56, $7.86; bid 59, $3.19 f.o.b.; bid 58, $7.15; bid 53, 5,000 tons, $3.00 f.o.b.

Class 269 for delivery f.o.b. hopper-bottom cars to naval airship construction and experiment station, Lakehurst, N. J. (government siding):

A. Ten thousand five hundred tons run-of-mine coal—Bid 6, $6.13; bid 8, $7.50; bid 17, $7.20; bid 19, $6.85 and $7.65; bid 15, $7.29; bid 20, $6.64 and $6.94 (no tax); bid 22, $7.03 and $6.50; bid 30, $3.50 net f.o.b.; bid 33, $7.57; bid 31, $6.93; bid 26, $6.69; $6.87, $7.09, $7.76 and $6.97; bid 48, $6.98; bid 42, $6.59, $7.54,

$7.32, $6.70, $7.26, $8.94, $6.59 and $6.69; bid 57, $6.98; bid 54, $7.56; bid 56, $7.89; bid 59, $3.25; bid 61, $6.84; bid 58, $3; bid 62, $7.15; bid 63, 5,000 tons $6.85.

B. Five hundred tons nut and slack coal—Bid 6, $5.88; bid 56, $8.89; bid 69, $6.67.

Class 272, 74,000 tons run-of-mine coal—Bid 22, $5.75 and $5.39.

1a. For delivery in lighters, f.a.s. wharf at the Navy Yard, Philadelphia—Bid 19, $6.01 and $6.82; bid 15, $6.79; bid 20, $5.89 and $6.24 (no tax); bid 22 plus 3 per cent; bid 38, $6.21, $6.31 and $6.67; bid 26, $5.86, $6.05, $6.26, $6.93 and $6.15; bid 25, $6.19; bid 53, $6.26; bid 56, $7.11; bid 57, $5.69 at coal piers; bid 58, 30,000 tons, $5.75; bid 63, 50,000 tons $6.45.

2a. For delivery f.o.b. hopper bottom cars, navy yard Philadelphia—Bid 17, $6.35; bid 19, $6.93; bid 15, $6.59; bid 20, $5.94 and $6.24, no tax, bid 33, $6.85; bid 36, 30,000 tons $7.68; bid 26, $7.04; bid 48, $6.28; bid 42, $6.17, $6.84, $6.62, $6, $6.56, $8.24 $5.89 and $5.99; bid 25 $6.27; bid 53, $6.35; bid 56, $7.17; bid 57, $5.94; bid 59, $3.36 f.o.b.; bid 58, 30,000 tons, $7.23.

3a. F.o.b. barges under chutes, Philadelphia—Bid 19, $5.86 and $6.67; bid 15, $6.49; bid 22, plus 3 per cent; bid 36, $7.43; bid 26, $5.37, $5.55, $5.77, $6.45 and $5.65; bid 25, $6; bid 56, $6.91; bid 61, $6.14 and $5.89; bid 58, 30,000 tons 5.23; bid 63, $6.30.

Class 273, 36,000 tons run-of-mine coal—Bid 22, $5.75 and $5.30.

1a. For delivery f.a.s. Navy Yard, Washington, in suitable canal boats or barges—Bid 22, plus 8 per cent.

2a. For delivery f.o.b. dump-bottom cars on tracks in the Navy Yard, Washington—Bid 17, $6.35; bid 19, $6.12 and $6.93; bid 27, $5.98; bid 33, $6.85; bid 31, $6.23; bid 38, $7.12, $6.56 and $6.66; bid 39, $7; bid 26, $6.15; $6.37, $7.04, $7.16, $5.97 and $6.24; bid 48, $6.28; bid 42, $5.94 and $6.30; bid 25, $6.27; bid 21, $5.98; bid 9, $5.42; bid 12, $6.64 (with tax), $6.54 (no tax); bid 56, $7.17; bid 57, $5.94; bid 59, $3.47 f.o.b.; bid 61, 12,000 tons, $6.14; bid 62, $6.53.

Class 274. (A), 900 tons run-of-mine coal—Bid 20, $7.29 and $7.59 (no tax); bid 34, $8.48; bid 31, $7.64; bid 26, $7.36; $7.54, $7.78, $8.43 and $7.66; bid 56, $10.89.

Class 275, for delivery f.o.b. barge alongside sea wall, Naval Academy, Annapolis, Md., where directed to be discharged by the government:

A. Nineteen thousand eight hundred tons run-of-mine coal—Bid 19, $6.46 and $7.27; bid 20, $6.40 and $6.75 (no tax); bid 34, $7.48; bid 31, $6.58; bid 38, $7.12, $6.56 and $6.66; bid 26, $6.33, $6.51, $6.75, $7.40 and $6.63; bid 56, $10.89; bid 63, 10,000 tons, $7.25.

Class 276, for delivery f.o.b., hopper-bottom cars at the Naval Hospital, Norfolk (Portsmouth), Va.:

A. Two thousand tons run-of-mine coal—Bid 5, 2,000 tons, $5.73; bid 18, $3.08 f.o.b.; bid 20, $6.43 (no tax); bid 28, $6.37 (no tax); bid 26, $7.26; bid 42, $8.80, $9.08, $8.86 and $10.48; bid 43, $6.60; bid 47, $5.52 (no tax); bid 21, $6.09 and $5.81; bid 50, $6.14; bid 9, $5.53; bid 56, $7.28; bid 62, $8.58.

Class 277, for delivery at the navy yard, Norfolk (Portsmouth), Va.

A. 25,000 tons run-of-mine coal:

1a. For delivery f.o.b. cars in Navy Yard—Bid 5, 12,500 tons at $5.68 and 12,500 tons at $5.73; bid 18, $3.08 f.o.b.; bid 20, $6.43 (no tax); bid 27, $5.93; bid 29, $5.94; bid 28, $6.37 (no tax); bid 26, $7.26; bid 42, $8.83, $9.08, $8.86, $8.80 and $10.48; bid 43, $6.35; bid 47, 5.52 (no tax); bid 21, $6.09 and $5.81; bid 50, $6.14; bid 9, $5.53; bid 56, $7.28.

2a. For delivery f.o.b. barge at Navy Yard water front—Bid 26, $7.66; bid 43, $6.35.

3a. For delivery, stored, piled and trimmed in bins at the Navy Yard at the contractor's expense—Bid 5, 12,500 tons, $6.58, and 12,500 tons $6.63; bid 43, $7.10.

Class 278, for delivery f.o.b. hopper-bottom cars at the naval operating base, Hampton Roads, Va.

A. Twenty-five thousand tons run-of-mine coal—Bid 5, 12,500 tons $5.68 and 12,500 tons, $5.73; bid 18, $3.08 f.o.b.; bid 14, $6.39; bid 27, $5.93; bid 28, $6.37 (no tax); bid 39, $3.80, f.o.b.; bid 26, $7.26; bid 42, $9.18, $8.96, $8.90 and $10.58; bid 43, $6.60; bid 21, $6.09 and $5.81; bid 50, $6.14; bid 9, $5.53; bid 56, $7.28.

B. Five hundred tons nut and slack coal—Bid 28, $6.37 (no tax); bid 39, $2.40 f.o.b.; bid 43, $5.85; bid 50, $6.14; bid 56, $6.74.

Class 278½, for delivery f.o.b. mines for shipment to naval training station, Great Lakes, Ill., under government bills of lading:

B. Sixteen thousand tons of screenings—Bid 4, $2.25; bid 13, $2.80; bid 11, $2.24 f.o.b. mines; bid 16, $2.128; bid 24, $2.13; bid 23, $2.11 gross ton and $2.18 net; bid 32, $4.32 and $4.23; bid 35, date to Jan. 1, $1.568, Jan. 1 to March 31, $2.24; bid 40, $9.89; bid 49, $1.50; bid 44, $1.85 net; bid 45, $2.35; bid 46, $2.02; bid 52, $2.52 and $2.24; bid 7, $2.18; bid 60, $2.51; bid 75, $1.40.

U. S. Fuel Co. Wins National First-Aid Cups; New River Co. Mine Rescue Contest

THE International First-Aid and Mine-Rescue Meet, at the Coliseum, St. Louis, Mo., ended Sept. 3 with a banquet at the Coliseum and with the bestowal of awards and prizes in the first-aid and mine-rescue contests conducted in the Coliseum Sept. 2 and 3.

The first prizes in the first-aid contest, a bronze cup, a silver cup and a gold medal, were awarded to the United States Fuel Co. team of Westville, Ill., Stephen Shaffer, captain. The second prizes, a silver cup and silver medal, were won by the team of the Clinchfield Coal Corporation, of Wilder, Va., William E. Wolfe, captain. Third prizes, a silver cup and a bronze medal, were won by the Superior Coal Co. team of Gillespie, Ill., Charles Miller, captain.

In the International Mine-Rescue contest, the first prizes, three cups and a gold medal, were won by the New River Co. team of McDonald, W. Va., Fred Lamb, captain. Second prizes, a silver cup and a silver medal, were won by the H. C. Frick Co. team, Leisenring, Pa., Stanley J. Comiskey, captain. Third prizes, a silver cup and a bronze medal, went to the Benton district team, Benton, Ill., Robert Weir, captain.

In the combination mine-rescue and first-aid contest the teams winning cups were: First, Independent Coal & Coke Co. team, Salt Lake City, J. R. Roaf, captain; second, Benton district team, Illinois; third, Owl Creek Coal Co. team, Gebo, Wyo., William Knowles, captain.

Seventeen state awards in first-aid contests were made. The Illinois championship was held by the Westville team, which also won the general championship. The Missouri award was won by the team of the Pierce-Hess Coal Co., Bevier. There were six state awards in mine-rescue championships, the Benton district team receiving the Illinois award.

At the banquet the speakers were Mayor Kiel, W. D. Ryan of the U. S. Bureau of Mines; Frank Farrington, president of the Illinois district of the United Mine Workers of America; Lieutenant-Governor Lloyd, who said he began life as a mine worker; and Representative M. E. Rhodes of the Thirteenth Missouri district.

Representative Rhodes, speaking of the West Virginia mine warfare, said that "unless there is an improvement, the Federal Government sooner or later, in order to protect the public, will be forced to take a hand in the settlement of disputes between labor and capital."

In the course of the mine-rescue contest, Sept. 3, a member of one of the teams was overcome by fumes, and was revived by genuine rescue work. He later went back into the contest. It was said that his mask slipped, exposing him to the fumes.

Director Bain, of the Bureau of Mines, in the course of his address, made use of a particularly happy figure in explaining the function of the Bureau of Mines in safety work. He explained the steps of a process in the making of sulphuric acid. He likened the Bureau of Mines to the catalyzer and the operators and the mine workers to the reagents. When the reagents are brought together in the presence of the catalyzer, the results desired are obtained.

One of the impressive features of the meet was the ceremonial in which a formal oath to universal safety was pledged. An indication of the widespread interest in the safety movement was the presence in the contest of representative of Mexican and British Columbian miners.

The address of T. T. Brewster, in which he explained what the mine operator can do for safety and health in and about mines, and the address of D. A. Frampton, the official representative of the United Mine Workers of America, were of particular interest. Others who delivered formal addresses were the Lieutenant Governor of Missouri; the Mayor of St. Louis; G. W. Traer, of Chicago; Colonel J. A. S. Ritson, Department of Mines of Great Britain; George S. Rice, chief mining engineer of the U. S. Bureau of Mines; J. W. Paul, U. S. Bureau of Mines; Robert Strachen, representing the Minister of Mines of British Columbia; Robert M. Medill, director Department of Mines and Minerals of Illinois; A. J. Moorshead, of Chicago.

Glen Alden Explains Why It Cannot Work Shallow Mines Under Kohler Law or Accept Fowler Provisions

IN REPLY to criticism that the Glen Alden Coal Co. should accept the provisions of the Fowler bill, under which it would pay $1,500,000 yearly and mine under the direction of three commissioners, that company, through William W. Inglis, its president, made on Sept. 5 the following statement:

It seems to be seriously contended that if this company were to accept the terms and provisions of the so-called Fowler bill it would not be necessary for us to close down any of our operations. With this we cannot agree. From a business standpoint it is out of the question for this company to accept the terms of the Fowler bill, for it is impractical of application to our conditions.

The Fowler bill should not have been so drawn as to apply to the collieries the operation of which cause no surface damage. At present, if accepted by us, it would apply to all of our operations and we would have to pay the tax on all the coal we produce, although the mining of most of it will not result in any such damage. We now pay taxes on our coal properties of upward of $2,500,000 a year, and this tax provided by the Fowler bill applied to all coal produced by us would amount to approximately $1,500,000 per year more.

If limited to operations causing surface damage, the tax would not exceed one-fourth of this sum.

None of the other large companies will accept the bill because they can continue most of their operations without violating the Kohler bill. We would, therefore, pay practically the entire tax, all of which would have to be absorbed in our cost of production. It could not, in competition with the coal of other companies who do not pay such taxes, be added to the price of the coal.

Believe Kohler Bill to Be Unconstitutional

It is confidently believed that the Kohler bill is unconstitutional and will be held so by the courts. In that event we having alone accepted the bill would alone be required to pay the tax, and for all time.

The fund to be raised by this tax is to be applied to the payment of damages wherever they occur in the anthracite region, the substantial effect of which would be that this company would have to assume the payment of practically all the damage done by all the companies. It would also mean that the large damage done by other companies during the past six years would be paid for by us, although, as is so well known, during such time we have been repairing properties affected by subsidence due to our mining.

Moreover, there is nothing in the Fowler bill which would warrant us in believing that an acceptance of the bill and the payment of the tax imposed would give us the right to continue second mining in this city [Scranton] and vicinity. Whether or not it could be done would depend upon the arbitrary decision of a commission composed of three men who are relatively unacquainted with our coal mining operations, and who could, if their judgment so indicated, decline to allow any second mining to be done by us except under prohibitive conditions. In other words, it takes the management of the properties largely from the officials of the company, and puts it in the hands of the commission.

There is again no assurance that acceptance of the Fowler bill would relieve us of the penalties of the Kohler bill. Under Section Sixteen of the former, the owner or operator is only relieved from penal action if the mining operations, in pursuance of the order of the commission, are done in a careful and skillful manner. In almost any instance of surface subsidence a claim that the mining which caused the same was done in a careless and unskillful manner might be maintained if an arrest of the officials was made therefor. In other words, it is highly probable that to do second mining under the provisions of the Fowler bill, even with the assent of the commission, would subject the officials of the company to the same penalty as if the bill were not accepted.

Our predecessor, the Delaware, Lackawanna & Western Railroad Co., at the time of the hearing on these bills, through its officials, stated to those who were most interested and most enthusiastic in urging the passage of the bills and the signing thereof by the Governor, *that all damage done by its mining would be repaired.* It has reiterated its position at every proper occasion.

It was through our knowledge of the conditions peculiar to our operations that we clearly foresaw that the passage of these bills would result in shutting down part of our mines, the loss of production caused thereby, the unemployment of a large number of mine workers, and the loss to the community of a pay roll of $800,000 per month. When these facts were called to the attention of the leaders in the movement for the passage of the "Mine Cave Bills," they seemed either to doubt our sincerity or to believe that such a result was preferable to a voluntary agreement between the company and the representatives of the public.

We deeply regret the necessity of closing some of our mines, but can find no practical method by the adoption of which we can avoid doing so.

We believe that we should not pay for damage done by other coal companies, either during the past six years or in the future. We are willing to pay for the damage done by our mining.

We do not believe that all of the coal which we mine should be subjected to the tax, but only that portion of it in the area affected by mine caves.

We believe that our officials should not be subjected to arrest on a charge of careless or unskillful mining when we are mining in strict compliance with orders of the commission.

We believe that we ought not allow the operation and management of a portion of our property to be placed in the hands of a political body known as the Mine Cave Commission.

We believe that we should not be called upon to pay a substantial tax on all the coal we mine when our chief competitors are not required to do so.

We will not accept the Fowler bill until the question of the constitutionality of the Kohler bill is determined.

We believe that no business man would do other than we are doing, and, for the reasons stated, we ought not, and cannot, accept the provisions of the Fowler bill.

Equipment Engineers Meet at Huntington

THREE separate classes of officials can be found around the coal mines, though in practice they are not entirely separated and many cover all three—personnel officials, locating and designing engineers and equipment users. The latter will meet at Huntington, W. Va., Sept. 20 to 23 as guests, or as members, of the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers at their first annual convention.

On Tuesday, Sept. 20, reports will be made by a committee on practical methods of reducing kilowatt-hours per ton of coal mined, Roscoe Woltz, chairman, and by a committee on depreciation of mine equipment, J. J. Fluck, chairman. On the same session, which will occupy only the forenoon, R. J. Wensley will read a paper entitled "The Automatic Substation for Coal Mines."

On Wednesday, Sept. 21, reports will be made by the committee on power plants, R. R. Webster, chairman, by the committee on care and operation of the nickel-iron type of mine-locomotive battery, C. A. Hornell, chairman, and by the committee on mine-locomotive headlights, George Donelson, chairman. W. P. Bovard will deliver an address on "Bonding Track in Coal Mines." On the day following reports will be made by the committee on care and operation of the lead type of mine-locomotive battery, R. A. Whetstone, Jr., chairman; by the committee on repair-shop equipment and methods, C. J. Fuetter, chairman; by the committee on comparison of belt, chain, gear and direct-connection drive for stationary equipment such as mine pumps and fans, J. B. Pennman, chairman, and by the committee on tests and testing instruments, A. M. Rosenblatt, chairman. F. Auld will deliver an address on the elementary principles of electricity.

On Friday, Sept. 23, E. Wanamaker, electrical engineer of the Chicago, Rock Island & Pacific Railway Co., will describe the electric arc-welding process and its commercial application and the committee on specification of equipment including a discussion of 40-deg. vs. 50-deg. ratings of electric motors, J. S. Shepherd chairman, will report, after which a business meeting will be held. The afternoons of all the three days will be occupied by visiting the Coal and Industrial Exposition, which will have seventy-five exhibitors. Should time be available the following subjects will be discussed: "How often should transformer oil be renewed or filtered?" "Combination vs. straight storage for

gathering locomotives"; "Flat vs. concentric; rubber vs. tape or braid for machine or locomotive cable."

The address of the secretary is Room 212, Robson-Prichard Building, Huntington, W. Va. The fee for active membership in Class A is $5. Class A men are those in charge of electrical or mechanical work of a mining company. Active membership in Class B calls for a fee of $4 a year. Those in Class B are men who are engaged in, but not in charge of, electrical work for a mining company. Associates are persons representing a company manufacturing or selling mining supplies, mine superintendents, general superintendents, managers or other mine officials, technical-publication editors and technical graduates of colleges and correspondence schools. The fees for these are $3 a year.

Freight-Car Loadings During Week Ended Aug. 27 Made New Record for 1920

AN INCREASE of 13,273 in the number of cars loaded with revenue freight during the week ended Aug. 27, compared with the previous week, is shown by a report of the American Railway Association. The total for the week was 829,709 cars. This is the largest week's loading since Dec. 11, 1920, but as compared with the corresponding week of 1920 it shows a loss of 171,599 cars.

The principal increases as compared with the week before were in the loading of merchandise and miscellaneous freight and in coal. The total number of cars loaded with merchandise and miscellaneous freight was 499,421, an increase of nearly 8,000 as compared with the week of Aug. 20, but 35,000 less than for the corresponding week of last year.

Loading of grain and grain products was 59,505 cars, a decrease as compared with the week before of 370, but 13,000 cars more than for the same week of 1920. The loading of live stock amounted to 28,070 cars, or a decrease of 1,040 from the preceding week and slightly less than for the corresponding week of 1920.

Coal loading amounted to 161,612 cars, an increase of 7,472 as compared with the week before but 50,000 cars less than for the corresponding week of 1920. The loading of forest products was 46,460 cars, an increase of 1,877 over the week before, but about 1,000 cars less than the loading for the corresponding week of 1920. The ore loading was 30,035 cars, a decrease as compared with the previous week of 2,355, while the loading of coke was 4,606 cars, an increase of 170.

Compared by districts, there were increases as compared with the week before in all except the Pocahontas and Northwestern districts, but in all districts the loading was below that for the corresponding week of 1920.

Colorado Industrial Board Sets Aside Wage Cut, Pending Further Investigation

THE Colorado State Industrial Commission, after holding a hearing at Walsenburg, set aside Sept. 10 a wage reduction inaugurated in coal mines of the Colorado Fuel & Iron Co. in Huerfane and Las Animas counties. It placed the old wage scale in effect pending further investigation of the controversy which had tied up many mines since Sept. 1.

A majority of the mine workers of the Colorado Fuel & Iron Co., according to the statement of that company, had agreed to restore the scale in effect from Nov. 1, 1917, to Nov. 30, 1919, under which the company men would get $5.25 per day instead of $7.75, coal miners 78c. per ton instead of $1.02, machine miners 15c. instead of 20c. a ton and loaders 58c. instead of 77c.

In Colorado the law requires thirty days' notice where employers desire to change a wage scale as a counterbalance to the requirement that miners must give a thirty-day notice before entering on a strike. The notice was posted Aug. 31. The new scale would affect 1,200 to 1,500 men.

John McLennan, president of District No. 15, United Mine Workers, points out that under the Rockefeller plan of employment wages may not be reduced until similar reductions have been made in the Central Competitive Field. As the scale in the area mentioned is fixed by agreement till March 31, he expressed himself as confident that Colorado could not have a new scale till that time, and declared himself willing to accept the decision of the commission, which decision is not binding unless the parties so announce in advance. McLennan regards the action of the company as a repudiation of the Rockefeller plan, but the men seemed anxious to have it repudiated if doing so would restore their work. The company promised that the reduction would be passed on to the consumer.

Hoover Reorganizes Foreign Trade Service On a Commodity Basis

HEREAFTER *Commerce Reports*, issued by the Bureau of Foreign and Domestic Commerce, will be published weekly instead of daily, beginning Monday, Sept. 5. This change is made as part of the general reorganization plan of the foreign-trade service.

It is proposed to place information with regard to foreign trade before American business men in more intelligible and constructive form, according to an announcement of Herbert Hoover. Heretofore a vast amount of material which comes in from a staff of 600 foreign agents, including commercial attachés, consular agents, trade commissioners and special agents, has been presented in a daily mass of reports, unsystematized excepting for arrangement to some extent on a purely geographical basis.

The Bureau of Foreign and Domestic Commerce is being reorganized on a commodity basis, the object of which is threefold:

(1) That specialists in the different great industrial divisions shall be incorporated in the bureau for the purpose of giving expert direction to these many foreign agents as to the investigations and services that will be of importance and most useful to their particular branch of industry.

(2) That they may, by maintaining close communication with trade associations in different industries, keep in touch with the character of service, information, and investigation needed in these industries.

(3) That the material coming in may be edited and prepared in such a manner as to be of the most practicable service.

The following divisions have so far been established:

Iron and steel	Fuels
Lumber	Textiles
Industrial machinery	Shoes and leather products
Electrical equipment and supplies	Agricultural implements and vehicles
Foodstuffs	Rubber products.
Automotive equipment	

The men in charge of these divisions have been chosen from the industries themselves and in most instances have been selected in co-operation with their trade associations, so that they may bring to the department not only specialized knowledge and sympathetic understanding of the problems of these particular industrial groups but in turn may interpret to the foreign staff the needs of these industries and, as stated above, develop the material received in such form as may be of the greatest use in the industry to which it is related.

In the above sense the weekly form will be departmentalized over the different industries as far as practicable. In order that there may be the widest distribution and no delay in important information, special material will be released to the press immediately upon its arrival, in advance of the weekly publication.

The present form of the weekly is not final, and it is expected that changes and improvements will be made in succeeding numbers. The department will welcome suggestions and criticisms that will lead to making the *Commerce Reports* in this new form more useful to subscribers.

THERE IS MUCH INTEREST in Washington in the action which the nominating committee of the American Institute of Mining and Metallurgical Engineers probably will take at the Wilkes-Barre meeting of that organization. There is a general desire among the mining engineers of the government service that the committee select a Western field man rather than a New York engineer for this post.

Three Separate Wage Scales Cause Strikes In Connellsville Region

WAGE increases of 10 per cent were granted Sept. 10 by the following companies in the Connellsville region: The American Coke Corporation, the Republic Iron & Steel Co. and the Tower Hill Connellsville Coke Co. The increase brings the wage scale up to the present Frick base. It is considered quite probable that all other independent operators with the possible exception of W. J. Rainey, Inc., will grant similar advances. There is no change in the Rainey situation.

The labor situation in the Connellsville coke region has been somewhat complicated for some time. Three distinct wage scales are in effect in the region. First there is what is known as the Frick scale, adopted by the H. C. Frick Coke Co. Aug. 1, 1921, under which pick mining is paid for at the rate of $2.38 per 100 bu., loading after machines $1.50 per 100 bu., drivers, tracklayers, etc., $5 per day, common inside labor $4.15, and outside labor $3. Then there is what is known as the old Rainey scale, adopted by W. J. Rainey, Inc., July 1, 1921, under which the same classes of work are paid respectively $2.06, $1.48, $4.50, $3.75 and $3.

Then there is the new Rainey scale, adopted by Rainey Aug. 19, 1921, under which the prices are $2, $1.40, $3.80, $3 and $2.55. The Frick scale is paid by the Frick company, and now by the Whyel interests (including the Consolidated Coke Co., Superior Coal Co. and some other small operations) and also by the Reliance Coke Co. and a few small independent companies. The old Rainey scale is paid by most of the independent companies except Rainey and the new Rainey scale is paid only by the Rainey company, and all their men are on strike except at one small operation. The striking Rainey employees are continually trying to march to other operations in the district to induce the men to stop work and it is having some effect, though the sheriff and state police are preserving very good order.

On Friday Sept. 2, the employees of the Brier Hill Coke Co., where the old Rainey scale is being paid, struck and demanded the Frick scale, but they started to return to work without any change on Monday, Sept. 5, and by Wednesday they were all back at work and so continue. On the day the Brier Hill men struck, Sept. 2, the Whyel interests posted notices at all their plants except Superior that they would advance wages from the old Rainey scale to the Frick scale, and closed down Superior.

Many Workers Strike for the Frick Scale

The Warwick mine of the Diamond Coal & Coke Co., up the Monongahela River, a new mine being developed, also is on strike. This mine being in the early stages of development work, all men were being paid by the day; but on Wednesday, Aug. 31, they demanded payment by the car for mining and next day went on strike and are still out.

On Wednesday, Sept. 7, the men at the Republic Iron & Steel Co. coal and coke plant at Republic struck for the Frick scale instead of the old Rainey scale, which the company was paying. They were still out the next day and this plant has been indefinitely shut down. On the same day the men at the Martin plant of the American Coke Corporation struck for the same wage, and this plant has been closed down. The next day the men at the Orient and Linn plants of the same company struck for the same concession and these plants are still idle. On Tuesday morning, Sept. 6, some of the strikers from the Mt. Braddock plant of the Rainey company marched to the plant of the Evans Coal & Coke Co., a small operation near by, and induced these men to strike for the Frick scale. On the same day the Superior Coal Co. resumed operations in full on the Frick scale.

On Sept. 8 the Redstone Coal & Coke Co., a subsidiary of the Weirton Steel Co., operating Thompson No. 1 coal and coke plant near Republic, where the old Rainey scale has been in effect, posted a notice advancing wages to the Frick scale.

The Reliance Coke Co., another subsidiary of the Weirton Steel Co. operating at Denbo, a short distance up the river from Brownsville, has not gone below the Frick scale, probably due to its proximity to the H. C. Frick Coke Co. Bridgeport mine and the further fact that it lies between two union mines operated by the Vesta Coal Co.

Food Prices Increase 1 to 8 Per Cent Between July 15 and August 15

THE U. S. Department of Labor, through the Bureau of Labor Statistics, has completed compilations showing changes in the retail cost of food in August in fifteen principal cities of the United States. During the month from July 15 to Aug. 15, 1921, there was an increase in all of these cities. In Rochester there was an increase of 8 per cent; in Buffalo, 7 per cent; in Baltimore and New York, 6 per cent; in Milwaukee, Newark and Norfolk, 5 per cent; in Charleston, S. C.; Louisville, Manchester and Portland, Me., 4 per cent; in Houston, 3 per cent; in Butte and Dallas, 2 per cent, and in Minneapolis, 1 per cent.

For the year period Aug. 15, 1920, to Aug. 15, 1921, there was a decrease of 30 per cent in Butte; 28 per cent in Louisville; 26 per cent in Baltimore, Charleston, S. C., Dallas, Milwaukee and Minneapolis; 25 per cent in Buffalo, Manchester and Norfolk; 24 per cent in Houston, Newark, Portland, Me., and Rochester, and 22 per cent in New York.

As compared with the average cost in the year 1913, the retail cost of food on Aug. 15, 1921, showed an increase of 62 per cent in Manchester, 60 per cent in Buffalo and Milwaukee, 59 per cent in New York, 58 per cent in Baltimore and Charleston, S. C.; 50 per cent in Minneapolis and Newark, 47 per cent in Dallas and 43 per cent in Louisville.

Lewis Denies Wage Cut Asked by Northern West Virginia Operators

HAVING made no progress in effecting a modification of the existing wage scale in their negotiations with C. F. Keeney, president of District 17, the Northern West Virginia Coal Operators' Association through its advisory board made another effort in that direction on Sept. 7 by submitting their case direct to John L. Lewis, president of the international organization. The conference with Lewis was no more satisfactory than that with Keeney, the advisory board being told point blank that there would be no reduction in miners' wages, because it would disrupt the entire industry. Among other things Lewis told the West Virginia committee that all unionized fields were suffering either from freight differentials or non-union competition.

In the tax revision debate in the House Representative Oldfield, of Arkansas, advocated a 20-per cent tax on stock dividends, but the House took no action in the matter. Mr. Oldfield read a list of corporations which had declared dividends in the last two years, which he said had been furnished him by the Treasury Department, and which included the following: The Burnrite Coal Briquette Co., D., L. & W. Coal Co., Texas Pacific Coal & Oil Co., Virginia Iron, Coal & Coke Co., Lig.-Mar. Coal Mining Co., and United Fuel & Gas Co. As the House only had time, under its special rule, for committee amendments, Representative Keller, of Minnesota, had no opportunity to present his land-tax amendment. He urged the tax, however, in a speech in the general debate on the bill, saying the high price of fuel was one of the chief items in the cost of railroads and that coal was high because a few monopolies hold great areas of undeveloped coal fields and by keeping down production maintain high prices. Taxation of land values would force the mining of these coal fields and cheapen the cost of fuel and railroad rates.

The Geological Survey reports that the so-called anthracite of Virginia is not really anthracite but is a much softer coal.

Tidewater Coal Exchange, Inc., to Dissolve

AT A MEETING of the members of the Tidewater Coal Exchange, Inc., held in New York City Friday, Sept. 9, a resolution was adopted to dissolve the exchange and the executive committee was authorized to appoint a trustee. The meeting was attended by about twenty-five members of the exchange, and although no official statement was issued, it was learned that the above action was taken. It also was learned that Gibbs L. Baker, counsel for the exchange, was authorized to take whatever action was necessary to proceed on the bonds of the various transshippers for the payment of any demurrage charges or debits in the pool.

It was said that objection to the dissolution of the exchange was made by representatives of the railroads present at the meeting and that some plan might be decided upon for a continuance of the organization. The chief bone of contention appears to be in the matter of demurrage. Some coal men believe that with this eliminated the exchange could be operated successfully. An official statement was promised some time this week.

National Safety Council Will Convene in Boston State House, Sept. 26 to 30

A BIG coal and metals program has been prepared by B. F. Tillson, chairman of the section, and D. E. A. Charlton, chairman of the program committee for the National Safety Council meeting in the State House at Boston, Sept. 26 to 30. Safety in underground transport will be discussed by several authorities. As regards storage-battery locomotives, Charles E. Stuart, consulting engineer, of New York City, and E. V. Davellar and R. E. Renz, of the Butte & Superior Mining Co., Butte, Mont., will address the meeting. Trolley-locomotive accidents will be discussed by F. W. Whiteside, chief engineer, Victor-American Fuel Co., Denver, Col. The dangers connected with animal haulage will be discussed by E. L. Solomon, of the Kingston Coal Co., Kingston, Pa. Rope haulage will fall into the hands of R. M. Magraw, general superintendent, United States Fuel Co., Hiawatha, Utah. Block-signal and dispatching systems are allotted to R. T. Murrill, safety engineer, Inspiration Consolidated Copper Co., Miami, Ariz., and compressed-air haulage to Guy J. Johnson, safety engineer, Homestake Mining Co., Lead, S. D.

Another subject that will be discussed is mine-fire prevention and fire fighting. Joseph W. Reed, safety engineer, Consolidation Coal Co., will speak for the bituminous mines; G. M. Gillette, of the same company, will relate "Experiences in a Coal-Mine Fire," illustrating it with slides, and H. M. Wolflin, formerly of the U. S. Bureau of Mines and now at the head of the California Industrial Commission, San Francisco, Cal., will present an instance of the use of carbon dioxide in a metal-mine fire.

A symposium on maintaining interest in safety will occupy a third session; W. H. Moulton, superintendent, and William Connibeer, safety engineer, Cleveland-Cliffs Iron Co., Ishpeming, Mich., will show how to sell safety properly and irrevocably to executives. Thomas Copperswaite, safety engineer, Calumet & Arizona Mining Co., Bisbee, Ariz., will inform the assembly as to the manner in which to make firemen and shift bosses root for safety, and J. T. Bradley, safety engineer, W. J. Rainey, Inc., of Uniontown, Pa., will show how to inoculate the miner with similar enthusiasm. G. L. Colburn, mining engineer, U. S. Bureau of Mines, and safety engineer, National Safety Council, will enlighten the session with an account of his observations in various coal and metal camps of the United States.

The final sitting on Friday morning, Sept. 30, will cover a paper on "First-Aid Stations Underground," by R. R. Sayers, chief surgeon, Bureau of Mines, Washington, D. C.; another on "Provision for Drinking Water," by B. C. Yates, superintendent, Homestake Mining Co., Lead, S. D., and "Traveling Ways and Signs," by R. H. Seip, safety engineer, New Jersey Zinc Co., Franklin, N. J.

A report will be made by the Committee on Standardization and Major M. J. Shields, of the Red Cross, will present a report on first-aid methods and contests, including lists of qualified judges.

The Mining Section's first meeting will be held on Tuesday but on Monday an annual meeting of members will be held, at which business of interest to all members will be transacted. The treasurer's annual report shows that last year's revenues were $284,337.35.

Urges Organization of Coal Transportation Companies Under Shipping Board

ORGANIZATION of commodity transportation companies under the Shipping Board similar to corporations under the Webb Act for extension of foreign and domestic commerce in coal and other commodities is recommended by a railroad man, whose name is withheld, in a letter to Senator Jones of Washington, chairman of the Senate Committee on Commerce, which has been forwarded to the Shipping Board for consideration. The letter specifically recommends the creation of such a company to take control over all of the major export and import sea-borne groups of commodities such as coal, and the co-ordination of these groups into a general commodity transportation company with representatives from the Shipping Board, the individual transportation companies, the Interstate Commerce Commission, American steamship and railroad lines and the Department of Commerce.

Senate Committee Resumes Mingo Inquiry

THE sub-committee of the Senate Committee on Education and Labor planned to meet at Washington Wednesday, Sept. 14, to take up the West Virginia coal situation, into which it inquired last July. The committee will see the President to be informed as to latest developments following the sending of the army into the region, after which it is expected the committee will take testimony at Huntington, W. Va., in the first of a series of hearings to seek remedies for the mine disorders which have existed for more than a year. The West Virginia hearings probably will begin Sept. 19.

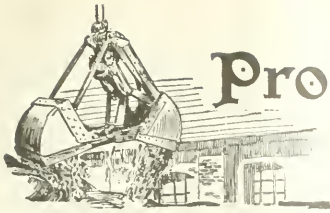
Former Judge Van Fleet of Indiana Named To Federal Trade Commission

PRESIDENT HARDING has chosen J. W. Van Fleet, of South Bend, Ind., as a member of the Federal Trade Commission to succeed John G. Pollard, of Richmond, Va., whose term expires on Sept. 25. Mr. Van Fleet, who is said to have the backing of Senator Watson, is a former circuit judge, a Republican county chairman and was state manager for Mr. Harding during the Presidential campaign.

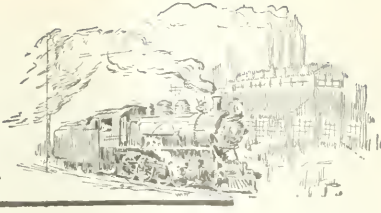
ERSKINE RAMSEY, OF BIRMINGHAM, prominent in the Alabama coal mining industry, attended the Wilkes-Barre meeting of the American Institute of Mining and Metallurgical Engineers and paid a business visit to Washington. Mr. Ramsey is chairman of the financial committee of the Birmingham organization which is staging an elaborate semi-centennial celebration to take place Oct. 24-29. President Harding will attend Oct. 26. A feature of the celebration will be a pageant, a part of which will be an allegorical depiction of the development of the coal industry in Alabama.

W. R. COYLE, president of the American Wholesale Coal Association, has appointed the following committee to investigate and report on the matter of classification of coal and the possibility of the establishment of standards: Messrs. Corey, Taylor, Evans and Cushing. Mr. Coyle also has appointed a legal committee to consist of L. S. Evans, John J. Shechan and W. R. Coyle. The new budget committee of the association is to be composed of C. L. Dering, G. H. Merryweather and H. J. Heywood.

AN EFFORT WILL BE MADE by the Navy Department to curtail by one-half the amount of fuel it will use during the current fiscal year, as compared with the fiscal year ended June 30.



Production and the Market



Weekly Review

NO IMPETUS, such as a month ago it was surely thought that September would bring the coal trade, has yet been recorded in either production or prices. Optimism tempered by past disappointments has brought the sellers of coal to a state of mind where they accept the inevitable present as a necessary condition and refuse to enthuse over the certain signs of improvement in the general situation. Production of pig iron touched bottom in August and is now on the upgrade, although yet far below the lowest point of 1914. The total output in August, according to the *Iron Age*, was less than a million tons, but yet nearly 100,000 tons above July. Railroad consumption of coal is gaining slowly and although buying for fuel is now taking more tonnage than in August, the financial condition of the railroads is not yet such as would permit of their acquiring normal stocks.

None of the reports from the market centers or the coal fields this week conveys intimation of a fall rush for coal. In the Middle West and beyond the demand from retailers for domestic sizes is about the only business that is being done. The rush on Lake coal is over and sales for export have practically ceased. So great is the available supply over present demand in the Eastern fields that each slight spurt in buying calls forth such a tonnage in offerings that spot prices record no permanent gain.

Expect Increase in Industrial Buying Power

Coal Age Index of spot prices on Sept. 13 was 91—unchanged from the week before. In many of the markets quotations are purely nominal and represent asking prices, so infrequent are spot sales.

The most hopeful signs indicating better business in the offing are the expected increase in purchasing power in the South because of the increase in cotton prices and the probable gain in purchasing power by the Northern and Western farmers because of the better market at home and abroad for their wheat. The stress laid on the program for helping the railroads by the administration in Washington beyond doubt will have a belated effect on the sale of coal.

All things considered, it is apparent that quite several weeks must elapse before requirements of the country for coal will increase sufficiently to have any effect on current prices. Anthracite production and the sales of domestic sizes are going ahead steadily, in accordance with the normal autumn demand, although the movement beyond retail dealers needs a stimulus that the advertising campaign of the anthracite operators is expected to furnish.

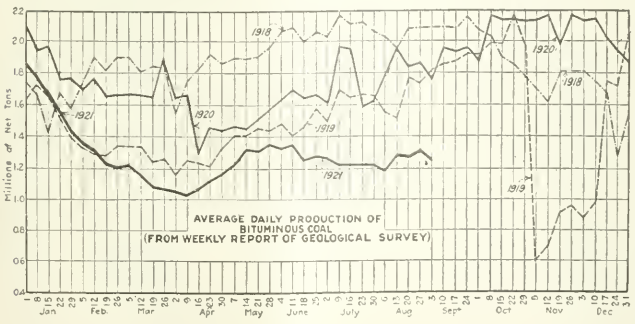
BITUMINOUS

Production of soft coal declined slightly during the week ended Sept. 3. The total output was 7,571,000 net tons, according to the Geological Survey, a decrease of nearly 200,000 tons from the week preceding. Labor disturbances in West Virginia and the declining movement of Lake coal were the main factors in the decrease. The output for the week ended Sept. 10 was cut into sharply by the Labor Day holiday, as indicated by the total loadings for the first two days of that week, which were but 31,350 cars, as compared with 52,289 during the corresponding period of the week preceding.

August production was 34,538,000 net tons less than the output of any corresponding month in the last nine years. The cumulative production to Aug. 31 is 261,000,000 tons, which also is less than the output during the first eight months of any of the last nine years. Compared with the average of the eight years preceding, 1921 is 62,000 tons in arrears and is steadily falling further behind.

The all-rail movement to New England during the first week of September was 2,580 cars, as compared with 2,670 in the preceding week. Prices in that section are under the pressure of shippers to move coal, particularly via Hampton Roads. The smokeless shippers are still favored by the low range of marine freights and there is only a very scattering demand for the Pennsylvania coals all-rail.

In the Middle West, where bituminous coal is sold for domestic purposes, the demand for lump has grown so



Estimates of Production
(NET TONS)

Week Ended	1921	1920
BITUMINOUS COAL		
Aug. 20(*b*)	7,708,000	11,039,000
Aug. 27(*b*)	7,763,000	11,383,000
Sept. 3(*a*)	7,571,000	11,167,000
Daily average	1,262,000	1,861,000
Calendar year	264,647,000	343,396,000
Daily average, calendar year	1,272,000	1,699,000
ANTHRACITE		
Aug. 20(*b*)	1,529,000	1,640,000
Aug. 27(*b*)	1,893,000	1,868,000
Sept. 3(*a*)	1,790,000	1,114,000
Calendar year	59,276,000	58,827,000
BEEHIVE COKE		
Aug. 27(*b*)	57,000	419,000
Sept. 3(*a*)	58,000	396,000
Calendar year	3,839,000	14,452,000

(*a*) Subject to revision. (*b*) Revised from last report.

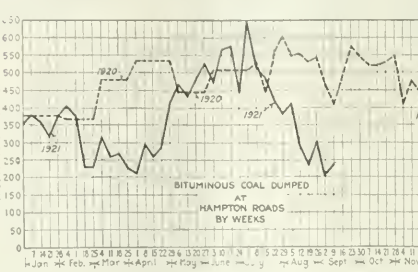
heavy that many mines are at least two weeks behind in filling orders. Screenings are in heavy oversupply and have been softening rapidly.

Lake shipments are dwindling rapidly. Dumpings during the week ended Sept. 10 were 451,595 net tons—430,415 cargo and 21,180 vessel fuel—and while the interior markets served by the Head-of-the-Lake docks are taking more coal, the volume so shipped is not sufficient to provide dock storage space for the tonnage which has been going up the Lakes weekly. Total Lake dumpings for the season are 17,190,948 net tons, as compared with 12,918,876 tons for the same period in 1920.

RECEIPTS OF COAL AT DULUTH-SUPERIOR HARBOR DURING THE SEASON OF 1921

	Hard	Soft	Total
May	173,190	1,548,880	1,722,070
June	192,830	2,125,453	2,318,283
July	339,383	1,650,629	1,990,012
August	418,238	1,068,555	1,486,793
Total to Aug. 31, 1921	1,206,699	6,513,729	7,720,428
Corresponding period, 1920	919,488	3,079,418	3,998,846
Corresponding period, 1919	767,818	5,142,156	5,909,974
Corresponding period, 1918	754,405	4,510,656	5,265,081

Unionized fields adjacent to the Connellsville region are still feeling the competitive effects of the recent non-union wage reduction, although as yet nothing has come of any move to drop the union wages proportionately. While the Pittsburgh operators are not disposed to discuss matters of policy publicly, the opinion of outside observers is that they have concluded that they can obtain a more substantial reduction in the wage scale by allowing the matter to rest until time for the regular biennial settlement than by attempting to make a reduction at this time and another for the new scale to become effective April 1, 1922.


Thousands of Net Tons
BITUMINOUS COAL DUMPED AT HAMPTON ROADS BY WEEKS
1920
1921
Jan. Feb. Mar. April May June July Aug. Sept. Oct. Nov. Dec.

Foreign markets are at a standstill and the movement of soft coal to Tide fell off sharply during August. Total dumpings for foreign account at Hampton Roads during the first week in September were 85,649 net tons, as compared with 83,628 tons in the last week of August. Dumpings at Hampton Roads during the week ended Sept. 8 for

Current Quotations—Spot Prices, Bituminous Coal—Net Tons. F. O. B. Mines

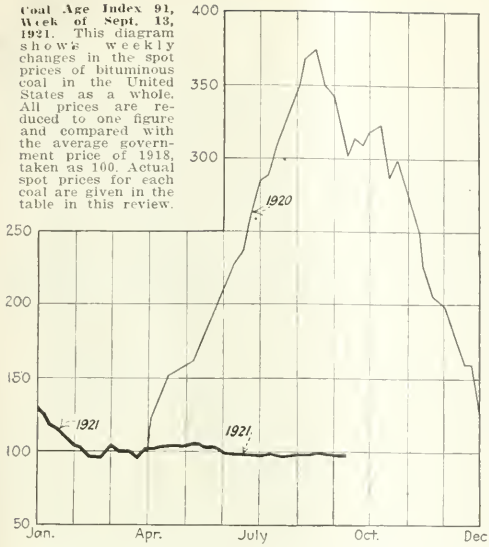
Low-Volatile, Eastern	Market Quoted	Aug. 9, 1921	Aug. 30, 1921	Sept. 6, 1921	Sept. 13, 1921†
Pocahontas lump	Columbus	$5 15	$5 30	$5 35	*$3 00@$5 40*
Pocahontas mine run	Columbus	2 90	3 15	3 15	3 00@ 3 35
Pocahontas screenings	Columbus	2 15	2 40	2 30	**2 25@ 2 60**
Pocahontas lump	Chicago	5 00	5 00	5 15	*1 65@ 5 75*
Pocahontas mine run	Chicago	2 75	2 75	2 50	**2 65@ 3 50**
*Smokeless mine run	Boston	5 60	5 15	5 15	*4 80@ 5 15*
Clearfield mine run	Boston	1 90	1 80	1 95	1 65@ 2 20
Cambria mine run	Boston	2 55	2 45	2 40	*2 00@ 2 65*
Somerset mine run	Boston	1 70	1 70	1 75	1 45@ 2 00
Pool 1 (Navy Standard)	New York	3 15	3 25	3 05	**3 00@ 3 75**
Pool 1 (Navy Standard)	Philadelphia	2 95	2 95	2 95	2 85@ 3 00
Pool 1 (Navy Standard)	Baltimore	2 45	2 50	2 50	**2 75@ 3 00**
Pool 9 (Super. Low Vol.)	New York	2 55	2 50	2 45	**2 40@ 2 75**
Pool 9 (Super. Low Vol.)	Philadelphia	2 35	2 35	2 35	2 25@ 2 40
Pool 9 (Super. Low Vol.)	Baltimore	2 20	2 25	2 20	**2 45@ 2 50**
Pool 10 (H. Gr. Low Vol.)	New York	2 35	2 15	2 20	**2 10@ 2 50**
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2 05	2 05	2 05	**1 90@ 2 15**
Pool 10 (H. Gr. Low Vol.)	Baltimore	2 00	2 00	2 00	**2 15@ 2 25**
Pool 11 (Low Vol.)	New York	1 95	1 90	2 05	**1 90@ 2 35**
Pool 11 (Low Vol.)	Philadelphia	1 75	1 80	1 80	1 75@ 1 90
Pool 11 (Low Vol.)	Baltimore	1 70	1 80	1 80	**2 00**
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1 85	1 90	1 80	**1 75@ 2 00**
Pool 54-64 (Gas and St.)	Philadelphia	1 65	1 70	1 70	1 60@ 1 75
Pool 54-64 (Gas and St.)	Baltimore	1 50	1 60	1 60	**1 50@ 1 85**
Pittsburgh sc'd gas	Pittsburgh	2 70	2 65	2 65	2 55@ 2 75
Pittsburgh mine run (St.)	Pittsburgh	2 10	2 25	2 25	2 20@ 2 30
Pittsburgh slack (Gas)	Pittsburgh	1 70	1 70	1 70	1 65@ 1.75
Kanawha lump	Columbus	3 25	3 50	3 45	3 25@ 3 65
Kanawha mine run	Columbus	2 15	2 15	2 15	2 00@ 2 25
Kanawha screenings	Columbus	1 50	1 30	1 30	1 20@ 1.40
Hocking lump	Columbus	3 15	3 20	3 20	*3 00@ 3.35*
Hocking mine run	Columbus	2 15	2 15	2 15	2 00@ 2 25
Hocking screenings	Columbus	1 50	1 35	1 30	*1 15@ 1 35*
Pitts. No. 8 lump	Cleveland	3 25	3 25	3 25	3 00@ 3 50
Pitts. No. 8 mine run	Cleveland	2 30	2 30	2 30	*$2.15@$2.35*
Pitts. No. 8 screenings	Cleveland	1 80	1 70	1 65	*1 55@ 1 65*
Midwest					
Franklin, Ill. lump	Chicago	3 55	3 65	3 65	3 25@ 4 05
Franklin, Ill. mine run	Chicago	3 15	2 90	2 95	2 40@ 3 50
Franklin, Ill. screenings	Chicago	1 85	1 95	1 85	**1 25@ 2 65**
Central, Ill. lump	Chicago	2 75	2 70	2 70	2 40@ 3 00
Central, Ill. mine run	Chicago	2 20	2 40	2 40	2 00@ 2 75
Central, Ill. screenings	Chicago	1 60	1 75	1 75	*1 05@ 2.25*
Ind. 4th Vein lump	Chicago	3 60	2 95	2 95	2 35@ 3 50
Ind. 4th Vein mine run	Chicago	3 10	2 50	2 55	2 35@ 2 75
Ind. 4th Vein screenings	Chicago	2 15	1 70	1 70	1 25@ 2 15
Ind. 5th Vein lump	Chicago	2 90	2 90	2 90	2 50@ 3 25
Ind. 5th Vein mine run	Chicago	2 45	2 40	2 50	2 25@ 2 75
Ind. 5th Vein screenings	Chicago	1 65	1 75	1 75	1 35@ 2 15
Standard lump	St. Louis	2 20	2 45	2 50	**2 25@ 3 00**
Standard mine run	St. Louis	1 75	1 85	1 85	**1 85@ 2 00**
Standard screenings	St. Louis	1 15	0 95	*0 65@*	*0 85*
West. Ky. lump	Louisville	3 00	3 10	3 05	*2 25@ 3 25*
West Ky. mine run	Louisville	2 25	2 45	2 35	*2 25*
West Ky. screenings	Louisville	1 70	1 50	1 25	**1 30**
South and Southwest					
Big Seam lump	Birmingham	3 75	3 75	3 85	*3 25@ 4 25*
Big Seam mine run	Birmingham	2 15	2 10	2 15	2 00@ 2 25
Big Seam (washed)	Birmingham	2 40	2 35	2 40	2 25@ 2 50
S. E. Ky. lump	Louisville	3 60	3 65	3 50	3 25@ 3 75
S. E. Ky. mine run	Louisville	2 30	2 30	2 35	*2 00@ 2.25*
S. E. Ky. screenings	Louisville	1 65	1 55	1 55	*1 40@ 1 60*
Kanawa lump	Kansas City	5 50	....	....	**5 75**
Kansas mine run	Kansas City	4 40	....	....	*4 25*
Kansas screenings	Kansas City	3 25	....	....	*2.50*

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in heavy type, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	Aug. 30, 1921 Independent	Aug. 30, 1921 Company	Sept. 6, 1921 Independent	Sept. 6, 1921 Company	Sept. 13, 1921† Independent	Sept. 13, 1921† Company
Broken	New York	$2 61	....	$7 50@$7 75	....	$7 60@$7 75	....	$7 60@$7 75
Broken	Philadelphia	2 66	$7 50@$8 20	7 65@ 7 85	$7 60@$8 20	7 75@ 7 85	$7 60@$8 20	7 75@ 7 85
*Broken	Chicago	5 62	12 75	12 65	12 75	12 65	12 75	12 65
Egg	New York	2 61	7 60@ 7 75	7 50@ 7 75	7 75@ 8 15	7 60@ 7 75	**7 75@ 8.25**	7 60@ 7 75
Egg	Philadelphia	2 66	7 60@ 8 20	7 60@ 7 85	8 10@ 8 35	7 75@ 7 85	8 10@ 8.35	7 75@ 7 85
*Egg	Chicago	5 62	12 80	12 65	12.80	12 65	12 80	12 65
Stove	New York	2 61	7 80@ 8 50	7 80@ 8 10	8 25@ 8 50	7 90@ 8 10	8 25@ 8 50	7 90@ 8 10
Stove	Philadelphia	2 66	8 00@ 8 35	7 95@ 8 25	8 25@ 8 60	8 00@ 8 35	8.25@ 8 60	8 00@ 8 35
*Stove	Chicago	5 62	13 40	12 90	13 40	12 90	13 40	12 90
Chestnut	New York	2 61	7 60@ 8 00	7 80@ 8 10	7 75@ 8 15	7 90@ 8 10	**7 75@ 8 25**	7 90@ 8 10
Chestnut	Philadelphia	2 66	7 75@ 8 00	7 95@ 8 25	8 20@ 8 75	8 05@ 8.25	8 20@ 8 75	8 05@ 8 25
*Chestnut	Chicago	5 62	13 10	12 90	13 10	12 90	13 10	12 90
Pea	New York	2 47	4 50@ 5 75	6 05@ 6 45	5 00@ 5 35	6 05@ 6 45	**5 00@ 6 00**	6 05@ 6 45
Pea	Philadelphia	2 38	4 50@ 5 50	6 10@ 6 40	4 50@ 5 50	6 15@ 6.25	4 50@ 5 50	6 15@ 6 25
*Pea	Chicago	5 62	11 10	11 00	11 10	11 00	11 10	11 00
Buckwheat No. 1	New York	2 47	3 00@ 3 50	3 50	2 75@ 3 50	3 50	**3 00@ 3 50**	3 50
Buckwheat No. 1	Philadelphia	2 38	2 50@ 3 00	3 50	2 50@ 3 00	3 50	2 50@ 3 00	3 50
Rice	New York	2 47	2 00@ 2 50	2 50	1 75@ 2 50	2 50	**2 00@ 2 50**	2 50
Rice	Philadelphia	2 38	1 75@ 2 00	2 50	1 75@ 2 00	2 50	1 75@ 2 00	2 50
Barley	New York	2 47	1 25@ 1 50	1 50	1 10@ 1 50	1 50	**1 25@ 1 50**	1 50
Barley	Philadelphia	2 38	1 00@ 1 25	1 50	1 00@ 1 25	1 50	1 00@ 1 25	1 50
Birdseye	New York	2 47	....	2 50	....	2 50	....	2 50

*Prices and freight rates, net tons; quotations f.o.b. cars, Chicago.
†Advances over previous week shown in heavy type, declines in *italics*.

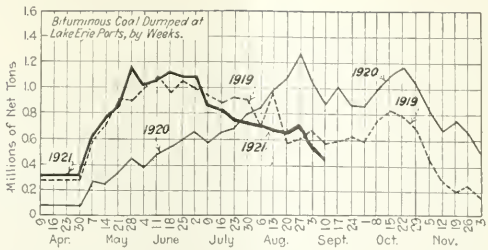


Coal Age Index 91, Week of Sept. 13, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.

all accounts were 216,740 gross tons, an increase of 33,000 tons over the preceding week, accounted for by the tonnage which is being urged on New England and the desire of shippers to clear up Tidewater accumulations on demurrage.

TIDEWATER BITUMINOUS COAL SHIPMENTS FOR AUGUST, 1921
(In net tons)

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Totals
Coastwise to New England	117,000	49,000	82,000	650,000		898,000
Exports	.....	81,000	82,000	252,000	23,000	438,000
Bunker	313,000	51,000	30,000	280,000	1,000	675,000
Inside capes	.....	157,000	91,000	21,000		269,000
Other tonnage	563,000	.....	.....	58,000		621,000
Totals	993,000	338,000	285,000	1,261,000	24,000	2,902,000



ANTHRACITE

Production of hard coal fell off during the week ended Sept. 3, being estimated by the Geological Survey at 1,790,000 net tons, compared with 1,893,000 during the preceding week. Western stocks of anthracite are heavy but dealers apparently feel that hard coal cannot go lower and are keeping their yards full, taking advantage of the lower-priced independent tonnage which is occasionally being offered. In the East the normal demand for this time of the year is being experienced although there is a tendency to cut down seasonal household requirements, due, no doubt, to a desire to economize.

Anthracite loadings at Buffalo for shipment up the Lakes continue fairly active. August receipts at Duluth-Superior harbor increased 79,000 tons over those for July. The total receipts for the season to Aug. 31 were 1,206,699 tons, more than in the corresponding period in any of the last three years. New England anthracite receipts for the week ended Sept. 3 were 2,479 cars, or at the same rate as during the preceding week.

COKE

Beehive coke production continues at a weekly rate just below 60,000 tons and conditions in the industry remain unchanged. The total output during the first week of September was 58,000 net tons, an increase of 1,000 tons when compared with the preceding week. Producers are feeling the strong competition of byproduct coke but are proceeding cautiously and obtaining a few good orders, at the same time refusing to shade prices further.

Foreign Market And Export News

Coal Paragraphs From Foreign Lands

HOLLAND—Cable advices to *Coal Age* are that American gas is unchanged in Rotterdam at $7 and British steam coal is quoted at 32s., as compared with last week's figure of 38s.

SWEDEN—Stocks of coal in Stockholm are low, and according to *Commerce Reports*, and if competitive prices and quick deliveries are made there is a prospect of considerable business. A list of Swedish coal importers is on file in the Bureau, File-Eur—12013.

BELGIUM — Demand for industrial coal is low and large stocks are accumulating. However, domestic call is strong and mines are unable to fill all orders. Following the wage decline, prices show reductions of 2 to 4 francs per ton.

Belgian production in June was 1,700,480 tons as against 1,592,420 in May, and a monthly average of 1,903,460 tons in 1913. Stocks at the end of June amounted to 561,320 tons, as against 776,830 tons at the end of May. Production of coke was 109,950 tons, against 122,250 tons in May; and that of briquets 237,390 tons, against 214,420 tons.

SPAIN — Arrivals of British supplies on the Spanish market have depressed the demand for Asturian coal and prices are weaker, with the exception of screened, which is quoted at 125 pesetas. Cobbles are 110 pesetas and smalls are 75@85 pesetas. The labor situation is still uncertain but at several mines the men have accepted a wage reduction and have returned to work.

In view of the derogatory statements regarding American coal for use on Spanish railways, *Commerce Reports* states that letters from officials of the three largest railways in Spain advise to the effect that American coal used was of good quality and conformed to specifications.

Continued Decline in Hampton Roads Exports; Less Tonnage at Tide

The export business continues to decline. Only six cargoes for foreign ports cleared last week, the C. & O. piers at Newport News clearing none.

Prices remain approximately the same but are even shaded at times. There is no difference between bunker and cargo prices, except in specific instances. The coastwise trade is holding its own, and the bunker business is still brisk.

Approximately 216,000 gross tons were dumped during the week ended Sept. 8. Tonnage at Tide is dwindling, operators being reluctant to accumulate demurrage. At the end of this week vessel tonnage at port awaiting cargo amounted to only 10,000.

PIER SITUATION

	Week Ended Sept. 1	Week Ended Sept. 8
N. & W. Piers, Lambert's Point:		
Cars on hand	2,105	1,761
Tons on hand	115,449	92,405
Tons dumped during week	72,802	95,864
Tonnage waiting	11,350	4,000
Virginian Ry. Piers, Sewall's Point:		
Cars on hand	1,776	1,640
Tons on hand	104,200	82,000
Tons dumped during week	73,202	74,125
Tonnage waiting	6,000	2,769
C. & O. Piers, Newport News:		
Cars on hand	2,181	2,116
Tons on hand	109,050	105,800
Tons dumped during week	37,086	46,751
Tonnage waiting	9,000	3,300

Foreign Coal Markets Are Oversupplied

British Home Market Glut Makes Export Outlet Imperative—French Production Gains Rapidly—Lower Quotations Appear but Fail to Bring Orders

Production in the United Kingdom for the week ended Aug. 27 was 4,102,300 gross tons, according to cable advices to *Coal Age*. The market is lifeless and producers are experiencing difficulty in disposing of the output. Britain's home trade is showing the effects of heavy stocks, which have been accumulated and also of curtailment in fuel consumption.

It is quite natural that strenuous efforts are being made to use the export market as an outlet for this production in excess of consumption, as evidenced by the fact that August coal exports from the United Kingdom amounted to 3,103,000 tons. In July they were 816,000 tons, although of course they were somewhat hampered in that period by the strike, which ended July 2. During the strike months of April, May, June and also in July, the United Kingdom imported 1,486,180 tons of American coal, of which 1,005,144 went to England, 406,640 to Ireland and 74,396 to Scotland.

Eastern markets are said to show signs of life, and the hardening of the rupee exchange has been welcomed as a sign of confidence, caused by the fact that Indian native merchants were beginning to pay the debts on which they had defaulted during the great break in values.

The depression in the coal trade is attributed in part to the stocks of foreign coal, which were in hand or on order when the strike ended. At that time some 500,000 tons were in hand on Government account. Having no storage, and not wishing to pay high demurrage charges the Government sold at a great sacrifice. Another 500,000 tons was left in private importers' hands at the end of the dispute, and they, too, have had to clear it.

Other coal merchants bought the first coal raised after the strike, paying high prices, expecting a rush to buy. They have been disappointed for the public held off, waiting for prices to fall, and practically no household coal has yet been bought for winter use. When the merchants have cleared off those stocks prices will fall. Already manufacturers are being offered consignments at greatly reduced prices, and as industry revives the factories must begin to buy steam coal; but the prices are likely to be reduced considerably.

Bunker trade is now reviving, and 20,000 tons were recently exported from South Wales to France. Thus there is a prospect of employment at collieries becoming brisker.

French Production Equals Consumption

The slight improvement of the industrial situation has not so far affected the coal business materially, as available coal is still greatly in excess of demand. It is quite evident that buyers are only covering their most urgent needs in order to have the benefit of an inevitable drop in home-produced coal which is being at present heavily stocked. British coals are still being actively offered at further reductions, but apparently without attracting French buyers.

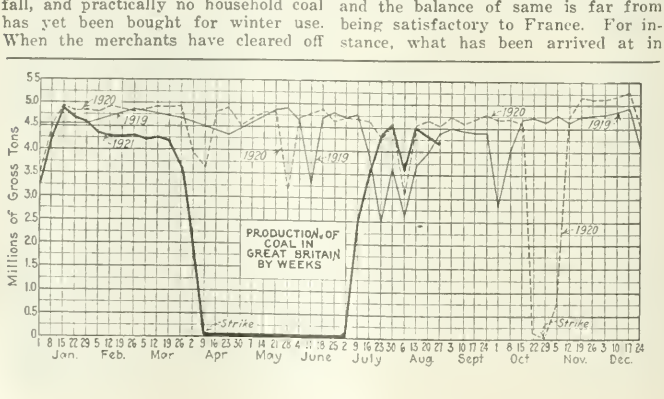
Much is being written on the possibilities of Saar coal by those who are bent on freeing France from any dependency on foreign coals. It is put forward that production could be enormously increased, in fact to an extent sufficient to enable France to cease buying foreign coals altogether.

The Interallied Financial Conference terminated their work on Aug. 14 and came to an agreement in which it is stipulated "that all coal received from Germany up to Aug. 31, 1922, via Rotterdam and Antwerp, and which as being invoiced at the British export price, will be reckoned on the basis of the German inland price." This is the question of the f.o.b. price which has always caused so much comment all round; its settlement represents to France a saving of 140,000,000 gold marks.

However, the general agreement has yet to be approved by the governments, and the balance of same is far from being satisfactory to France. For instance, what has been arrived at in regard to Saar coals is flatly repudiated by the French Premier.

French coal production for June, 1921, was 1,762,160 tons. Lignite output was 48,301 tons and the Saar furnished 728,197 tons. In July the total production in France, including the Saar region, was 3,217,632 tons. A cablegram to the Department of Commerce states that French coal mines are increasing their production at a rate considerably higher than expected.

Production of coal in the Ruhr district for the week ended Aug. 27 was 1,787,085 tons acording to cable advices to *Coal Age*, as compared with 1,791,579 tons in the week of Aug. 20. Production in Upper Silesia for the month of August was 2,074,132 tons.



Export Clearances, Week Ended Sept. 8

FROM HAMPTON ROADS

	Tons
For Atlantic Islands:	
Nor. SS. Bratlaod, for Curacao	2,500
Nor. SS. Gran, for Kingston	3,032
For Argentina:	
Br. SS. Shannonmeade	6,011
Br. SS. Torrent	3,826
For Cuba:	
Am. SS. Callabasas, for Santiago	1,364
For Italy:	
It. SS. Belvedere, for Trieste	2,817

FROM PHILADELPHIA:

For Canada:	
Schr. Priscilla Aldeo, for St. Stephen's	
Dan. SS. Bornhold, for St. John's	

Pier and Bunker Prices, Gross Tons

(Foreign Bunker Quotations by Cable to Coal Age)

PIERS

	Sept. 3	Sept. 10†
Pool 9, New York	$5 75@$5 90	**$5 75@$6 00**
Pool 10, New York	5 50@ 5 65	**5 80@ 5 85**
Pool 9, Philadelphia	5 80@ 6 00	5 80@ 6 00
Pool 10, Philadelphia	5 40@ 5 70	5 40@ 5 70
Pool 71, Philadelphia	6 00@ 6 25	6 00@ 6 25
Pool 1, Hampton Roads	4 90@ 5 15	4 80@ 5 25
Pools 5-6-7, Hampton Roads	4 50@ 4 75	*4 50*

BUNKERS

	Sept. 3	Sept. 10†
Pool 9, New York	$6 20@$6 30	$6 20@$6 30
Pool 10, New York	5 95@ 6 05	5 95@ 6 05
Pool 9, Philadelphia	6 10@ 6 30	6 10@ 6 30
Pool 10, Philadelphia	5 75@ 6 00	5 75@ 6 00
Pool 1 Hampton Roads	5 10@ 5 25	5 10@ 5 25
Pool 5, 6, 7, Hamp. Rds		4 65
Welsh, Gibraltar	50s. f.o.b.	50s. f.o.b.
Welsh, Port Said	64s. f.o.b.	64s. f.o.b.
Welsh, Singapore	102s. 6d. f.o.b.	75s. f.o.b.
Welsh, Rio Janeiro	75s. f.o.b.	75s. f.o.b.
Welsh, Algiers	50s. f.o.b.	50s. f.o.b.
Welsh, Malta	60s. f.o.b.	60s. f.o.b.
Welsh, Lisbon	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, La Plata	70s. f.o.b.	70s. f.o.b.
Welsh, Madeira	57s. 6d. f.a.s.	57s. 6d. f.a.s.
Welsh, Teneriffe	57s. 6d. f.a.s.	57s. 6d. f.a.s.
Welsh, Genoa	58s. t.i.b.	58s. t.i.b.
Durham, Newcastle	35s.@37s.	35s.@37s.
Belgian, Antwerp	110 fr.	110 fr.

C.I.F. Prices, American Coal

(In Gross Tons)

	Sept. 3 — Low Vol.	Sept. 3 — High Vol.	Sept. 10† — Low Vol.	Sept. 10† — High Vol.
River Plate	$10 85	$10 25	*$10.76*	*$10 20*
French Atlantic	9 75	9 25	9 75	**9 30**
United Kingdom	9 75	9 30	*9 65*	9 30
West Italy	10 15	9 65	*10 05*	*9 60*
Scandinavia	10 30	9 95		
Rotterdam				
Cuba	7 25	7 00	7 25	*6 85*

Current Quotations British Coals f.o.b. Port, Gross Tons

Cardiff	Sept. 3	Sept. 10†
Admiralty Large	33s.	32s.6d.@33s.6d.
Steam, Smalls	19s.	18s.6d.@19s.6d.
Newcastle:		
Best Steams	28s.9d.	27s.6d.@30s.
Best Gas	28s.	*27s.@28s.*
Best Bunkers	27s.6d.	**28s.@29s.**

† Advances over previous week shown in heavy type, declines in *italics*.

Reports From the Market Centers

New England

BOSTON

Market Saturated—Prices Continue on Low Level—Cheap Coal at Hampton Roads — All-Rail Extremely Dull — Anthracite Domestic Moving More Easily.

Bituminous—Careful canvass of the current market discloses no significant developments. Prices are still under the pressure of shippers to move coal, particularly via Hampton Roads, and what sales are reported are on the lowest basis heard thus far this season. No reaction has as yet set in, so far as we are advised, and in none of the industries is there any likelihood of such an early increase in business that would mean greater fuel consumption than at present. There are instances of oil supplanting coal, but these are now scattered over different parts of New England and seem not so significant as the general shift from coal to oil in the district about Providence, R. I., a few years ago.

Pocahontas and New River shippers are still favored by the range of marine freights, and through a widening belt, widening as prices recede, there is a certain volume of smokeless coal being placed on the spot market from day to day. A price of $4.80 per gross ton f.o.b. vessel at Norfolk, was freely quoted on Pool 2 last week, and at the rate market cargoes are coming forward it is to be expected that the price level will drop still further, at least until certain accumulations at the Hampton Roads piers are worked off. The quiet state of prepared coal West, along with the weak market on coke and slack, and the lack of any urgent demand either cargo or bunker for offshore leaves New England one of the very few openings.

For the Pennsylvania coals all-rail there is only a very scattering demand. Prices on the better grades from the central district are not low enough to compete with Pocahontas and New River under present conditions, and there is hesitancy on the part of consumers to buy the medium coals that run rather high in ash and sulphur. Sales agents are keeping in close touch with buyers, but the response so far is slow and faltering.

The daily average of steam coal received through the Hudson River gateways remains extremely low as compared with recent years.

The New York and Philadelphia piers are still suffering from extremely light business. The barge lines that regularly operate from Hampton Roads find it difficult to fit in very much movement from Philadelphia and are inclined to ask a higher rate to compensate for loss of time and certain charges that are incident to movement on the Delaware. For these and other reasons there is nothing like the movement of Pennsylvania coals from New York and Philadelphia that might be looked for during a period of such low coastwise freights.

Anthracite — The large companies are having much less difficulty moving prepared sizes. Even chestnut is in better demand, and by the end of the month there may easily be a fairly active market. Certain cities in this territory show a better retail demand, and without much doubt this will spread when cooler weather prevails.

Tidewater—East

NEW YORK

Anthracite Situation Continues to Improve—Demand More Evenly Divided —Steam Coals Stronger—Bituminous Market in Better Shape — Stronger Market Indicated.

Anthracite—The situation is gradually improving. With demand on the increase some of the smaller operations on short time or closed are now making preparation for reopening.

The demand from retail dealers, which has been centered on stove, has now spread over egg, stove and chestnut, although not evenly. Locally there is a better call for egg than for chestnut, while from New England and the West the latter size is mostly wanted.

Independent coal is moving easily, some being quoted above company schedules. Pea coal is up, the better grades being held around $6. Buckwheat is not as strong as rice, while barley is the longest of the three coals.

Bituminous—The trend to improvement continues. Inquiries are increasing and more business is being placed. Some shippers report more business already booked for September delivery than they had during the entire month of August, while the deliveries for October will, it is believed, exceed those for the present month. For future business there is a tendency to stronger quotations.

The demand has been spotty, much depending on how badly the buyer wants the coal and on how much coal the seller has available. One prominent operator who recently made a tour of some of the adjoining states where bituminous is used largely in industrial plants expressed surprise at the small amount of coal in storage. Many of the mines continue to be closed down, while others are working scarcely half time. Boatmen are looking for business but are holding their prices for harbor work at around 35c.

On Sept. 9 there were reported outside the pools 1,359 cars and 39 cars in the pools.

PHILADELPHIA

Anthracite Demand Eases — Retail Prices Tend Higher—Steam Coals Inactive—Bituminous Unchanged—Market Prices Continue Low — Some Contract Changes.

Anthracite—The weather so far this month has been so unseasonably warm that the pep is out of the late August retail market. Home-coming vacationists have not bought as usual. Retail men are inclined to pass the Sept. 1 general increase in mine price on to the buyer. Some quite sizable retail men are asking $14 for egg and $14.25 for stove and nut, although most all still cling to $11 for pea. An increased price schedule by some of the largest dealers is expected about the 20th of the month.

Shippers report coal moving in better volume and distribution in good shape. Nut and pea are piling up. We recently heard of a distress sale of pea as low as $4.25, with considerable at $4.75, and plenty to be had at $5 to $5.25. Dealers are taking this coal on as a speculation. Some dealers report better collections.

There is little improvement to record in steam coals, although some interests reported a slightly better demand for barley, while buckwheat and rice remain only in moderate demand.

Bituminous—The market shows no change. We have heard of some big users who have signed agreements for coal sufficient to carry them for the balance of the coal year, and while neither the shipper nor consumer considers this an ordinary contract, yet it amounts to the same thing, with the price 50 per cent lower than so-called contract prices for good coals. More than one shipper has reduced his prices on contracts to meet the spot market.

Spot prices continue at the level of the past six weeks. The trade is somewhat inclined to feel that September will not witness the beginning of the upward climb that has been so much looked forward to.

BALTIMORE

Bituminous Business Tightening — Prices Advance — Anthracite Consumers Hold Back — Hard Coal Movement Far Below Normal.

Bituminous—Whether under the impulse of the general news from over the country that business is picking up or due to the slightly better return of ordering in the local field, the soft-coal business is showing decided signs of tightening. The best grades of steam coal are now going under contract in a way that is sure to tighten still further the situation on the spot market. Pool 1 is now so thoroughly covered that the offerings of this coal in the open market are getting rather scarce.

The result has been that while some has been offering this week at $2.75 a net ton f.o.b. mines, which in itself is an advance over the week previous, the majority of free No. 1 is now being held at $3. Pool 9 is quoted around $2.50; in some cases a little lower and in some a little higher. Lower-grade steam coals for which there is any market run from $2 to $2.25. There is practically no demand for either Pool 18 at quotations around $1.84 or Pool 34 around $1.50. Best grade Pennsylvania gas lump is selling around $2.75 mine basis with West Virginia lump at from $2.25 to $2.50. Pool 61 is offering here at $2.25. The export situation is far from brisk.

Anthracite—Continued warm weather and the unshaken belief of the public that lower prices at retail may result from the action of the Grand Jury in Baltimore against retail coal dealers apparently are enough causes to prevent any considerable ordering of coal supplies, despite the fact that cooler weather is almost at hand. During the month of August a total of 721 cars of hard coal were received in the Baltimore district over the Pennsylvania, Baltimore & Ohio and Western Maryland railroads, or about 28,000 tons. This is less than half the normal movement. From April 1 to Sept. 1 the receipts here were actually about 90,000 tons short of the usual 360,000 tons.

BUFFALO

Bituminous Prices Sagging Again—Wages Refuse to Come Down—Anthracite Shipments Lighter.

Bituminous—Shippers do not speak in an encouraging way of the trade, some saying that prices are not as high as they were. The shipper looks at the report of more coal mined with anything but pleasant feelings. He knows that so long as mining jumps up to meet any slight increase of demand it is useless to expect much improvement in prices. As to wages it is not expected that the miners will give up present figures, so that it is likely to be April before anything can be done.

Some of the mining districts usually considered too far away to get into this market are now offering their output here. Latrobe coal sells at a low price, due to cheap mining, but local consumers are not used to it and do not buy it readily. Now and then a shipment of West Virginia coal is offered at a cut price. The tendency is to weaken the market. General bituminous quotations remain at $3 for Youghiogheny gas lump, $2.75 for Pittsburgh and No. 8 steam lump, $2.50 for Allegheny Valley mine run and $1.75 to $2 for all slack, adding $2.36 to Allegheny Valley and $2.51 to other coals for freight.

Anthracite—The demand increases slowly, but it will take some pretty cool nights to set consumers to buying. Lack of work is going to oblige more people than usual to buy a little at a time, and that, with the idea still prevailing that prices are to decline, will cut down the demand more or less. In many parts of Canada the September advance in prices has been 40c. to 50c., compared with 10c. here. Independent operators are asking $8.75 for stove size, which is a full dollar over circular, with few takers.

Lake—The movement from this port has suddenly declined sharply, but that is supposed to be due to the holiday and an accidental slacking off of clearances, loading being about as usual. For the week ending Sept. 7, clearances were 87,500 net tons, of which 49,500 tons were for Duluth and Superior (shipper's option, after sailing), 25,100 tons for Milwaukee and 15,100 tons for Chicago. Freight rates remain at 50c. to Duluth, 60c. to Milwaukee and 65-70c. to Chicago.

Northwest

DULUTH

Lake Receipts Decrease as Shipments Steadily Increase—Supplies for Dealers Expected to Be Plentiful.

It is not expected that September receipts will approximate the 1,106,756 tons of bituminous and 412,305 tons of anthracite received here in August. Receipts for the season have reached 6,529,256 tons of soft coal and 1,198,205 tons of anthracite, a gain for both over last year.

Shipments from the docks are steadily increasing in volume and dock men feel safe in predicting that dealers will all have plentiful supplies on hand by the time cold weather makes the general buying market take a jump.

Two boats arriving for a Duluth dock this week were unable to discharge their cargoes and now are standing alongside waiting for sufficient coal to be moved out to accommodate their loads. Thirty-two cargoes arrived at Duluth-Superior harbor last week, of which seven were anthracite, and it is reported that nine are on the way, one of which is hard coal.

MINNEAPOLIS

Coal Shortage in Northwest Unlikely—Shyness of Steam Users Depresses Demand for Illinois Coal—Retail Business Good.

There has been a general admission in the last few weeks that the chances of any real coal shortage for the Northwest were exceedingly remote. It has been apparent for many weeks that this would be the case, unless there should be a sudden and inexplicable reversal of form. For three months coal has been coming to the docks on Lake Superior in large quantities. For a month or so it has been something of a question at times whether the cargoes could be unloaded, and considerable delay has been caused by the quantities on the docks. The exploitation of the possible coal shortage does not seem to have done the slightest good toward inducing anyone to buy coal earlier.

Aside from the innuendo which will attach to the trade from the shortage predictions, its members have come through the summer in first-class shape. They have proceeded to handle their business to their own best judgment. They have urged a better distribution of orders, and they have stated that there was no chance of any lower prices on domestic coal—a prediction which has been confirmed up to this time.

Steam users are very backward about taking hold, and this has affected the demand for Illinois coal, which usually is fairly active by this time. Many large users are buying only as they need it, and are still looking for a substantial reduction in prices beyond the figures already made. Retail orders are coming along very well, and retailers are moving out coal as fast as they can do so conveniently.

MILWAUKEE

Demand Improving but Not Sufficiently to Relieve Dock Congestion—Shortage in Anthracite Stove.

Dealers are urging industries to stock up with soft coal in order to relieve the docks and make room for additional supplies. There was a slight flurry the first of the month because of a report that anthracite was to be advanced 40c. to cover a Pennsylvania State tax, but the report was promptly discredited.

As it stands, anthracite was advanced 10c., with the exception of buckwheat. Three dock companies, representing the Philadelphia and Reading, and Lehigh Valley interests, are selling at 10c. under the figures, however, due to the fact that they failed to exact the customary 10c. advance in July.

Receipts by Lake are holding up somewhat better than was predicted. The record for the season at the close of August was as follows:

ANTHRACITE

	1921	1920
April	43,100	17,500
May	204,246	109,600
June	153,135	138,771
July	124,934	104,690
August	141,071	126,206
	666,486	496,767
Increase	169,719	.....

BITUMINOUS

	1921	1920
April	154,583	26,000
May	486,967	136,462
June	492,965	192,573
July	334,453	259,459
August	330,886	401,554
	1,799,854	1,016,048
Increase	783,806	.....

Inland West

ST. LOUIS

General Conditions show Slight Improvement—Steam Business Still Quiet—Higher Priced Domestic Coals Fail to Move.

The general public as yet has not started buying. Some tonnage of cheaper coals is moving, but the better grades are slow. Dealers are

loading up their yards, anticipating the demand. Several thousand tons of Pennsylvania anthracite are in storage in yards since last spring and it is a question whether it will all move out.

Locally steam is in a bad way. Just enough to keep going on seems to be the idea of the buyer and it is a good one for him, for prices keep slipping down. There are fairly good storage supplies at many plants. Country steam is from bad to worse and in time this business will only be a memory in many sections.

Movements through this gateway are good for Omaha and St. Joseph, and Chicago is coming in now for the larger sizes of cheaper coals. Retail prices are unchanged.

DETROIT

Sales in Both Steam and Domestic Divisions Continue Light — Incoming Shipments Small—Little Free Coal in Sight.

Bituminous—Despite the lateness of the season, wholesalers and jobbers are making slow progress. Consumers of steam coal are still buying on a hand-to-mouth basis.

The disinclination to increase stocks is credited to a desire to watch the progress toward restoration of usual conditions in business and industrial lines. There is also a feeling on the part of the buyers that the present situation makes it desirable to retain all working capital as far as possible in liquid form rather than have it invested in raw material or commodities used in operations but not immediately required.

The domestic division is largely a weather market. Several days of low temperature bring an increase of buying from householders. The buying is in small lots generally.

Anthracite—Only a small volume of business is being done. Dealers have been informed that certain independent producers are advancing prices beyond the seasonal basis.

CHICAGO

General Market Improvement Felt—Roads Purchase Spot Coal—Heavy Line of Inquiries.

Sales companies report many more inquiries on both steam and domestic sizes, and some noteworthy sales have recently been made. Those who have been putting off storing their winter supply until the last minute have now come into the market, probably having been influenced by the many editorials and warnings issued by the press concerning an anticipated shortage.

Considerable steam coal has been purchased lately. The buyers, however, have all been of one class, namely, the railroads, who, on account of the information at their disposal realize there is going to be a coal shortage. In spite of their poor financial condition they are buying coal on the open market above contract requirements.

Out of town buyers have been coming into Chicago in larger numbers. While but few purchases have been made, the buyer who is away from the big central market is showing some anxiety about the future, and is coming to size up the situation for himself. These out-of-town purchasing agents, as a general rule, represent only the retail dealer, as purchasers of steam coal who have plants outside of Chicago have been conspicuous by their absence.

Pocahontas and Eastern coal receipts continue in large volume, especially the smokeless variety. Smokeless coal is a little stronger than it has been as the lowest figure at which it is now possible to buy mine run is in the vicinity of $2.65 a ton, which shows a gain of about 25c. over the last few weeks. Anthracite is coming in fairly normal volume although not in as great quantities as is generally the case at this time of the year. It is possible, however, to pick up anthracite at prices considerably below the circular.

CINCINNATI

Holidays Cut Trading — Smokeless Prices Drop — Better Buying Noted.

Labor Day dulled the edge of trade here to a considerable extent. However, the volume of the movement is greater than for some time past with the bulk of the tonnage going to fill contract requirements and quite a little extra for the Lake.

The spot bituminous market has been fairly even, although West Virginia slack is again on a basis of competition with the Kentucky producers, prices ranging $1@$1.45 while the Kentucky offerings are $1@$1.25. West Virginia lump and block is $2.75 @$3.50; Kentucky holds firm at $3@ $3.50 and mine run $1.60@$1.70, while that from West Virginia is $1.60@ $1.75.

Considerable adverse comment is heard on the drop in smokeless to $4.50 @$5 for lump and egg and $3.50 for nut, the country dealers who had stocked up being the chief critics. Mine run can be had in the open market for $2.75. Slack is $1.50@$2.50.

Retail prices have not shown any great disposition to change and one dealer gave it as his opinion that even though the prepared sizes of smokeless had fallen off the market would have to reach a $4 level before there could be any great change.

CLEVELAND

Industrial Demand Improving — Retail Trade Shows More Life — Lake Movement Still Lags — Prices Recover Slightly.

With steel mills operating at the highest rate in months, and with paint, textile and a few other industries experiencing what is believed to be the beginning of a recovery in trade, there is a decidedly more cheerful sentiment spreading in the coal markets. Sufficent inquiries are appearing to indicate that industrial consumers are taking much more interest in the market. Many of them are still clinging to the hope that freight rates will drop and bring prices down with them. On the whole, consumers are feeling their way cautiously, many of them asking for bids on requirements which they expect to cover just as soon as conditions in their respective lines justify definite manufacturing schedules. In the meantime such coal as is moving represents immediate needs.

The railroads are buying more freely. With the exception of slack, which has reacted from the peak of around $2 touched a few weeks ago, all grades of steam coal continue firm with stiffening tendencies appearing here and there.

Retailers report perceptible gains in buying from domestic users in the last week or so. There is no rush and none is expected before cool weather actually arrives, but the volume of orders received daily is gradually swelling. An advance of 15c. for anthracite stove brings the retail price to $4.40 and has been the only change of retail quotations.

Bituminous receipts show an increase for the week ended Sept. 3, both in industrial coal has not been sufficient dustrial 563 cars, retail 263 cars, total 826 cars; as compared with 660 cars the week preceding.

COLUMBUS

Domestic Demand Fair — Steam Trade Dull in Every Locality—Screenings Firm—Lake Trade Tapering Off—Prices Unchanged.

The domestic demand is still the chief feature of the Ohio coal trade, a few cold nights having brought householders to the realization that winter is not far off.

Retail prices are strong at former levels with smokeless in the lead. Pocahontas lump retails from $9.50 to $10. while anthracite is quoted at $15. Coke sells around $11.50 to $11.75. West Virginia splints are delivered at $7.50 while Hocking lump is quoted at $6.50.

Tonnage from Ohio mines to the Northwest is very much reduced. During the week ending Sept. 3 the Hocking Valley docks at Toledo loaded 116,020 tons, as compared with 148,611 the previous week, making 3,084,653 tons for the season, a gain over last year of 1,000,000 tons. The T. & O. C. docks during the same week loaded 29,635 tons as compared with 48,028 tons the previous week, making a total of 808,226 tons for the season.

Steam coal demand is slow in resuming; railroads are taking only a limited tonnage, while there is a steady demand for screenings from public utilities. All colleges and public institutions have been supplied with fuel. Small sizes show a little strength as a result of these conditions. Output in the Hocking Valley, Cambridge and Crooksville fields is estimated at 28 per cent of normal, in Eastern Ohio at 30 per cent and in Pomeroy Bend at 30 per cent.

Southwest

KANSAS CITY

Mines on Short Time — Steam Coal in Small Demand — Advance in Price of Fuel Oil Deters Industrials From Giving Up Coal.

This week has brought little change in the local coal market. Mines are on short time, steam coal being in small demand and the domestic trade not having improved sufficiently to warrant increasing output. A slight advance in fuel-oil prices in several districts has served to deter more industrials from converting from coal to oil fuel.

Mine-run coal is not meeting with much favor as a domestic fuel, but the indications are that consumers will have to fall back on this size in the winter because of inadequate stocking this summer. Prices of Kansas lump are $4.75, mine-run $4.25, slack, $2.50. Missouri lump from Bevier is $4.75, mine-run, $3.85 and worked slack $3.65. Arkansas lump is quoted at $7.50, mine-run $4.50 and slack $2.50.

South

LOUISVILLE

Better Cotton Prices Expected to Help Coal Business—Railroad and Utility Consumption Improves.

With prices for cotton up to 19c. a pound and better on futures the situation in the South looks much brighter, and the operators are encouraged. So far textile mills or other consumers have not increased orders, but the outlook from the standpoint of general consumption is better, due to the fact that the South will have money.

Railroad consumption is picking up, and gas and utility production is better. Retailers report somewhat better business. Local yards contain more coal than in years past and are buying coal for replacement about as fast as they deliver.

Shippers of coal are afraid that in the event of any material increase in demand the railroads will be unable to supply cars, especially if equipment is not in first-class shape. Reports show that time lost in the Kentucky fields due to shortage of orders, has been decreased by about 4 to 5 per cent in the past two or three weeks.

BIRMINGHAM

Trade Quiet but Improving Slightly—Prices Practically Stable — Production Showing Some Gain.

Trade conditions are gradually growing better, but the elements of steadiness and permanency in the upward trend are not thoroughly established as yet. Increased inquiry, has not resulted in a steady buying movement, but improvement in sales has been of a rather intermittent character. Consuming sources are being gradually added, however, as industrial plants are taking on a steadier stride and the demand will become stronger and more dependable.

Sales are now practically confined to the spot market, and contracts are neither being offered nor solicited. Quotations have become practically stable and are shown in the Weekly Review.

Domestic coal is not moving in a satisfactory manner. The market is dull and discouraging. Prices f.o.b. mines for the month of September show increases of 10c.@25c. per ton in most cases on the better grades, though some producers maintained the August schedule and Corona lump shows a reduction of 20c. per ton.

News From the Coal Fields

Northern Appalachian

UNIONTOWN

Still Difficult to Move Tonnage—Movement Is Mostly on Contract—Prices at Old Levels.

Although there has been a complete lack of disorder throughout the Connellsville coke region due to the strike situation which had its origin with the suspension of operations at the plants of the W. J. Rainey, Inc., the strikers have made encroachments at plants of other independent operations adjoining the Rainey plants. (The situation is covered in the news columns.)

Despite the curtailment in operations there has been no reaction in the market and there is as much difficulty as ever in disposing of tonnage produced. Most tonnage is moving on contracts but there is some finding its way to the open market; in those transactions, however, operators are meeting with price resistance consumers seeking to shade a $3 dead-line figure, which has been fairly well established for standard furnace quality. Off-grade coke is offered at $2.75 and $2.85 but standard furnace is commanding $3 and $3.25 and operators are holding firmly to those figures. Foundry coke likewise is firm at $4 and $4.25, but sales are limited.

There is no demand for coal despite the approach of cooler weather and prices remain at old levels, steam coal being quoted at $1.55 to $1.75 and by-product at $1.85 and $2.

EASTERN OHIO

Production Lowest Since Last Week in April — Utility and Railroads Place Large Contracts — Healthy Retail Demand.

Production during the week ended Sept. 3 was 346,408 tons, or 55.5 per cent of rated capacity, and 16,000 tons below the previous week; in fact, the lowest since the last week in April.

Cessation of Lake shipping accounts for the falling off in production with no prospect of change for thirty days. The number of loads at lower Lake docks is averaging around 9,000 cars, receipts a little over 1,000 cars, and dumpings 1,500 cars, daily.

While industrial inquiries are said to be sagging somewhat, it is reported that the Cleveland Electric Illuminating Co., a large public utility, has just closed for another hundred thousand tons for storage, to be delivered during the next few months, and also that the Michigan Central and Baltimore & Ohio railroads have recently contracted for some large quantities of fuel in this field. The railroads are understood to be taking around 40 per cent of the present output of this field.

Lake shippers are now either curtailing or closing down, while domestic coal shippers are increasing operations. Retail dealers report a healthy demand and Ohio's industrial situation apparently is slowly improving. Spot inquiries are not so active and there has been a consequent shading of prices.

PITTSBURGH

Market Stagnant—Asking Prices Unchanged—Business Going to Non-Union Fields.

The labor troubles in the Connellsville region have not affected the Pittsburgh district coal market, which continues altogether inactive, with not enough turnover in the open market to disclose actual prices, so that the market is quotable as of late on the basis of asking prices. While coal demand in general is light there is no question but that a considerable volume of business normally tributary to the Pittsburgh district has been going to non-union fields, particularly Connellsville.

There is no change in the wage situation, operators showing no signs of making a move to open up the matter with the United Mine Workers. It is asserted that many union men have gone from the Pittsburgh district to Connellsville and other non-union districts where they have obtained employment at such wages as are obtainable.

CONNELLSVILLE

Labor Situation Dominates Coke Market—Prices 25c. Higher—Production Increases.

The Connellsville coke market has been dominated by the labor situation, and is up 25c. in the week. (The labor situation is covered in the news columns this week.) As a result of the blowing in of two or three furnaces and the buying caused by strikes the coke market has advanced sharply 25c. and

there is a distinct possibility that further advances will occur. The market is now quotable strong at $3.25 for furnace coke, either spot or contract, and at $4.25 as minimum for spot foundry, some brands as formerly commanding $4.50, all prices being per net ton at ovens.

The *Courier* reports production in the Connellsville and lower Connellsville region in the week ended Sept. 3 at 14,120 tons by the furnace ovens, an increase of 1,420 tons, and at 25,240 tons by the merchant ovens, an increase of 4,080 tons, making a total of 39,360 tons, an increase of 5,500 tons.

CENTRAL PENNSYLVANIA

August Loadings Gain — Union Fields Suffering — Operators Favor Early Break With U. M. W.

A gain of 5,200 cars was made in August over July, the loadings being 56,300. While the gain is slight, the producers accept it with a feeling of optimism and believe that the increase will be maintained to some extent. Quotations are now at their lowest ebb and in the union fields of central Pennsylvania the spot price on all grades is below the cost of production.

The United Mine Workers are sitting tight on their policy of no reduction. This is working great hardship among the miners in portions of the field. It is the general belief among operators that this attitude will bring about a strike next spring and that the only thing left is to break with the union. Many are in favor of breaking now as it would cost the miners, operators and the public the least. Some operators stand ready to wait until the result in the central competitive field is made known.

FAIRMONT AND PANHANDLE

Production Declines—Inquiries for Future Tonnage Encourage Operators—Steel Mill Resumption Significant.

Fairmont

Although production was less during the week ended Sept. 3, there were undoubtedly more inquiries for tonnage. The belief prevails that demand will be better in the near future. Current orders, however, were few, contract business still constituting the bulk of production. Dullness was not strange in view of the small demand for coal at Tidewater and the Lakes.

Northern Panhandle

Inquiries were somewhat more plentiful, although having no sequence in increased orders, owing to a decided lull in Lake buying. A gradual resumption of operations at steel mills in the district was relied upon to help matters in the near future.

UPPER POTOMAC

Operating Conditions Unchanged—Spot Market Barred by High Mine Wage Scales.

At the outset of September there was comparatively little change in operating conditions. Virtually all the mines on the Western Maryland were out of commission and similar conditions prevailed in the Georges Creek region. Aside from a few contract orders, high mining rates made it seem unlikely that an early production recovery for spot account could be looked for.

Middle West

MIDWEST REVIEW

Signs of Improvement — Domestic Better but Far from Normal — Labor Unrest Grows.

If one searches carefully it is not difficult to find unmistakable signs of improvement. Professional economists returning from St. Paul and Minneapolis report improvement in that vicinity. Goverment reports from Seattle, Portland, etc., advice that the raw products from the Northwest, for instance, lumber and fruit, are moving east in a satisfactory manner. In the South the cotton business has taken a new lease on life; and in the Middle West proper, it appears that the steel industry is improving.

These signs of better conditions have not affected the steam market as yet although it is expected that demand will show some signs of improvement during the next two weeks. The railroads are buying more coal in order to prepare themselves for the winter months; and practically all industries who see any gleams of hope for future business are gambling on putting in a small supply of coal at bargain prices. It is expected that improvement will come very gradually, so gradually that it will be hard to notice until it is well under way.

While the domestic situation is much better than it has been in a long time, it is far from normal. The rural population of the Middle West on account of the decrease in the demand for farm produce, are feeling very poor, and are economizing in every way possible.

The average user in the Middle West sizes up coal only by what it costs in his bins, and he knows that coal costs him more today than it did in the pre-war period, consequently, he feels he is being imposed upon and is going to buy just as little as he can.

As we ventured to predict a few weeks ago, trouble can be expected from the Illinois and Indiana fields. It seems there are some mines producing fluorspar down in Hardin County. The operators of these mines have had trouble with their men ever since last November, and the miners of this mineral have enlisted the sympathies of the coal miners in the neighboring field. Several mobs of coal miners from Eldorado and other adjacent points started to march into the fluorspar district, and serious trouble was barely averted. In fact, the situation today is far from settled. These disturbances, coupled with the recent trouble in Sullivan County in Indiana and in the West Virginia fields show that the coal miners are in an aggressive state of mind and will have to be handled very carefully in order to avoid future difficulties.

INDIANA

Consumers Tardy in Laying in Coal Supplies — Advance of 25c. a Ton on Coke and Anthracite the Outstanding Feature.

At this time of year from 25 to 35 per cent of the domestic winter supply of coal should be in the bins, whereas it is estimated that not more than 12 to 18 per cent has been purchased. Even the railroads are buying slowly and without much spirit in Indiana.

Retailers say a recent advance of about 25c. a ton on coke and anthracite is the only important change in prices in recent weeks. Pocahontas lump coal, selling at the mines at $5 a ton, to which is added $3 for freight and war tax, is retailing in Indianapolis at about $11.25 a ton. West Virginia lump comes in several grades; the best, it is said, sells at the mines for $3.50 to $3.75 a ton, and the freight and war tax add another $2.90, making the price here, laid down, $6.40 to $6.65, while the retail price is approximately $9.50. Indiana lump, which dealers say may be used more extensively this winter, sells at the mines for about $3.50 a ton. The shorter haul, for which the freight rate is only $1.26 with war tax, it is understood, makes the chief item of difference in the price of Indiana lump and West Virginia lump. Indiana lump retails here at from $7 to $7.50.

WESTERN KENTUCKY

Situation Improving—One-third Shipments on Contract — Difficulty in Moving Screenings—Lump in Fair Demand—Mine Run Somewhat Slow.

Inquiry is somewhat better, and while September business has not picked up as rapidly as had been expected, the situation is showing improvement. One-third the shipments are on contract.

Western Kentucky reports some trouble in disposing of screenings, but lump coal is in fair demand. Mine-run is a little slow. Some screenings have been offered at 85c. a ton during the past few days, but very little is quoted under $1.10 a ton, the price ranging in some instances as high as $3.

Middle Appalachian

HIGH-VOLATILE FIELDS

Production Fails to Increase — Better Market Outlook — Labor Disturbances Cause Tonnage Loss — Inquiries Are Heavier.

Kanawha

Partial paralysis of production was the inevitable outcome of the civil war waged by union miners of the region in

the week ended Sept. 3. During the greater part of the week in the Coal River territory railroad service was inoperative so that coal shipments were literally at a standstill and producers were not able to take advantage of the increase in inquiries.

LOGAN AND THACKER

Despite the fact that the Logan field was upset by the invasion, production averaged about 22,000 tons daily. Inquiries were increasing and more orders were received. The increase was largely of an industrial nature, there being no export business whatsoever.

Williamson production did not reach over 40 per cent of capacity. Market rather than industrial conditions or labor disturbances was affecting production although better railroad fuel orders helped somewhat. Producers as a rule were optimistic of an early betterment in conditions.

NORTHEASTERN KENTUCKY

Steam buying showed more activity than the domestic end. It was very hard, however, to move much mine run and, as there was comparatively little slack available, it was in fair demand. Production on the Big Sandy and its tributaries was not much in excess of 30 per cent.

VIRGINIA

Although inquiries were more numerous and orders were beginning to appear, yet upon the whole, there was little change as compared with recent preceding weeks, the output being not far below 50 per cent of capacity. The bulk of production was on contract orders although mine run was a trifle firmer on the spot market.

LOW-VOLATILE FIELDS

Poor Market Conditions Continue—Demand Not Yet Stimulated—Miners' Strife Affects Production.

NEW RIVER AND THE GULF

Not only market conditions but the uprising in the Kanawha and Coal River regions, causing wholesale desertions from the mines, retarded New River production in the week ended Sept. 3. Tidewater demand was extremely dull, not even much bunkering coal being shipped.

Poor demand held Winding Gulf production down to less than 50 per cent of capacity. Tidewater shipments were next to nothing, and the low prices prevailing prohibited a large movement even to Western markets.

POCAHONTAS AND TUG RIVER

Pocahontas production was less during the week ended Sept. 3, "no market" losses aggregating over 235,000 tons. There was no demand at Tidewater either for commercial or bunkerage purposes and while the bulk of the output went to Western markets, the demand was not as strong as it might have been. There was an extremely poor market for slack, while mine run was soft.

A revival of activity in the steel and iron trade exerted a beneficial effect on Tug River production, which was being retained at a little less than 80,000 tons a week. Few mines were down entirely but half-time was about the maximum. Much of the output went to the West.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Little Change in Volume of Shipments—Inquiries Plentiful—Not Much New Business—Car Shortage Past.

So far as actual shipments are concerned, the first week of September brought little or no change. Inquiries are more plentiful but result in little new business. Retail yards are taking a minimum of domestic coal and steam sizes continue to drag.

Cars are more plentiful on the Louisville & Nashville R.R. than for the past week or so and the fear of an immediate car shortage, which was apparent a week ago, seems to be over for the present.

West

UTAH

Business Picking Up—Uncertainty as to Prices—Good Operating Conditions.

Although business is considerably better, dealers have not experienced the rush that was expected. Many of the producing companies report 65 per cent running time.

The Independent announced an increase in price at the mine some weeks ago, but the company does not appear to be insisting upon it.

News Items From Field and Trade

ILLINOIS

Announcement has been made by Illinois State Director of Mines and Minerals Robert Medill, of the appointment of **J. Mulligan** as member of the state mining board, to succeed **William Turner**, who died recently. Mr. Mulligan is a resident of Decatur.

C. E. Oleson, formerly of the Old Ben Coal Corporation and the Interstate Coal & Dock Co., has been made salesman for northern Illinois of the Lake & Export Coal Sales Corporation.

Development work in the new No. 12 mine of the **Madison Coal Corporation**, in Williamson County, continues steadily, and it is predicted that by the first of the year this mine will be producing 2,000 tons daily.

A party of mining men from Great Britain, France, Belgium, Italy and South American countries, have been in Franklin County recently, making an inspection tour of the mining plants. They were accompanied by **H. Foster Bain**, Director of the United States Bureau of Mines and Minerals, **Thomas Moses**, general superintendent of the United States Fuel Co. and **Roy L. Adams**, chief engineer of the Old Ben Coal Corporation. Among those visited was the Middlefork mine and washer at Benton, Old Ben mines at West Frankfort and Zeigler and the Orient mine of the C. W. & F. Coal Co. The visitors were impressed with the modern collieries and improved methods of production in Franklin County.

The new shaft of the **Southern Gem Coal Corporation**, at Pinckneyville, has reached coal, and the company is now ready to begin hoisting. This company has recently leased mines at Cutler, Tamaroa and Pinckneyville, in Perry County, also operating mines in Franklin County.

INDIANA

Fire of undetermined origin destroyed the general store of the **Coal Bluff Mining Co.**, at Coal Bluff. The entire stock of goods also was lost. The loss was estimated by Terre Haute officials of the company at about $25,000, all of which was covered by insurance.

Lex Sherwood, formerly engineer for the Vandalia Coal Co., at Sullivan, Ind., has withdrawn from the company and has gone in Terre Haute, where he will engage in the engineering business with **Willard Reaves**.

The Pike County Coal Co., operating the Atlas mine, has resumed operations on a normal basis. Additional miners are being added to the working force.

KENTUCKY

In the involuntary petition in bankruptcy filed against the **Sun Coal Co.**, of Louisville, it is claimed that the company preferred J. W. McCulloch and P. R. Lancaster over other creditors in July, 1920, when a mortgage was executed on the company's property for $25,000 to McCulloch and Lancaster but not filed or recorded until July, 1920. McCulloch and Lancaster were among the organizers of the company, later selling their interests to C. F. Lowther, who is still president. J. O. Beubauer is treasurer. Lowther, with Lancaster and McCulloch, originally formed the company.

The Kingston Coal Mining Co., at Morton's Gap, has amended its articles of incorporation to extend the life of the corporation seventy-five years.

The Linton Collieries Co., of which E. M. Mogg, of Indianapolis, is president, is reported to plan development of 100,000 acres of coal land.

The Fayette-Jellico Coal Co., Anchor, capital $100,000, has been chartered by Lee Congleton, Mary F. Congleton, Claude Congleton, all of Lexington.

The Black Mountain Coal Corporation, of Virginia, has been authorized to operate at Keavir, Harlan County, as a foreign corporation.

The new Alex Y. Malcolmson Coal Co., recently incorporated in Louisville, is headed by some very able interests, the firm having as its head Alex Y. Malcolmson, of Detroit, formerly secretary of the Ford Motor Co. His brother, George W. Malcolmson, is vice-president, and M. J. Campbell, secretary-treasurer, is also a Detroit man. The sales manager is Louis A. Powell, formerly sales manager for the H. L. Cory Coal Co., of Chattanooga. The company will be agent for the Harlan Gas Coal Co., operating in Harlan, with an output of 25 cars daily.

The Kentucky Diamond Coal Co., of Corydon, Henderson County, capital $100,000, has been incorporated by Alfred G. Merritt, V. E. Chappell and Paul Eldridge, the former two of Corydon, and the latter of Nashville.

A. G. Funk, of the Funk Coal Co., Pikeville, Ky., and with several operations on the Big Sandy, has returned home after several weeks spent at French Lick, Ind., where he went for his health.

MARYLAND

Floyd J. Patton, of the Patton Coal Co., Fairmont, W. Va., was in Baltimore, recently on a business trip. Mr. Patton made the trip by automobile.

The Big Vein Coal Co. has been formed by Lonaconing men with a capital of $100,000. The incorporators are John L. Casey, Robert T. Love and Hugh A. McMullan, Jr.

C. H. Jenkins of Fairmont, secretary and treasurer of the Hutchinson Coal Co., spent the first few days of September at Deer Park, Md.

MINNESOTA

The Superior Coal & Dock Co. has announced that the remodeling of its Duluth dock will be completed early in September. The dock will then be ready to take coal for the winter supply.

J. W. McWilliams, of the Winnett Coal Co., Pittsburgh, was a visitor in the Twin Cities recently.

W. H. Godwin, sales manager of the Carnegie Coal & Dock Co., made a recent inspection tour of the company's docks at Duluth-Superior harbor. Mr. Godwin was optimistic over the possibilities of a good trade this winter despite the late start in selling.

MISSOURI

The Farmers & Merchants Bank of Spickard is sponsoring a movement of citizens in the sinking of a shaft near there for a mine. The shaft is down 84 ft. and has about 40 more to go.

The Charitan Coal & Coke Co., of Marceline, has preliminary plans under way for the construction of a new tipple. George Green is president.

NEW YORK

Stroud & Co. has removed to 43 Exchange Place, New York City.

Colonel E. O. Dana, head of the Campbell's Creek Coal Co., Cincinnati, is spending a vacation at Lake Placid in the Adirondacks.

George M. Dexter, of Dexter & Carpenter, 12 Broadway, New York, and Mrs. Dexter sailed recently for a sojourn in Europe.

E. H. Zimmerman, New York sales manager of the Imperial Coal Corporation, Whitehall Building, is back at his desk after a two weeks' vacation spent in New England and Canada.

New York, N. Y.—J. Wörner & Co., of Budapest, Hungary, handlers of machinery, are interested in coal pulverizing equipment. Catalogs, specifications and prices, as packed for export are wanted on this product. Their selling field on their own products covers Hungary, the Balkan States and Russia. Until Sept. 20, information can be sent to L. J. Caldor, 348 Madison Ave., New York; after that to the headquarters at Budapest.

John P. Creighton, secretary and treasurer of the Johnstown Coal & Coke Co., was in New York City several days recently.

Dr. Henry M. Payne, who is now in Mexico on consulting work, advises that he is having an interesting trip, having covered twelve states of Mexico. He has traveled over 200 miles on mule back through Jalisco and the new state of Nyarit, formerly Tepic. He will return to New York on Sept. 26, on the SS Orizaba via Vera Cruz.

OHIO

After a trial lasting three weeks in Superior Court at Cincinnati, a jury returned a verdict in favor of the **Wyatt Coal Co.,** Cincinnati, for $6,441.57 against the **McBard Coal Co.** The Wyatt company sued a year ago for $5,991.57 damages in connection with a coal contract with the McBard company. The latter filed a cross petition in which it claimed $24,000 damages against the plaintiff upon a coal contract in 1918, when the Fuel Administration had charge of the coal industry. The jury allowed nothing on this cross petition, giving judgment to the plaintiff for the amount claimed, with interest.

F. W. Braggins, president of the Lorain Coal & Dock Co., was a recent visitor in Cleveland.

J. C. Heinlein, Bridgeport, Ohio, president of the Belmont County Bar Association and also prominently identified with the coal industry of Eastern Ohio, entertained members of the Bar Association at an outing held on his estate east of St. Clairsville.

The Landreth Bros. Coal Co., of West Park, near Cleveland, has been chartered with a capital of $25,000 by T. R. Landreth, Jr., Harry E. Landreth, A. R. Landreth, Alma F. Landreth, and Florence M. Landreth.

G. H. Marting, of the Logan-Pocahontas Fuel Co., was in Cincinnati recently.

W. E. Darnaby is now associated with the Southeastern Coal Co., of Cincinnati, as vice-president in charge of sales. Mr. Darnaby has been connected with the R. O. Campbell Co., of Atlanta for many years.

W. W. Ruby, secretary of the Chesapeake and Virginian Coal Co., was in Cincinnati recently attending the funeral of his father.

W. E. Tytus has been made general sales agent for the Sunday Creek Coal Co., of Columbus, succeeding **J. R. Fitzer,** who was compelled to resign because of ill health. Mr Tytus has been connected with the company in the capacity of purchasing agent.

William Robinett, of Jacksonville, Athens County, Ohio, has been named chief state mine inspector by the newly appointed Director of Industrial Relations Tetlow. He succeeds **Jerome Watson,** of Belmont County. Mr. Robinett is president of the Hocking Valley District of the United Mine Workers.

PENNSYLVANIA

The Bird Coal Co., has put into operation its new tipple at the Kelso mines along the Windber line. This tipple cost between $40,000 and $50,000.

The Clearfield Bituminous Corporation, with mining interests in Indiana County, is making living conditions for the miners at Commodore, the new mining town, very comfortable and convenient, at a minimum cost. The town was named Commodore in honor of Commodore Vanderbilt, the founder of the New York Central, whose interests are backing the building of the town. Substantial houses are being erected and these will be rented to the miners at a rate of $14 per month.

Central City, Somerset County, the new town being developed by John Lochrie, the Windber coal operator, is fast becoming a modern city. The mines are being operated by the **Reitz Coal Co.,** one of Mr. Lochrie's Somerset interests. In building the model town, houses of the most modern types are being constructed and recreation centers and a swimming pool are included in the plans. No excuse is being spared in making Central City an ideal home town for the miners.

The H. C. Frick Coke Co., has resumed operations at its Lambert Mine, between Uniontown and Connellsville. **The Hillman Coal & Coke Co.,** is preparing to resume operations at the Thompson No. 2 and Tower Hill Connellsville No. 2 mines, between Brownsville and Uniontown. All these mines have been idle for several months.

Effective Aug. 15, **George J. Kelly,** formerly general manager of the Consolidated Fuel Co., the Ohio subsidiary of the Bertha Coal Co., became manager of the Fuel Inspection Department of the Standard Coal Sales Co., of Pittsburgh, Pa. Mr. Kelly began his coal career in the mines of the old Pittsburgh-Buffalo Co., studied engineering, later becoming superintendent and general manager of the Consolidated company. In his various capacities, Mr. Kelly has planned and installed several of the mines now operated by the Bertha interests.

The Schuylkill Valley Coal Co., through A. B. Benesch, president, Schuylkill County, has notified the office of the Secretary of the Commonwealth of an increase in indebtedness from nothing to $150,000. It has also increased its capital stock from $5,000 to $500,000.

The Silver Lake Coal Co., has increased its indebtedness from nothing to $200,000, Jesse W. Powell, treasurer, Philadelphia.

The Rainey-Wood Coke Co., has increased its capital stock from $3,800,000 to $3,950,000, Scott Stewart, treasurer, New York City.

W. K. Field, president of the Pittsburgh Coal Co., and John A. Donaldson, connected with the same company, returned from Europe on the Olympic recently.

Wilbur A. Marshall, of W. A. Marshall & Co., inspected his mines near Johnstown, Pa., recently.

Stephen Arkwright, of the Arkwright Coal Co, was visiting relatives at Mt. Pleasant, Pa., recently.

Effingham P. Humphrey, oldest son of John M. Humphrey, president of the Lehigh Valley Coal Co., has been made general superintendent of the five collieries of the J. P. Wentz Coal Co., with headquarters in Hazleton.

UTAH

The Pleasant Valley Coal Co., has been granted a lease of 1,560 acres of coal land in Carbon County under the provisions of the Mineral and Leasing Act, bidding $50,100 as a bonus. The successful bidder is required to expend at least $200,000 on the property in the next three years. The Government will receive a royalty of 10 per cent in addition to the bonus.

Sunnyside [illegible] mine of the **Utah Fuel Co.** is ready to resume production. The mine caught fire a year ago and the company has had to contend with one of the worst coal mine fires in the history of the state.

VIRGINIA

W. H. Stephens, of Charleston, sales manager of the Colcord Coal Co., spent a few days at his old home in Virginia on his annual vacation.

The Norfolk office of the **Weston Dodson Co.** is closed as of Sept. 1. J. Luther Neel, former manager of this office, died in Norfolk recently, leaving the firm without a local representative. The decline in the coal business is given as the reason for the company's suspended operations.

Virginia coal will be mined on an extensive scale by the **Superior Coal Corporation,** which has been chartered at Roanoke. This is a $2,000,000 company, with Clyde E. Smith, of Pulaski, president, and R. L. Loger, secretary, Roanoke.

WEST VIRGINIA

A. S. Knowles of New York, head of a well known firm of testing engineers, was a visitor in the Fairmont region during the early days of September.

H. S. Gay, general superintendent of the Gay Coal & Coke Co., operating in Logan County, has returned to his headquarters after a business trip to Baltimore.

B. P. Wolfburg, in charge of the sales department of the Lake & Export Coal Corporation of Huntington has returned to his Huntington headquarters after a trip to Chicago and other Western markets.

Following his graduation from Yale, **Austin King, Jr.,** has been appointed purchasing agent for the numerous companies in which his father, A. J. King, of Huntington, is interested.

Work having been completed on the new plant of the **Seminole Gas Coal Co.,** at Haywood Junction, Harrison County, affiliated with the Jewett, Bigelow & Brooks interests, the first coal was mined and shipped from this plant recently. This company will operate in a tract of about 400 acres of low-sulphur coal. The company has put in a belt conveyor which has a capacity of between 2,000 and 2,500 tons a day. An alternating current arcwall machine has also been installed. A. D. Carr of Cincinnati is chief engineer and R. G. Douglas, also of Cincinnati, is general manager.

The Turkey Gap Coal & Coke Co., of Dott, has contracted for the installation of shaker loading booms and refuse disposal machinery at the Wenonah No. 2 Mine at Wenonah.

The ownership of the **Smith Coal Co.,** operating a mine at Levi, on the K. & M., just above Charleston, has changed hands, the assets of this concern having been taken over by the **Powels Moantain Coal Mining Corporation,** a Baltimore concern. New equipment is to be installed at the Levi plant with a view to increasing the production of coal.

Preparations are being made by the **Cascade Coal Co.,** with mines at Cascade in the Kingwood section, to resume operations, the company having been engaged in cleaning up its mines during recent weeks in preparation for such resumption.

General improvements are being made at the plant of the **Leevale Coal Co.,** of which D. H. Morton, of Charleston is general manager. This plant is at Leevale and at that point in connection with the remodeling of the tipple, shaker screens and a loading boom are being installed.

WISCONSIN

The Central Coal Co., of Milwaukee, who received very little Lake coal during the period of the war and up to this year, has unloaded a number of cargoes and the **Kanawha Fuel Co.,** who has not docked a cargo of Lake coal for the past two years is preparing to receive a number of cargoes between now and the close of navigation.

Safe crackers robbed the office of the **Flatley Brothers Coal Co.** of Green Bay, of $440.00 in cash, and $300.00 in Liberty Bonds.

The Great Lakes Coal and Dock Company, at Superior, has erected about 50 per cent of the structural steel of the new 10-ton man-trolley bridge. The contractors are working on the new 500-ft. extension, which when completed will give the dock a total length of 2,000 ft. and width of 55e ft.

Traffic News

Freight rates on coal from Utah mines to Cherokee, Cal., have been reduced from $7.87½ to $7.25 effective Sept. 15, according to an announcement of the Western Pacific road

The I. C. C. decides that the rate of $5 to $5.75 per ton on soft coal from Walsenberg, Col., to Billings, Okla., was unreasonable in that it exceeded $4.40.

Officials of the B. & O. commercial development department have just completed an analysis showing there are more than 1,000 coal mines on its lines in 54 counties in seven of the states through which it operates and 40 seams of coal are minable with a coal reserve of 25,000,000,000 tons. In West Virginia alone, eighteen billion tons of coal are available for steam and technical use, in mines adjacent to the company's right of way.

Representative Newton, Missouri, in a House speech urging improvement of waterways for transportation, referred to the improvement of the Monongahela River, Pittsburgh, over which 50 million tons of coal have been carried during the past three years, of which 21 million tons were transported last year at 15c. a ton as compared with $1.25 the rail rate.

Reduction in the freight rate on shipments from the northern coal fields to Boulder, from $1.21½ to 90c. a ton, on the Union Pacific and the Colorado & Southern railroads in Colorado, has been ordered by the state public utilities commission.

A report and order was made recently by the Pennsylvania Public Service Commission in the case of the New York and Pennsylvania Co. against the New York Central and the Pennsylvania, relative to the rate on bituminous coal in carloads, from the Munson district and the Hawk Run district in Central Pennsylvania on the New York Central to Lock Haven, on the Pennsylvania. The commission holds that a reasonable through rate of $1.40 should be established and issued an order directing the railroads to file a tariff providing for such a rate.

The Newport Chamber of Commerce is co-operating with the Northern Kentucky Manufacturers' Association and the Cincinnati purchasing agents' organization in protesting against an advance in freight rates on coal by the L. & N. The road increased its rates on June 16, the coal rates to Newport and Covington being raised from $1.56½ to $1.90 a ton and to Cincinnati from $1.75 to $2.

The I. C. C. has suspended until Jan. 1 proposed reduction in rates on coal from mines on the Detroit, Toledo & Ironton R. R. in the Jackson County and Ironton, Ohio, districts to Detroit and other destinations on that line in Ohio and Michigan. The proposed reductions were: From the Ironton District to Detroit from $2.57 to $2.08 per ton; to Toledo from $2.36 to $1.91; to Lima, Ohio, from $2.11 to $1.71. From Jackson County to Detroit from $2.47 to $1.98; to Toledo $2.26 to $1.81; to Lima from $2.01 to $1.61. The commission says the present rates on coal from mines in the Jackson County and Ironton districts to Detroit, and other points on the Detroit, Toledo & Ironton bear a relationship to the rates on coal from other regions and districts in Kentucky, Pennsylvania, Tennessee, Virginia and West Virginia based upon certain differentials fixed by the Commission.

The commission is conducting an investigation in the matter of interstate rates on bituminous coal in Ohio and in the matter of differentials from Ohio districts with relation to other regions and districts in Kentucky, Pennsylvania, Tennessee, Virginia and West Virginia, and assigned the case for hearing recently at Columbus, together with the suspended schedules in order that the relationship between the rates from the Ohio mines and mines in other regions and districts may be determined.

The commission has declined to suspend the proposed rate of $1.85 per ton on coal from Ironton, Ohio, applicable on shipments reaching Ironton via the Ohio River to Detroit and intermediate points on the D. T. & I. Railroad.

In a complaint to the I. C. C. the **Central Wisconsin Supply Co.** of Beaver Dam, Wis., alleges unreasonable rates on bituminous coal from Hymera, Ind., to Milwaukee.

In the complaint of the **Pittsburgh Terminal Railroad and Coal Co.** the I. C. C. decides that freight rates on bituminous from points in Pennsylvania on the West Belt R. R. to interstate destinations east of Harrisburg are not unreasonable.

Although it has denied the proposal of railroads to increase rates on authracite from the Wyoming, Lehigh and Schuylkill regions of Pennsylvania to points in New York, the I. C. C. has requested the roads to devise another plan of revision to bring greater uniformity in the rates.

The Jackson, Mich., Chamber of Commerce, in a complaint to the I. C. C. alleges unreasonable rates on bituminous coal from the Ohio and Inner and Outer Crescent fields to Jackson, Chelsea, Cement City, Coldwater, Ablion, Fenton, Union City, Newaygo and Petoskey, Mich.

In the case of the **Procter & Gamble Mfg. Co.**, involving rates on coal from Mt. Olive and Staunton, Ill., to Kansas City, Kan., the Consolidated Coal Co. of St. Louis has been authorized to intervene.

In the complaint of the **Citizens Coal Mining Co.**, of Illinois, the I. C. C. decides that the rates on soft coal from complainant's mines A and B, near Springfield, Ill., to Springfield during Federal control were unreasonable and awards the company reparation.

In the case of the **West Kentucky Coal Bureau** versus the Illinois Central Railroad Co., the I. C. C. has ruled that the rates on coal, in carloads, from western Kentucky to points in southeastern Missouri and northeastern Arkansas are prejudicial to the members of the bureau and unduly preferential to mine operators in southern Illinois.

Final surveys have been completed for a new branch of the **Illinois Central R.R.** extending south from Mulkeytown to Royalton and thence east to Zeigler. This branch will open up to the Illinois Central coal fields in the east part of Jackson County and in southwestern Franklin County, together with some recently developed fields in the northwestern part of Williamson County, which in the past has been served by the Missouri Pacific.

The commission has assigned the complaint of the **Lehigh Valley Coal Co.** and the **Lehigh Coal & Navigation Co.**, for oral argument at Washington, Oct. 26, and the complaint of the **Ball Coal Co.** for hearing at New York on Oct. 5 instead of Sept. 21.

In the complaint of the **Canton Chamber of Commerce**, the commission denies on further hearing, reparation on coal shipped from the Pittsburgh and Connellsville districts in Pennsylvania, to Canton, Ohio, on rates found in the original proceeding to have been prejudicial to Canton and preferential of Youngstown and Cleveland.

Obituary

Philip Healy, 23 years of age, son of J. Healy, superintendent of the Main Island Creek Coal Co., Omar, W. Va., died recently. Since the war he had been connected with a mining operation in Kentucky.

Warren C. Barber, known as "the grand old man of the New York coal trade," died recently at his home in Brooklyn. In 1916 he joined the selling staff of the Alden Coal Mining Co., and remained with that concern until his death.

Recent Patents

Miners' Electric Safety Lamp. John W. Jones, Cannock, England, assignor to Haslam & Stretton, Ltd., Cardill, Wales. 1,373,820. April 5, 1921. Filed May 10, 1920. Serial No. 380,328.

Car-Dumping Platform—C. C. Smith, Wheeling, W. Va., 1,380,745. June 7, 1921. Filed Aug. 26, 1919; serial No. 319,945.

Air-Shaft For Mines—A. S. Richardson, Butte, Mont., 1,381,017. June 7, 1921. Filed Dec. 24, 1919; serial No. 347,058.

Combined Screen and Picking Table—R. G. Lawry, Chicago, Ill., assignor to Roberts & Schaefer Co., Chicago, Ill., 1,381,204. June 14, 1921. Filed April 30, 1920; serial No. 377,836.

Coal-Trimming Device—G. B. Holbert, New York, N. Y., 1,382,359. June 21, 1921. Filed April 20, 1918; serial No. 229,734.

Elevating Coal Truck—Anton Kukielski, Jersey City, N. J., 1,382,428. June 21, 1921. Filed Nov. 26, 1919; serial No. 340,806.

Hoisting and Conveying Machinery—C. W. Aveling, Elgin, Ill., 1,382,614. June 28, 1921. Filed May 24, 1918; serial No. 236,302.

Burning Pulverized Fuel—H. G. Barnhurst, Allentown, Pa., assignor to Fuller Engineering Co., 1,382,712. June 28, 1921. Filed June 26, 1918; serial No. 242,099.

Coke Oven—E. Johnson and A. Nordquist, Gary, Ind., 1,382,917. June 28, 1921. Original application filed July 18, 1919; serial No. 311,824. Divided and this application filed May 17, 1920; serial No. 382,112.

Mining-Drill Device—L. F. Verdy, Pleasantville, Ind., 1,383,041. June 28, 1921. Filed May 24, 1920; serial No. 383,716.

Association Activities

National Coal Association

The Membership Committee of the Association, appointed June 1, 1921, is composed of the following:

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J. C. Brydon, president, Quemahoning Creek Coal Co., Somerset, Pa.

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W. H. John, Bridgeport Coal Co., Bridgeport, Tex.

John McElwain, W. J. Rainey, Inc., 52 Vanderbilt Ave., New York City.

The Publicity Committee of the Association, appointed June 1, 1921, is composed of the following:

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George Harrington, Chicago, Wilmington & Franklin Coal Co., Chicago.

F. W. Lukins, president and general manager Farmers Fuel Co., Rialto Bldg., Kansas City, Mo.

Penna Phillip, secretary, Indiana Bituminous Operators' Association, Terre Haute, Ind.

P. J. Quealy, president, Gunn-Quealy Coal Co., Kemmerer, Wyo.

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T. H. Watkins, president, Pennsylvania Coal & Coke Corp., 910 Whitehall Bldg., New York City.

E. E. White, president, E. E. White Coal Mining Co., Glen White, W. Va.

W. M. Wiley, vice-president, Boone County Coal Corp., Sharples, W. Va.

Coming Meetings

The Huntington Coal and Industrial Exposition will be held in the Chamber of Commerce Building, Huntington, W. Va., Sept. 19 to 24 inclusive. Chairman of committee, Thomas A. Palmer, Huntington Chamber of Commerce, Huntington.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The twenty-fourth annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers will hold its annual meeting at Huntington, W. Va., on Sept. 20 to 23. Secretary-treasurer, Herbert Smith, Huntington, W. Va.

American Manufacturers Export Association will hold its twelfth annual convention at the Waldorf-Astoria, New York City, Oct. 5 and 6. Secretary A. W. Willmann, 160 Broadway, New York City.

National Safety Council will hold its annual congress at the State House, Boston, Mass., Sept. 26 to Sept. 30 inclusive. Secretary, S. J. Williams, Chicago, Ill.

The Coal Mining Institute of America will hold its annual meeting at Pittsburgh, Pa., Dec. 7, 8, and 9. Secretary H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

An Industrial Relations Conference for all industries in the State of Pennsylvania has been arranged for October 24 to 27 at Harrisburg, Pa., by the Commissioner of Labor and Industry, C. B. Connelly.

The sixth annual convention of the **National Association of Purchasing Agents** will be held Oct. 10-13 at Indianapolis, Ind.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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Utilizing Even the Squeal

GREATER efficiency in use is the impelling force behind the studies in the use of powdered coal. The coal-producing industry itself is one of the largest users of coal and it is but natural, therefore, that here, where there is the fullest appreciation of its value, the art of getting the most power out of coal should be given first attention. As a natural consequence of having always used the unmarketable portion of the mine output for the power plant, the mine operator has sought improved equipment and methods of converting this lowest-grade fuel into energy at the least cost. The mine management has ordered the cars of dirty product marked for the mine power house and the mechanical engineer has of necessity sought better ways of utilizing it.

In the anthracite region the problem has become one of using extremely fine coal, as distinguished from the utilization of the unmarketable high-ash product at the soft-coal mines. So long as the power industry can get steam coal suitable for standard equipment the chief incentive for developing the art of burning refuse must come from those who would turn an expense into an income. The hard-coal producers, though having an output but 15 per cent of the total for the country, require for their operations a quantity of coal for fuel as great as the whole bituminous industry and they furthermore have as a commercially unmarketable product at least 10 per cent of their output. The "slush"—that is, the anthracite passing through screens with openings one-thirty second of an inch in diameter—is fuel, the cost of producing which is no less than that of stove coal, but which is as yet largely consigned to refuse piles, saved only because of possible future use.

Quite appropriately, therefore, one of the sessions of the American Institute of Mining and Metallurgical Engineers at Wilkes-Barre last week was devoted to the subject of the application of powdered fuel in boilers. The paper on this subject by J. M. Fuller, of the Fuller Engineering Works, and the discussion that followed brought out the progress that has been made in saving the least valuable of the byproducts of the anthracite industry—the "squeal" of the pig, as it were.

It was asserted that pulverized anthracite can be burned under boilers with an efficiency apparently greater than in the combustion of larger sizes in other types of furnaces, that no inherent difficulties have developed in the process of burning, and that the problem as yet not completely solved is the pulverizing of the coal preparatory to burning. In other words, the hardness of anthracite (and lack of volatile matter) has not acted as a bar to combustion in this process but has advanced the problem of fine grinding. Comminution to 100 mesh and finer is a prerequisite to burning as a powder, and the reported cost of 20 kw.-hr. per ton of product ground for the softer varieties of anthracite, together with the fixed charges on the grinding equipment, do not encourage the belief that powdered anthracite will at once replace the larger sizes, or bituminous coal, in steam plants generally outside the anthracite region.

It is not necessary, however, to go outside the hard-coal region to find market for all the power that can be developed from the combustion of "slush" and fine anthracite. The power requirements of this region are now some 3,000,000,000 kw.-hr. and studies made by the superpower survey have shown that this power can be developed from the byproduct steam sizes without greatly affecting the supply of fine coal required by outside markets, providing the smaller isolated steam plants in the region are replaced by large economic units. So definite is the trend in the direction of large central power plants and so promising is the utilization of fine sizes of anthracite, both as pulverized fuel and on stokers, that no one can hold that the engineers and managers of this industry are not fully alive to their possibilities.

Progress is slow—culm banks piled up in the first fifty years of the industry have not all been converted into fuel in the second half century. Slush is accumulated now faster than it is used. It is encouraging that the direction of greatest effort is now toward making each portion of the product of the anthracite mines pay its share of the cost, to the end that the cost of the principal product—domestic fuel—may be cheapened for the household consumer.

The Seriousness of Unemployment Among Bituminous Miners

UNEMPLOYMENT among coal miners will constitute one of the major subjects of discussion at the forthcoming conference which will meet in Washington in response to a call by Herbert Hoover, Secretary of Commerce. Unemployment at coal mines during the first eight months of 1921 set a new low record. It was even greater than during the period following the panic of 1893, which previously held the low record. Twenty-six per cent less work was performed in coal mines during the first eight months of 1921 than during the corresponding period of 1920. Enough information already has been gathered, in anticipation of the conference, to indicate that approximately 150,000 men who are coal miners by trade are not now engaged in that activity.

No figures are at present available to indicate how many of these men have been absorbed by other employment. In some of the coal-mining districts there is other work to which miners may turn, but in most of the districts this is not the case. A great many

miners have been and are now idle living on their savings or on their credit and awaiting an improvement in the demand for coal.

We are informed that figures to the end of August show 68,000,000 man-days of work performed in 1921 as compared with 91,500,000 man-days during the same period of 1920. The record for 1921 is but slightly in excess of that for 1919, when lack of work sowed the seed for the great industrial disturbance which followed the refusal of the demands of the United Mine Workers. During the peak of war activities 615,000 men were employed in mining bituminous coal, increasing in 1920 to about 640,000. At the present time it is believed that as few as 500,000 men are employed in bituminous coal mines.

Due to the seasonal character of the demand and the practice of carrying little coal in storage, unemployment in the coal industry constitutes a special problem. Plans for the unemployment conference have gone far enough to indicate that the coal-mining industry is to receive special attention. One of the interesting developments of the preliminary study being made of the situation in the bituminous branch is the tendency of working mines to approximate capacity production. Unlike manufacturing plants, the returns indicate that mines, for the most part, run full tilt or close down entirely. The situation in the anthracite district is much different. Production is practically as large as ever with the figures indicating increased employment this year, even as compared with the boom year of 1920.

A Story About Snowbirds

EARLY last spring, when felt hats were becoming *de trop*, two disciples of Jeff Peters began the rounds of the office buildings in a thriving Ohio city, showing a fine line of genuine Panama hats. These hats were in the rough, just as they are shipped from the tropics of Central America and were offered to the victims of this particular episode, two enterprising young business men, partners in the real estate game, for $25 each. The idea of getting something real fine, direct from the source of supply, as it were, and without paying a retailer's profit, appealed to these gentlemen, and after much bickering the hats were knocked down to both for the price of one and the sale consummated.

The next scene reveals the proud purchasers of hats in the store of the leading hatter in their city. In a confidential tone of voice he is asked to step into the back of the store and is asked if he can be trusted to block real Panama hats without making a substitution or injuring the fiber. On being assured of his integrity, the real estate men bring forth their purchases, carefully wrapped in tissue paper. The hat specialist looks the goods over and asks whether these hats were purchased for genuine Panamas, for he wishes them to know that they are in fact made of paper, a clever Japanese imitation, now quite common and cheap. To demonstrate, he picked out a small section of the "straw" from the inside of one hat and unrolled it to a strip an inch wide. The story of the purchase was then told.

It later developed that the two peddlers did a thriving business in these hats and that many otherwise intelligent business men were taken in, for it was one of the principles of the salesman never to leave an office without making a sale. All efforts of the legitimate dealers in that city to catch the shysters and run them out were unavailing, even with the help of the police. Perhaps they were "snowbird" coal dealers temporarily out of work, it having been early in the warm season when they were following the game we have described.

As autumn approaches we are hearing much about snowbird coal dealers, particularly in the Middle West. One is said to be causing much concern to the trade because of the successful use he is making of the mail-order plan of getting business. Some of his literature has come to our desk, and we digress for the moment from our theme to note that his copy is good and his follow-up system according to the best practice. We cannot fail to wonder why, if such methods produce business for the quack, they should not be worth imitating by the regular dealer. That is, we wonder until we cogitate on the story of the hats and the gullibility of people who think they can beat the middleman out of a profit. It is a trite saying that human nature is the same everywhere. The irresponsible element is to be found in every line of human endeavor—coal has no monopoly on the snowbird.

What is to be done with the intruder, whether he be in the guise of a retail coal dealer, a jobber or a producer? Every winter shippers of coal are regularly warned not to send coal to this and that name, because he is not a regular dealer and will hurt the trade. Last year producers were advised that they could help hold the price of coal within reason by refusing to let the mushroom jobbers have coal for speculation, and the railroads were importuned to refuse cars to the wagon mines, who were in the game only while prices were extremely profitable. There is no anaesthetic for this type of coal man, who at most is but an irritant to the "legitimate" trade. We quote the word because its meaning, though sanctioned by law and custom, does not always bar from its scope the snowbird, who is really to be defined as the irresponsible, whether producer, jobber or retailer.

It would seem to be the saner philosophy to appreciate that the snowbird of today may be the responsible coal man of tomorrow and to seek to beat his game by better merchandising. Satisfied customers will not turn their trade to unknown channels.

Dissatisfaction on the subject of coal engendered by the conditions of recent years can but cause many to seek novel ways of getting supplies apart from the dealer they have known too intimately for so long. Fraudulent schemes of short-circuiting the dealer should be given the publicity and treatment they deserve, but those that are merely outside the normal course of trade, whether fly-by-night peddlers or factory salesmen, are better treated as evidences of shortcomings in the trade itself—seasonal and in part temporary and altogether susceptible of reduction to a negligible minimum by proper selling on the part of the permanent trade. Some folks always will take a chance on buying from a street hawker, but most of us prefer the established store, where we feel we have some assurance of quality and value received for our money. Where snowbird coal retailers flourish, look for weakness in the merchandising and publicity methods of the established trade. Where the retailer has the confidence of his public, snowbirds will find scant fodder.

How to Recover Four Million Tons of Usable Coal from The Slush Made at Anthracite Breakers*

Ten Million Tons of Fine Culm Is Run Into the Streams, Into the Mines or Is Stored—Methods of Recovery, Past and Present—Eight Tables Expected to Deliver Two Hundred Tons of Clean Coal Per Day

By John Griffen†
Scranton, Pa.

THE modern anthracite breaker or washery uses almost exclusively a wet method of preparation, which requires, roughly, one gallon of water per minute for every ton of coal produced per day. The entire anthracite industry uses about 320,000 gallons of water per minute for this purpose, or 800,000 tons of water per day. As this water leaves the breakers it contains fine solids—coal, slate, pyrite and clay—and is then called silt or slush; as slush is the term most commonly used, it will be employed throughout this paper. The solid content of the slush will be referred to as solids.

In the earlier days of anthracite mining little coal was washed, less crushing was employed and virgin coal was mined exclusively. These conditions caused the quantity of solids to be relatively small and made such as there were comparatively coarse. For this reason the slush problem was not acute. Such slush as was produced usually could be easily impounded and retained or could be discharged into the streams without any pollution being apparent.

The character of the fine waste from the breakers changed materially as its quantity increased until now about 40,000 tons of slush solids are produced daily. Second mining and robbing operations materially increased the quantity of fine solids delivered to the breaker in the mine car. The demand for chestnut, stove and egg sizes, to the exclusion of grate, steamboat and lump sizes, requires finer crushing of the mine-run coal with a consequent increase of fine solids in the slush. The use of rice and barley sizes removed a considerable tonnage of coarser solids but left great quantities of fine solids, difficult to retain completely and store and long considered of no possible fuel value.

Slush Solids Cause Pollution of Streams

Despite the efforts of the coal operators, the slush solids have found their way into the streams, causing in some cases serious pollution. The Water Supply Commission of Pennsylvania published in 1916 a report on Culm in the Streams of the Anthracite Region,[1] from which the following is taken:

> About 40,000,000,000 gallons of water carrying 10,000,000 tons of fine culm are discharged into the water-courses direct, flushed into the mines, or disposed of by various means on the surface. The extent to which the very small sizes of anthracite have been deposited in the rivers draining the coal fields is made evident by the fact that over a quarter of a million tons are recovered annuallly from the river beds by coal-washing operations.
>
> The contamination of the streams has been in progress for more than fifty years and it is estimated that there are now 660 miles of creeks and small streams which should be available for water supply but which are rendered useless for domestic and manufacturing purposes by the culm and sulphur water from the mines.

Since 1914 the quantity of solids reaching the streams probably has not increased, but the character of the material that does reach them has changed. Due to the war demand for steam coal, less of these sizes was lost from the breakers and many of the banks that could be washed into the streams by heavy rainfall and freshets were prepared for use and shipped. As a result, it is probable that far less coal of the buckwheat sizes is now finding its way into the streams.

The recovery of coal from the rivers increased enormously during the war period, but the coal was largely obtained from deposits formed by the waste of earlier years. W. C. Webbert,[2] in an address before the Engineers' Club of Philadelphia, said: "The total output of coal for the Lehigh River for 1919 was 120,000 tons; adding to this 235,000 tons for the Schuylkill and 1,580,000 tons for the Susquehanna and its tributaries, the total output of river coal in eastern Pennsylvania for the year 1919 can be estimated at 1,935,000 tons. Approximately the same amount of coal was reclaimed in 1918, but prior to that year the output was much less."

Slush, as now discharged from the breakers, contains practically no solids larger than $\frac{3}{8}$ in. diameter and often passes through a round mesh of $\frac{1}{16}$ or $\frac{3}{64}$ in. diameter. It carries from 4 to 15 per cent. of solids by weight, and in isolated cases an even higher percentage. The solids will range in size down to particles that are colloidal and, under certain conditions, settle very slowly.

Analyses of the various sizes of solids in slush generally show that the ash content—that is, impurities—increase with decrease in size. Table I is a typical screen analysis which illustrates this condition.

TABLE I. SIZES OF MATERIAL IN SLUSH WITH THEIR ASH PERCENTAGES

	Per Cent Sizes Each Size	Per Cent Sizes Cumulative	Per Cent Ash Each Size	Per Cent Ash Cumulative
On 3 32-in. round screen	5 3	5 3	27 38	27 38
Through 3/32-in. round screen on 20-mesh	21 7	27 0	30 26	29 70
Through 20-mesh on 35-mesh	15 0	42 0	34 40	31 40
Through 35-mesh on 48-mesh	6 4	38 4	34 80	31 80
Through 48-mesh on 65-mesh	4 7	53 1	34 10	32 00
Through 65-mesh on 100 mesh	5 1	58 2	36 10	32 40
Through 100-mesh on 200-mesh	6 8	65 0	38 84	33 10
Through 200-mesh	35 0	100 0	59 40	42 30
	100 0			

The granular solids that will remain on a 200-mesh screen are reasonably low in ash and consist of grains of fairly pure coal mixed with grains of slate, sand, pyrite and, occasionally, calcite and gypsum. The slimes, which will pass a 200-mesh screen, consist largely of fine slate and fine clay and show a high ash content.

The quantity of solids in slush and their character varies greatly from breaker to breaker. A fairly extensive investigation permits the following generalizations: (1) Steep-pitch mining produces a greater quantity of slush solids and generally causes a large quan-

*First part of article read before the American Institute of Mining and Metallurgical Engineers at Wilkes-Barre, Pa., Sept. 12.

†Manager, anthracite territory, The Dorr Co.

[1]Water Resources Inventory Report, part X.

[2]Bureau of Topographic and Geological Survey, State of Pennsylvania.

tity of slimes as well as considerable impurities in the plus 200-mesh solids. (2) Second-mining and robbing operations, where crushing has taken place, have the same effect as steep-pitch mining and generally produce a colloidal slime, which settles with difficulty. (3) A coal of soft and friable nature increases the amount of solids, but these are relatively low in ash, this being true not only of the larger slush but even of the slimes.

An accurate determination of the tonnage of slush solids made annually is quite difficult but a close approximation can be obtained by making careful tests at breakers representing the various fields throughout the region and by applying these figures to the total production of the fields.

In figuring the tonnage of recoverable coal, no solids passing through a 200-mesh screen are included and the amount of refuse larger than 200-mesh that must be removed to reduce the ash content to 15 per cent has been deducted. A summary of the determinations of the three anthracite fields is given in Table II.

TABLE II. SOLIDS AND RECOVERABLE COAL IN SLUSH OF ANTHRACITE FIELD PER CENT SHIPMENT

	Wyoming Field, Per Cent	Lehigh Field, Per Cent	Schuylkill Field, Per Cent
Total solids	7.2	22.4	22.3
Recoverable coal with 15 per cent ash	3.5	9.5	8.8

The Anthracite Bureau of Information states that the shipments for the past three years are as in Table III. The shipments during 1918 were at an unusually high rate, but those of 1919 and 1920 are more nearly representative.

TABLE III. ANTHRACITE SHIPMENTS FOR THREE YEARS

Year	Wyoming Field, Long Tons	Lehigh Field, Long Tons	Schuylkill Field, Long Tons	Total, Long Tons
1918	42,382,793	11,511,760	22,755,365	76,649,918
1919	36,689,313	10,266,479	19,899,519	66,855,311
1920	37,249,303	9,860,611	21,517,211	68,627,125
Average, 1919-1920	36,969,308	10,063,545	20,708,365	67,741,218

Applying the field averages for total solids and recoverable coal to the average shipments gives the following annual tonnages in the slush:

TABLE IV. SOLIDS AND RECOVERABLE COAL IN SLUSH OF ANTHRACITE FIELDS

	Wyoming Field, Long Tons	Lehigh Field, Long Tons	Schuylkill Field, Long Tons	Total, Long Tons
Total solids	2,661,000	2,254,000	4,618,000	9,533,000
Recoverable coal with 15 per cent ash	1,294,000	956,000	1,822,000	4,072,000

This indicates that 4,000,000 tons of coal can be recovered from the slush at present produced, leaving 5,500,000 tons of solids, a large part of which is finer than 200-mesh, which must be retained in some efficient way if serious pollution is to be prevented. It must be noted that the trend in mining anthracite indicates that the tonnage of solids in slush and recoverable therefrom will increase rather than decrease, for more and more robbing is being resorted to and much of the reserves from which future production must come lie in the Schuylkill field.

It is probable that the first efforts to retain the solids in slush consisted in allowing the solids to settle back of retaining dams, and were planned for the purpose of preventing stream pollution. As the size of the dams increased, it became necessary to find other places for storage or a method that would hold a greater tonnage on a given ground area. Slush is now disposed of in the following ways: Run to slush dams; used for hydraulic mine filling; delivered to settling tanks of various types where the solids are removed and stocked, burned in mine-boiler plants, or shipped.

Much of the slush produced is still delivered to settling dams, which effect a more or less complete removal of solids. These dams are constructed in two ways: Either the slush is impounded to form a pond and the clarified water is allowed to overflow the top or the retaining dam is constructed of porous material and the water is filtered in its passage through the dam. Either type, if given proper care, can be made very efficient and an almost complete removal of solids obtained, so that the clarified water contains less than 0.1 per cent solids.

Where the slush is impounded and clarified by sedimentation, a large dam must be constructed so as to give plenty of settling area, and a depth of several feet of water should be maintained. This requires the labor of several men and often large quantities of lumber. Unless the men are carefully watched, the dam will not be properly maintained and only the coarsest solids will be retained. When the water is several feet deep it is difficult to keep the slush and water from breaking through unless the dam is heavily reinforced with breaker slate, mine rock, ash or lumber. At many collieries, slush dams must be located on territory that is broken and caved from mining operations, and much of the water, and often slush solids, finds its way into the workings and seriously increases the pumping load.

Boiler Ashes Used as Filtering Medium

Slush dams that clarify by filtering usually are constructed of a core of mine rock and breaker slate. Boiler ashes are dumped along the inside of this wall and act as a filtering medium. It often is difficult to seal all the large passageways so that slush solids will not pass. After these passages are sealed, however, the dam will deliver fairly clean water. The ashes finally become clogged with slush solids, so that the filtering operation stops; the dam walls must then be raised to offer new ashes for the filtering process.

Where the slush can be run to the basin by gravity, dams afford a fairly low-cost method of retaining slush solids, but while the slush is kept from polluting the rivers and streams, it is not available for burning. The retained solids invariably are so permeated with slimes and fireclay that they cannot be utilized for fuel without further preparation.

Slush was used as early as 1884 to extinguish a serious mine fire. It was early realized that such flushing, in addition to serving other purposes, gave a possible means of disposing of slush and preventing stream pollution. It is seldom, however, that mine flushing of slush can be applied solely for the prevention of pollution, as the cost generally is high. If, however, fires are to be extinguished, surface is to be supported or filling required to enable further extraction of pillar coal, mine flushing of slush may be economic. Tests made by Prof. F. B. McKibben and W. H. Conklin, at the Fritz Engineering Laboratory of Lehigh University show that slush solids, when confined so as to prevent lateral expansion, will support heavy pressures per square foot. The use of slush for hydraulic mine filling creates many problems where the coal measures are steeply pitching, owing to the difficulty of holding the solids in place while the water is drained away.

Charles Enzian[3] gives the cost of hydraulic mine filling with slush as from 9c. to 33c. per cubic yard when operating at a rate of at least 400 cu.yd. daily.

[3] U. S. Bureau of Mines, *Bulletin* 60.

These costs are based on prices in force during 1911 and 1912 and should be corrected for present-day conditions. They do not include anything for the value of the coal in the slush. When there is a method of utilizing this material that will return a greater revenue than the mine coal won by flushing with slush, this method of disposal will cease in all but exceptional cases.

Settling tanks of various types were developed to recover as much of the solids as possible in a relatively dry condition, so that a large tonnage could be stocked on limited areas. Such tanks also enabled the recovery of a crude product for shipment, for which there has been a small demand for certain special uses—mainly in the metallurgical industries.

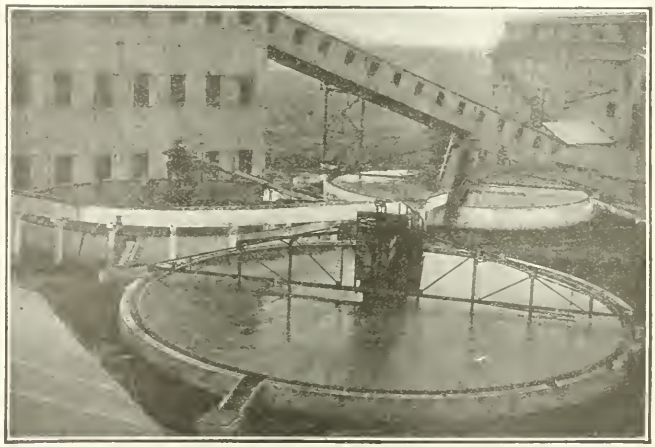
The earliest settling tanks installed worked intermittently and consist of a series of hoppers or tanks with gates at the bottom. The slush is delivered into one tank until it is filled with solids and is then diverted into a second, while the solids in the first are discharged from the bottom into cars or a conveyor line by which they are delivered to the bank. These tanks remove plus 100-mesh solids rather completely, if made large enough and given proper attention. The solids recovered contain layers of fireclay and slime, which render them unfit for boiler fuel. One man's time is required to regulate the flow of slush and to discharge each tank when filled. No power is taken for tank operation, but installations can be made only where the necessary headroom is available. The cost of repairs on these tanks is low, as no machinery is employed, but, due to the attention required, they have given way to tanks where the operation is continuous.

Various arrangements of bucket line, feed and overflow are used. In some cases buckets with perforated sides are employed while in others a solid bucket is used; but the bucket is slightly tilted after leaving the water, in order to decant off the excess water. Unless the bucket line is quite large and is operated at a low speed, only the coarsest solids will be removed. Many of these tanks lose some solids larger than ¾-in. mesh, while at the same time some solids as fine as 100-mesh are removed. Due to the agitation of the bucket line, little slime and fireclay are found with the recovered solids, which can be used as fuel in properly designed boiler plants. The attention required is confined mostly to lubrication and repairs, but the construction costs are fairly high and repairs to the elevator are difficult and expensive. As the buckets and chain are submerged in the slush for much of the time, wear is heavy. At one colliery, where acid water is used, buckets last about six months and the chain a year.

In the drag-flight type a conveyor is installed in a shallow horizontal tank of some length. At the discharge end the conveyor is carried out of the tank on a pitch that allows some drainage of the removed solids and returns over the top of the tank. The conveyor flight is operated at a speed not greater than 50 ft. per minute; the sectional area of the tank should be such that the speed of the slush through the tank will be the same as the speed of the flight, so that the agitation caused by the flight will be reduced to a minimum. The slush is fed near the tail wheel of the conveyor and the overflow is taken off toward the discharge end.

Some of these tanks make a good recovery of solids. One tank, with the horizontal part of the conveyor 60 ft. in length, using 6 x 18-in. flights, spaced 18 in. apart and running 50 ft. per minute in a tank 2 ft. 8 in. inside width, handled 800 gallons of slush per minute through ⅜-in. round mesh, carrying about 13.5 per cent by weight of solids and reduced the solids in the overflow to 1.2 per cent, or a 91 per cent recovery of solids.

No data are available as to the size of the solids in overflow and recovered product, but it is probable that practically all solids larger than 200-mesh were recovered. This is the best performance record obtainable, and tests were made shortly after the settling tank was first operated. Experience shows that the efficiency decreases after these tanks have been in service some time. The efficiency of this tank falls off if the slush feed is subject to heavy rushes, such as occur when a number of jigs in the breaker are slushed simultaneously.



DORR THICKENERS AT A BITUMINOUS WASHERY

Such machines rid the water of solids to an extent sufficient to permit its reuse for any and all coal-washing purposes. The discharge from the tank is approximately 50 per cent water and 50 per cent coal.

The coal recovered usually contains all the plus 100-mesh solids in the slush, but it also contains sufficient finer solids to make its utilization uneconomic without further preparation. It is usual to assign one man to the operation of these tanks, but he generally has time for additional duties.

The construction costs are moderate; one tank designed to handle 2,000 gallons of slush per minute cost $9,000, including the cost of the pipe line erected to take the water to the tank and the product to the stocking conveyor. An installation erected during 1920-21, consisting of 8 x 18-in. flights spaced 18 in. apart, 120 ft. long center to center of sprockets, in a tank 4 ft. wide, 4 ft. deep and 100 ft. long, with a stacking conveyor 65 ft. center to center on a 6-in. pitch and the same flights spaced 3 ft. apart, cost $10,253.

Repairs on this type of tank cost less than on the

bucket-elevator type but, owing to the wear on chain and flights, they amount to a considerable sum where acid water is employed.

During the past two years several slush recovery plants, containing Dorr thickeners and classifiers, have been installed; they have shown the following advantages:

(1) Operation can be controlled so as to produce a product of given specification; (2) recovery of over 90 per cent of the slush solids can be obtained or any lower percentage, as desired; (3) maintenance costs are reduced to a minimum; (4) power and attendance costs are extremely low; (5) additional equipment can be conveniently included in the plant to remove slate, sand and other impurities from the recovered coal, giving a product analyzing 15 per cent ash or less.

The equipment operates continuously and is so designed that no bearings are submerged in the material being treated. Because of the prevalence of acid water, wooden-stave tanks are used for thickeners up to 40 ft. in diameter, while for the larger sizes concrete tanks or tanks with wooden-stave sides and clay bottom built in the ground are used. The plows rotate so slowly that no swirl or agitation is produced. Sufficient tank area can be provided to cause the settlement of all suspended solids, giving a practically clear overflow. In case only the coarser solids are to be removed, a tank of smaller area is provided, so that the finer solids are carried into the overflow with the water. A thickener operating under this condition is termed a hydroseparator. Rough separations can be made at any desired mesh.

Utility of Classifiers in Slush Treatment

On anthracite slush, the classifiers can be operated to recover a product that is practically all larger than 48-mesh, or any part of the solids between 48-mesh and 200-mesh can be included in the recovered product. Where solids smaller than 200-mesh must be completely recovered, a thickener is required. Slush treatment generally is practiced to obtain the recovery of fine coal, prevention of pollution and the recovery of clarified water for breaker use.

In the recovery of fine coal it sometimes happens that all the solids are sufficiently low in ash for use at the mines or for shipment; in other cases the slimes are too high in ash for present use or the granular solids also carry so many non-carbonaceous particles that to produce a usable product these impurities must be removed.

As yet Dorr equipment has not been used at any place where all the solids are sufficiently low in ash for use at the mines or for shipment, because this condition is rare except in the Lykens Valley district.

Several plants have been installed to recover the granular coal and more are in course of erection. The first plant of any size for this purpose was installed in the Wyoming field at a breaker producing 5,000 to 6,000 tons per day, and was designed to recover the solids larger than 60-mesh. A Dorr hydroseparator 26 ft. in diameter and 8 ft. deep and three Dorr classifiers were installed. A plan and an elevation of the installation was shown in the issue of *Coal Age* of Feb. 19, 1920, page 351. The slush amounts to about 4,000 gallons per minute, contains about 5 per cent total solids, and is made through a $\frac{3}{4}$-in. round-mesh screen. The plus 60-mesh solids form about 40 per cent of the total solids, and the solids between 60- and 100-mesh amount to 20 per cent additional. This installation is recovering the plus 60-mesh coal, with 15 to 20 per cent undersize and with 40 per cent moisture. On delivery to the stock pile, the product quickly drains to 18 per cent moisture. With breaker shipments averaging 5,000 tons per day, 200 dry tons daily are recovered from the slush. On a number of days the breaker has shipped well over 6,000 tons without taxing the Dorr equipment. The hydroseparator easily takes care of the material when a number of jigs in the breaker are slushed out. At such times the slush will amount to 6,000 gallons per minute for several minutes.

The installation was made in the summer of 1919, and the cost, exclusive of the stacking conveyor line, was as in Table V.

TABLE V COST OF AN INSTALLATION TO RECOVER SLUSH

Foundations	$1,800 00
Equipment	9,225 32
Erection of equipment	746 92
Building erected	4,965 76
Total cost	$16,738 00

The plant is operated by one man and a 10-hp. motor. During two years of operation no parts of the hydroseparator or classifiers have required replacement and now show little signs of wear. Total operating costs, including 10 per cent of plant cost for fixed charges and 10 per cent for amortization, have been from 9c. to 10c. per dry ton of product.

A slush plant to recover a low-ash granular coal, now being installed in the Wyoming field, consists of a Dorr hydroseparator, 32 ft. in diameter and 8 ft. in depth; eight Deister-Overstrom coal-washing tables, and four Dorr classifiers. It is designed to treat 4,000 gallons per minute of slush made through $\frac{3}{4}$-in. round-mesh screen and recover the plus 200-mesh coal with an ash content of 15 per cent or less. The breaker ships from 4,000 to 5,000 tons of coal per day.

Refuse Removed from Eight Tables

The slush will be delivered to the Dorr hydroseparator, where the bulk of the water and minus 200-mesh solids will be separated and discharged to waste in the overflow. All the plus 200-mesh solids will flow by gravity from the bottom of the hydroseparator to a distributing launder for feed to the eight tables. On the tables the refuse will be removed, and the washed coal will flow by gravity with the water used on the tables to four Dorr classifiers, where the coal will be recovered and dewatered. It is expected that the plant will recover per day about 200 dry tons of coal between $\frac{3}{4}$-in. mesh and 200-mesh analyzing less than 15 per cent ash.

This equipment is being installed in a separate building of steel construction and at present construction costs are not available. The power consumption will amount to about 25 hp. Probably one man, and certainly not more than two, will operate the plant. Operating costs, excluding fixed charges and amortization, should amount to less than 10c. per ton of product.

Plants to prevent stream pollution may be of various types, depending on the amount and size of solids that must be retained. One plant installed in 1920 in the Lehigh field consists of a Dorr hydroseparator 30 ft. in diameter and 7 ft. in depth, and two Dorr classifiers. It is recovering the granular solids from 2,200 gallons per minute of slush made through a $\frac{1}{8}$-in. round-mesh screen. The purpose of the plant is to remove all the solids that would block the stream into which the breaker slush water must discharge.

Prior to the installation of Dorr equipment two settling tanks of the bucket elevator and drag-flight conveyor type had been used in series, but the stream could not be kept free of slush solids. After the Dorr plant had been in operation only a few weeks, the stream bed for several miles below the breaker had become freed from the solids already deposited, and after seven months' operation no signs of deposit in the stream are apparent.

The construction costs of this installation, which was placed in a separate building one-half mile below the breaker, in order to get plenty of stacking room, were as in Table VI.

TABLE VI. COST OF A PLANT TO PREVENT STREAM POLLUTION

Foundations	$530 00
Dorr equipment	6,856 00
Building	2,602 00
Wooden pipe line to plant	2,800 00
Stacking conveyor	4,576 00
Electrical equipment, including transmission line and transformers	2,620 00
Labor	6,479 00
Total	$26,463 00

The construction cost of this plant is rather high because of the wooden pipe line, transmission line and substation required. In many cases the equipment could be installed in the breaker. If this could have been done in this instance it would have saved at least $10,000.

This plant is operated by two men, who also look after the disposition of the product on the stock pile, to which it is delivered by an 8 x 18-in. conveyor 120 ft. long. A 15-hp. motor drives the Dorr equipment and a 30-hp. motor the stacking conveyor. Although the slush water comes from the mines and is quite acid, the maintenance costs have been quite low. One casting on the hydroseparator, weighing not over 200 lb., wore out in four months and was replaced by a bronze casting; otherwise the equipment shows no signs of wear from the acid water and abrasive action of the solids. It is too early to figure accurately the costs of operation but operation to date indicates that the cost, exclusive of fixed charges and amortization, is about 7c. per ton of recovered coal. Based on breaker shipments, the cost of preventing pollution is slightly under 1c. per ton shipped, if the recovered coal is considered of no value. If the recovered coal is valued at 18c. per ton, the value of the coal will be equal to the cost of preventing pollution.

A Dorr plant of a different type is planned for a breaker in the Schuylkill field; it probably will be erected during the summer of 1922. At this colliery the question of pollution is rather serious and an almost complete removal of solids is necessary. A Dorr thickener 90 ft. in diameter will be installed in a tank with wooden stave sides and clay bottom. The feed will amount to 2,200 gallons per minute of slush made through a ¼-in. round-mesh screen and containing about 320 tons of solids per 8-hr. day. The thickener should remove about 300 tons per day, leaving nothing in the water but the finest slimes. The recovered solids, with about 50 per cent moisture, will be delivered to a conveyor line installed in a concrete tunnel under the thickener for delivery to the storage pile. The recovery of total solids in the slush will amount to more than 93 per cent.

This thickener will produce a clarified water that will be suitable for all washing processes in the breaker. The accompanying illustration shows three thickeners installed in the bituminous field for a similar purpose.

Utilize Liquid Oxygen in Mine-Rescue Apparatus and as Mine Explosive

A NEW application of liquid oxygen—for use in mine-rescue breathing apparatus—is attracting the attention of the U. S. Bureau of Mines. This innovation has already been tried out in Europe, and Dr. F. G. Cottrell, of the National Research Council, formerly director of the Bureau of Mines, is now investigating for the bureau the use of the apparatus in England and on the Continent. The new apparatus weighs no more than one-half that of the present type, while it may be used by the wearer at one charging of the regenerator for double the time of the present standard type.

The Bureau of Mines is conducting experiments at its Pittsburgh (Pa.) station with a view to making the use of liquid oxygen explosives practicable in certain mining and quarrying operations. The increasing cost of dynamite and permissible explosives at the time the United States entered the world war caused the Bureau of Mines to investigate all possible substitutes. It was found that the Germans used liquid oxygen explosives extensively in non-gaseous coal mines, in quarries and in iron mines, as well as for destructive purposes in French steel plants. As eminent physicists are promising great improvements in liquefying apparatus that can be used for the production of cheap oxygen, it is possible that the explosive will become so cheap that it will displace dynamite and other explosives where conditions permit its use.

Bituminous Coal Loaded Into Vessels at Lake Erie Ports During Season to End of August*

(In Net Tons)

Ports	Railroads	1921 Cargo	1921 Fuel	1921 Total	1920 Cargo	1920 Fuel	1920 Total	1919 Cargo	1919 Fuel	1919 Total
Toledo	Hucking Valley	2,964,611	78,923	3,043,534	1,811,256	34,760	1,846,016	2,984,508	84,205	3,068,713
	Toledo & Ohio Central	811,064	22,425	833,489	854,755	35,862	890,617	885,291	26,713	912,004
	Baltimore & Ohio	1,684,130	48,591	1,732,721	644,643	20,507	665,150	1,623,051	37,891	1,660,942
Sandusky	Pennsylvania	1,022,312	28,999	1,051,311	723,938	9,312	733,250	936,149	26,512	962,662
Huron	Wheeling & Lake Erie	1,265,489	33,712	1,299,201	1,123,653	61,928	1,185,581	1,063,902	34,409	1,098,311
Lorain	Baltimore & Ohio	1,980,137	75,192	2,055,329	1,723,662	131,549	1,855,211	1,961,786	103,710	2,065,496
Cleveland	Pennsylvania	1,577,958	57,749	1,635,707	445,663	80,582	526,245	1,598,451	163,919	1,762,370
	Erie	310,858	10,402	321,260	140,609	10,617	151,226	135,170	4,289	139,459
Fairpory	Baltimore & Ohio							16,692	12,954	29,646
Ashtabula	New York Central	901,756	43,633	945,389	698,814	148,576	847,390	1,246,265	93,481	1,339,746
	Pennsylvania	1,732,874	55,739	1,788,613	820,404	55,126	875,530	1,260,910	57,258	1,318,168
Conneaut	Bessemer & Lake Erie	836,695	11,396	848,091	1,478,112	24,251	1,502,363	935,857	5,739	941,596
Erie	Pennsylvania—West	740,278	25,400	765,678	110,116	8,008	118,124	527,052	27,338	554,390
	Pennsylvania—East	119,601	19,347	138,948	86,901	47,039	133,940	145,472	9,328	154,800
Totals		15,947,763	511,508	16,459,271	10,662,526	668,117	11,330,643	15,320,556	687,747	16,008,303

* Compiled by Ore & Coal Exchange, Cleveland, Ohio; H. M. Griggs, manager.

PANORAMA OF EAST CENTRAL PORTION OF LYNCH, KY., SHOWING THE HOSPITAL IN THE CENTER

An 8,000-Ton Tipple with a Coking Coal Erected

Lynch Plant of United States Coal Cent Sulphur and Under 5 Per Cent Above Tipple—Belt Conveyors Used

By Howard N. Eavenson†
Pittsburgh, Pa.

EARLY in 1917 the United States Coal & Coke Co. obtained options on several tracts in Harlan County, Kentucky, aggregating about 19,000 acres in area, and after careful prospecting by outcrop openings and diamond drilling, completed the purchase late in July of that year. This property is situated in the eastern end of Harlan County, south of the Poor Fork of Cumberland River, and extending across Big Black Mountain to the Clover Fork of Cumberland River, a distance of about seven miles.

It reaches from the Kentucky-Virginia line westward for about six miles. Looney Creek, which empties into Poor Fork, crosses the property for about four miles, and as several of the seams within the property outcrop along this stream, it afforded an easy and, therefore, the logical place for development.

The property is on the northern side of the geological trough formed by the uplifting of Stone Mountain, on the southern, and Pine Mountain, on the northern side; the northern boundary along Poor Fork is practically at the base of Pine Mountain. This area has been described in various geological reports.‡

The main seam on this property is the one known variously as the "C," Benham, Keokee, Taggart, and Roda; it is also called, by the Kentucky Geological Survey, the Kellioka seam of the western portion of Harlan County. This seam averages, in this property, about 5 ft. in thickness, though local rolls reduce this thickness considerably over small areas, and at the extreme western end of the property the seam splits. It is usually clean, although occasionally a small parting occurs within a few inches of the bottom of the seam, and it is one of the best coking and gas coals in the United States. Its average analysis is given in Table I.

TABLE I. ANALYSES OF COALS FROM "C" SEAM

Number of samples	24	Coke	70 1
Volatile matter, per cent	35 09	Ammonium sulphate, lb	25 0
Fixed carbon, per cent	60 47	Benzol, lb	29 2
Ash, per cent	4 44	Tar, gal	7 5
Sulphur, per cent	0 59	Gas, cu.ft	11,448
Phosphorus, per cent	0 005		

The purchase negotiations were completed late in July and about Aug. 4 the decision was made to start the development of the tract at once and to push it with all possible speed, as the government wanted an additional supply of high-grade high-volatile byproduct coal from which the production of benzol and toluol could be increased. Actual possession of the property was given about three weeks later and on Aug. 26 construction work was started and pushed with all possible speed until after the armistice was signed.

A good survey of the property lines was available, but nothing that showed any topography or the relation of the coal outcrops to the property lines, and the only time available for obtaining these data was three weeks between the two dates mentioned above. A topographic party was organized, and the work of getting the necessary information for the town site layout was pushed as rapidly as possible, using a transit survey for the base lines, and filling in the topography by plane tables.

The scale used was 1 in. = 100 ft., and the contour interval was 10 ft. The site available for the town, all of which will ultimately have to be used, covered an area about two and half miles long, and in places about 2,000 ft. wide. The topography for the plant site layout was not complete until the early part of November, 1917, and the layout map was finished a few days thereafter.

When directions to begin the construction of the plant were issued, the output wanted was 2,500,000 net

*Excerpt from article read before the American Institute of Mining and Metallurgical Engineers at its Wilkes-Barre meeting, Sept. 12-15, entitled "Lynch Plant of United States Coal and Coke Co." This excerpt gathers together all the information about the boiler plant and tipple. The mine and the dwellings will be described in other articles.

†Consulting engineer.

‡Philip N. Moore: Report on Iron Ores in Vicinity of Cumberland Gap. Geol. Survey of Kentucky [2] 4, Pt. 5.
J. B. Dilworth: Black Mountain Coal District, Kentucky. *Trans.* (1912) 43, 129; Kentucky Geol. Survey: Upper Cumberland Coal Field. *Bull.* 13 (1912). Supplementary Report on the Coals of Clover Fork and Poor Fork in Harlan County (1916).

OF THE GROUP, AND SEVERAL OF THE DWELLINGS AND THE HOTEL ON THE LEFT

5,000-Ton Storage Bin for at Lynch, Kentucky*

& Coke Co. Has Coal with 0.6 Per Ash—Capacity for 240 Railroad Cars Exclusively—Two Rotary Dump Pits

tons per year. The property could not be attacked, except from the Looney Creek site, without much railroad construction, and as this site was approximately in the center of the tract, and all the coal could be reached from it with a maximum haul of four and half miles, and an average haul of about two miles, it was decided to construct at this point a plant that would have a capacity of not less than 8,000 tons per day.

For this output two mines were projected, one on each side of Looney Creek, pit mouths being placed a short distance above high-water mark, so that as much of the coal as possible would drain to them. The coal from both mines was to be taken to one tipple, at which the entire output would be loaded. It was realized that such a plant would be the largest single loading plant in the United States, perhaps in the world, and its construction gave opportunities for concentration in the line of shops, wash houses, tipples, amusement buildings, housing facilities, etc., that were unique and which enabled the company to build units and facilities of a size that are ordinarily unheard of in the usual coal-mining community.

It was realized that, to obtain prompt development, electric power was absolutely necessary and three second-hand 150-kw. engine-driven direct-current generators were installed with the necessary boilers just as soon as the materials could be assembled; later a fourth unit was added, although ordinarily only three were operated. This temporary power plant was replaced by the permanent plant in August, 1919.

The only public-utility company within reaching distance of this plant had two small power stations, but a substation at Lynch would have had to depend on a single transmission line eight miles long over the top of Big Black Mountain, which it would cross at one of the highest points in the state. This line probably would be frequently out of order and yet comparatively inaccessible for repairs. It might be years before a loop line could be constructed and, as the power company required the coal company to finance the necessary extensions, the latter company decided to install its own plant in order to have a reliable source of power at all times.

A careful study showed that alternating current to inside substations, for the mine transmission, would result in large savings. On account of the distance that ultimately would have to be reached and of the possibility of the acquisition of property three or four miles west of the power plant (which property has since been acquired) it was decided to generate at 6,600 volts.

Plant Arrangement Compact and Accessible

The new plant accordingly was laid out for two 1,875-kva. three-phase 60-cycle 6,600-volt turbo-generators with the necessary switchboard and control apparatus. Each machine is mounted on a heavy steel framework, under which is placed the surface condenser; directly under the condenser is placed the Radojet air pump and the centrifugal circulating pump. The arrangement is compact and accessible. The foundations of the pumps and condensers are built on the ground floor and the floor between the turbo-generators is covered with an open steel grating, which allows the air to ascend from the condenser floor and also permits the use of the crane for any repairs to the condensers, as the building is entirely open after the gratings are removed.

The general layout of the plant is shown in Fig. 1.. The cold well is under the floor of the main turbine room and the circulating pumps discharge into a steel-pipe line which feeds the water into a spray pond built as a part of Looney Creek, which is outside of the power plant. Sufficient room has been left in the building to install an additional turbine as large as 10,000 kva., should the demand warrant it, and the crane is large enough to handle a machine of this size.

The switchboard is on the same elevation as the turbo-generators and the control apparatus is in a room immediately back of it. On top of this room are the

lightning arresters and the disconnecting switches on the outgoing lines; in the room immediately below it are the necessary current and power transformers for the switchboard instruments and the 6,600-400 volt power transformers for the fan and tipple motors.

Adjoining the turbine room is the pump room, in which are installed two centrifugal boiler-feed pumps, each with a capacity of 600 gallons per minute, two centrifugal pumps for the town water supply, each with a capacity of 800 gallons per minute against a 500-ft. head, two centrifugal pumps for circulating the hot water through the central heating system, and two fans for the forced draft for the underfeed stokers. All of these machines are driven by steam turbines, the pumps by direct connection and the fans through gear reductions. Two steam engine-driven compressors supply air for pumping the wells, operating the rotary dumps in the tipple, greasing mine cars, operating the loading gates under the bin, cleaning motors and shop tools, etc. These machines have a combined capacity of 2,200 cu.ft. free air per minute to 110 lb. pressure. Immediately adjoining the pump room is the boiler room, in which are installed three 750-hp. Stirling watertube boilers, operating at 175 lb. steam pressure and 100 deg. superheat. There is ample room inside the building for a fourth unit and provision has been made outside for the installation of three similar units should such an increase in power become necessary. These boilers are equipped with Taylor underfeed stokers, an underground ash-cleaning system, and an overhead steel coal bin with a capacity of about 250 tons, from which the coal flows by gravity to the stoker hoppers. This overhead bin is filled with slack coal and with the mine refuse, if any, delivered by a belt conveyor from the tipple. The boilers are connected by a steel breaching to a reinforced-concrete chimney of 9 ft. internal diameter and a height of 205 ft.

The ashes are taken from a small storage pit under the back of the boiler settings, by roller-bearing cars, to a point outside the building, where they are dumped into a skip hoist (Fig. 2), which delivers them to the slate conveyor, by which they are carried to a bin on the mountain side. The skip hoist is also arranged so that any garbage or refuse of any kind collected around the town can be dumped into it and disposed of with the ashes and the mine waste.

No Wood Used Anywhere in the Building

The steam lines are all of extra-heavy steel pipe, flanged, with Van-Stone joints, built in a loop entirely around the plant, and provided with the necessary expansion joints, so that any unit can be operated from any one of the boilers. The entire building is made of reinforced concrete; sash and doors are all of steel; floors are of concrete with steel-plate coverings over the pipe trenches; no wood is used in the building.

For a long distance above the power plant, masonry walls have been built along both sides of Looney Creek, to confine it within a definite channel, and part of this area has been utilized for a spray pond, the water being kept in it by a movable steel dam at the lower end of the power plant. When there is ample water in the creek the condensing water is drawn directly from it through movable screens, to keep out leaves, etc.; when

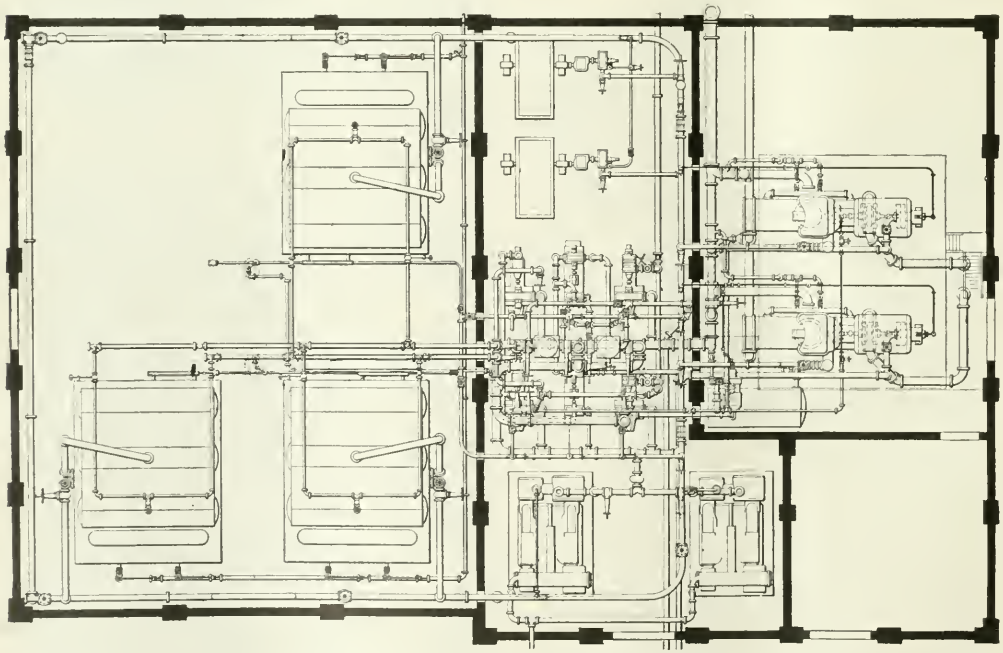


FIG. 1. GENERAL LAYOUT OF POWER HOUSE WITH DETAIL OF PIPING

On the right are two 1,875 kva. 6,600-volt turbo-generators. Directly under each machine is placed its surface condenser and below that its air pump. The floor between the generators is covered with an open steel grating for ventilation and for a crane opening. The pump room in the center has two boiler-fuel and two town-supply centrifugal pumps and two pumps to supply hot water for central heating. On one side of the pump room are two force-draft fans for the underfeed stokers and on the other side two air compressors for well pumping, for dumping cars, and for other odd jobs about the plant.

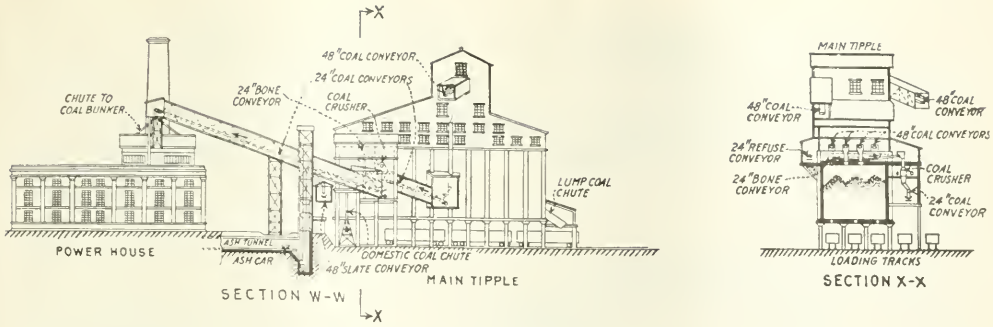


FIG. 2. SECTION OF THAT PART OF THE LYNCH TIPPLE DEVOTED TO STORAGE AND TRANSPORT OF MINE REFUSE, BOILER ASHES AND GARBAGE

The section WW is taken at the point indicated in Fig. 4. One 24-in. bone-coal conveyor and one 24-in. slack conveyor carry the fuel to the 250-ton steel coal bin above the boilers. The ashes go to a small storage pit at the back of the boiler settings where they are loaded to cars, run to a skip hoist and taken in the slate conveyor to a bin on the mountain side. Into the same hoist is dumped any garbage or refuse collected around the town. Figs. 4 and 5 show more of these details.

the supply is scarce, the dam is raised and the spray pipes put in operation.

As already stated, the output for which the plant was designed is 2,500,000 tons per year, or, roughly, 8,000 tons per working day; and as it was expected that this output would eventually be increased, and because any tipple should be designed so that it will handle the coal easily at the greatest rate at which it can be delivered to it, which usually is during one of the morning hours, the tipple was planned for a mine capacity from each side of 1,000 tons per hour, or a total capacity of 2,000 tons per hour, which is 16,000 tons per 8-hr. day.

As all the coal was to be shipped for coking purposes, no preparation, so far as sizing was concerned, was necessary; but as it was probable that the coal from more than one seam might be brought to the tipple and also because of occasional impurities in the bed, it was decided to equip the tipple with picking tables so that the coal could be cleaned by hand.

Two Picking Tables for Each Size

The experience at the Pocahontas mines had shown that it is not feasible commercially to pick coal less than 1¼-in. in size, so the screens were designed to make coal over 6 in., between 6 in. and 3 in., and between 3 in. and 1¼ in.; all the coal under 1¼ in. goes directly to the bin.

Picking tables were installed capable of handling the output of each size at a speed of 60 ft. per minute and at a depth on the table of not more than the larger limit of the size handled, or, in other words, in the size from 1¼ to 3 in. the coal while completely covering the picking table would be not more than 3 in. deep. Two tables were installed for each of the three sizes, making a total of six picking tables.

Owing to the location of the plant, at the end of a single-track railroad, on a 2-per cent grade and about five miles from the nearest railroad yard, a number of trains are needed to keep it supplied with cars. For this reason the track system, both above and below the tipple, was laid out for a capacity of 240 cars, or 12,000 tons per day, thus allowing for some margin over the day's run and also for a future increase in capacity.

The empty tracks were designed for 60-car trains, and the incoming train is pulled through to the upper end of the storage yard and dropped into the tipple tracks. Below the tipple the cars are dropped over a railroad scale and weighed and then into the storage yard with tracks of sufficient length for 90-car trains. All the tracks are laid with 80-lb. steel rails.

Even with this provision it was felt that the operation of the plant often would be hindered by the shortage of cars and that on more than one occasion when cars would be expected during the morning, the men would not enter the mine because they could not see them, and for that reason the run would be stopped because what cars were on hand already had been loaded. It was thought advisable, therefore, to provide a 5,000-ton storage bin.

Three Loading Tracks Beneath Bin

The coal is of a hard, splinty nature and comes from the mine in large slabs. As coal passing over the 6-in. screen was likely to be entirely too large to load through a hopper, the tipple was designed to deliver this large coal to the lower end of the bin, where chutes convey it separately to the cars. After a careful study of the most economical shape of bin for the desired capacity and the space necessary for the picking tables, screens, etc., three loading tracks were decided upon, the bin being placed directly above these. The coal is loaded from the bin into the cars through openings approximately about 2 ft. 6-in. x 3 ft. These are closed by steel plates, operated by air cylinders.

The use of a bin made it necessary to place the picking tables some distance above the ground; and as it was advisable in order to reduce the average haul of the coal and to drain as much of the seam as possible, that the pit mouth be placed as close to the flood level as was practicable, conveyors were installed for raising the coal from the ground to the top of tipple.

Several plants having been inspected it was decided on account of the extremely large capacity desired to use rotary grizzly screens for the smaller sizes and bar screens for the larger sizes. Shaking screens would have required very large units, which would have occasioned much vibration. The rotary grizzly screens revolve at slow speed, consume little power and screen efficiently.

The use of steel-pan conveyors was carefully considered, and plans and specifications for a steel tipple with such equipment and shaking screens were pre-

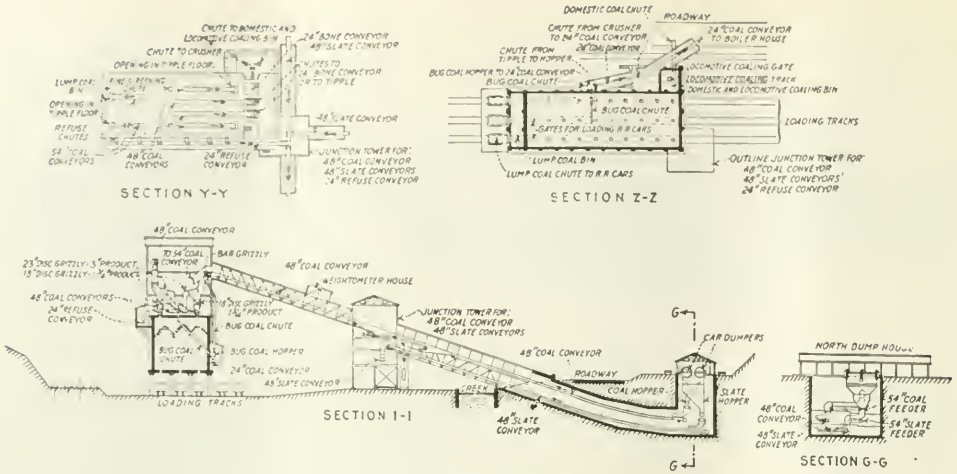


FIG. 3. SECTIONS OF LYNCH TIPPLE HORIZONTALLY OVER PICKING TABLE AND OVER STORAGE BIN AND ALSO VERTICALLY THROUGH THE CONVEYOR FROM THE NORTH-SIDE DUMP

The large bin holds 5,000 tons and has a section at the far end for lump coal 6 in. in diameter and over. Three loading tracks pass under the huge bin. The lower illustration shows the long belt conveyors by which coal and slate are carried from the north-side dump under the roadway and over the creek to the preparation plant. Slate cars can be discharged on either dump of either of two tracks. For location of sections YY and ZZ see Fig. 4, and for section 1-1 see Fig. 5.

pared. After the inspection of other plants, however, it was decided to use rubber-belt conveyors, the only objection to their use being that the tipple would be removed farther from the dump. Even though an increased quantity of steel would be involved in the longer conveyor ways the rubber-belt conveyors are much cheaper than the steep-pan conveyors would have been and their size was well within good practice. Roller-bearing idlers of heavy design were specified throughout and the top and bottom pulleys and the gear drives are unusually heavy and rugged, all gears being of cast steel. The use of as few sizes of shafts as possible throughout the tipple was specified, even if some were a little large, in order to reduce the number of boxes and repair parts to be carried in stock.

Ample Provision for Disposal of Mine Refuse

Around the usual coal mine, the slate and mine refuse, if any is encountered, is disposed of with great difficulty. In my opinion, in most mines not enough attention has been paid in the design of the plant to handling this material, the disposal of which is therefore unnecessarily expensive. On account of the thinness of the coal in some places and as draw slate probably would be encountered in some headings, provision was made for handling 400 tons per hour through the tipple and to the slate dump by the ordinary tipple crew.

As the cars used were of the solid-end type, the use of rotary dumps was necessary; and so in order to get the capacity desired, it would be necessary to dump two cars at once. For this reason the equipment was designed so that two cars of coal, two cars of slate, or a car of slate and one of coal could be dumped at the same time. The handling of such a volume of coal and slate at each dump meant the use of a separate belt for handling the slate.

The rotary dump (Fig. 3) discharges the contents of the cars into hoppers under the dump, these being so arranged and so covered by hinged gates that coal falls into one bin and slate into another, and, by air-operated valves, the contents of any car can be easily diverted into either bin. From these bins the coal passes by short apron feeders of very heavy rubber belts to the coal conveyor, and the slate to the slate conveyor (Fig. 4). The two main conveyors are carried in the same galleries to the tipple, the coal conveyors in each case being over the slate conveyors.

Rotary dumps ultimately are to be installed in duplicate in each dump house but at present one of them has only one dump. The dumps are operated by compressed-air cylinders and revolve 135 deg. and back to the starting point, there being a positive stop so that the rails in the dump come at each revolution exactly to the same elevation as those leading to the dump. The dumps are guaranteed to have a capacity of four dumps per minute, or, as the cars hold about three net tons, a capacity of twenty-four net tons per minute. This easily can be maintained over long stretches of time and for short periods can be considerably exceeded.

Storage Tracks Hold About 100 Mine Cars

For each mine, storage tracks above the dumps hold about 100 mine cars, which are automatically fed into the dumping apparatus by car feeders. After leaving the dumps the empty cars are handled by trip makers, which also are used to raise the cars to a higher level, in order to save excavation. The height from the dump to the conveyor feeder is regulated entirely by the arrangement of chutes, and as this was designed so that either car could go into either dump, it required a considerable excavation below the dumps, the deeper of the two conveyor pits being about 54 ft. The conveyor pits, as well as the lining of the conveyor galleries from the dump pits to the surface of the ground, are made of reinforced concrete, the outside of which in each case was water-proofed with tar and felt paper. The supports for the floors in the dump hoppers are of heavy steel girders.

From the dump pit in each case, the coal conveyors carry the coal to the top of the tipple, where it passes over a bar grizzly having a 6-in. opening (Fig. 3). The

coal passing over the bar grizzly is carried by chutes to the lump picking tables, and is then dumped into the lump coal bin at the end of the tipple.

The coal passing through the bar grizzly goes over a 23-in. revolving disk screen (Fig. 3) which takes out all material larger than 3 in.; this material goes through to the picking tables, and then to the main bin or through a chute to the domestic and locomotive-coal bin. The material passing through this screen goes to an 18-in. rotary disk screen, which separates the material larger than 1¾ in.; this goes through picking tables, thence into the bin.

In the morning the first coal loaded out of the mine is the "bug dust," or machine cuttings. In certain parts of the mine a small parting about 3 in. above the bottom, which occasionally is 1 in. thick, and is considerably higher in ash than the rest of the coal is cut out by the machines. Occasionally, also, the machines dig into the fireclay bottom, which is mixed with the bug dust. As this bug dust is loaded into separate cars, it is easily seen on the conveyors; and thus by the opening of a flap gate at the end of each conveyor it is sent direct to a bug-dust hopper (Fig. 3), whence a conveyor takes it to another conveyor, by which it is transported to the boiler house.

The material from the picking tables, if of a combustible nature, is dropped to the floor, and, at suitable intervals when the work is slack is deposited on the conveyor under the picking-table floor, which dumps it into a crusher in which it is reduced to a nut-coal size; here it drops to a conveyor and goes to the boiler-house coal bin. The 3- to 6-in. lump coal can be handled this same way, if desired. The other material from the picking tables is wheeled to the side of the bin and dropped through suitable refuse chutes to the belt conveyor, which deposits it on the slate conveyor. The locomotive coaling bin is used for coaling locomotives on the railroad, which is done through a gate where the coal is weighed; the coal from this same bin also drops by a chute to a point along the road, whence it can be taken to the houses by truck or wagon.

The slate from the north-side dump (Fig. 5) is taken by a slate conveyor to the junction tower, where it is dumped upon a conveyor (Fig. 4) which finally deposits it in the slate bin on the side of the mountain. The slate from the south-side dump is taken on a conveyor to the junction tower at the end of the bin, where it is also placed on a slate conveyor for final disposition.

The slate bin on the mountain side has a capacity of about 400 tons, and the slate is drawn from it through air-operated bin slides into a steel stacking larry, which is so arranged that the slate is drawn from the bottom of the larry by a conveyor that can discharge to either side or in front, thus doing away with the necessity of moving tracks at frequent intervals. This larry can build its own track directly ahead of it or it can make a fill from 30 to 40 ft. wide on top. Pieces of slate weighing as much as 200 lb. are handled by this larry and are discharged at a distance of from 15 to 20 ft. from the center of the track.

Nine Cars Can Be Loaded at One Time

The coal is drawn from the main bin through cast-iron boxes, which are embedded in the concrete floor and are closed by heavy steel plates, sliding in cast-iron grooves. These gates are operated by air cylinders having a stroke equal to the opening of the gate and measure about 30 x 36 in. They are spaced approximately 12 ft. apart and the cylinders are operated by three-way cocks, which are turned by the loader walking along the platform, from which he can estimate the proper loading of the cars.

Three cars can be loaded on each track, or a total of nine cars, at one time, and it is possible, if the bin is kept full of coal, to load 500 tons of coal in three minutes. The lump coal at the end of the bin is loaded through chutes, which are raised or lowered, to shut off the coal supply, by electric windlasses (Figs. 3 and 4). The main bin is built of reinforced concrete and was calculated to have a working stress of 500 lb. per sq.in. for the concrete and 10,000 lb. per sq.in. for the steel. So far as I have been able to ascertain, it is the largest reinforced-concrete bin in the world. The

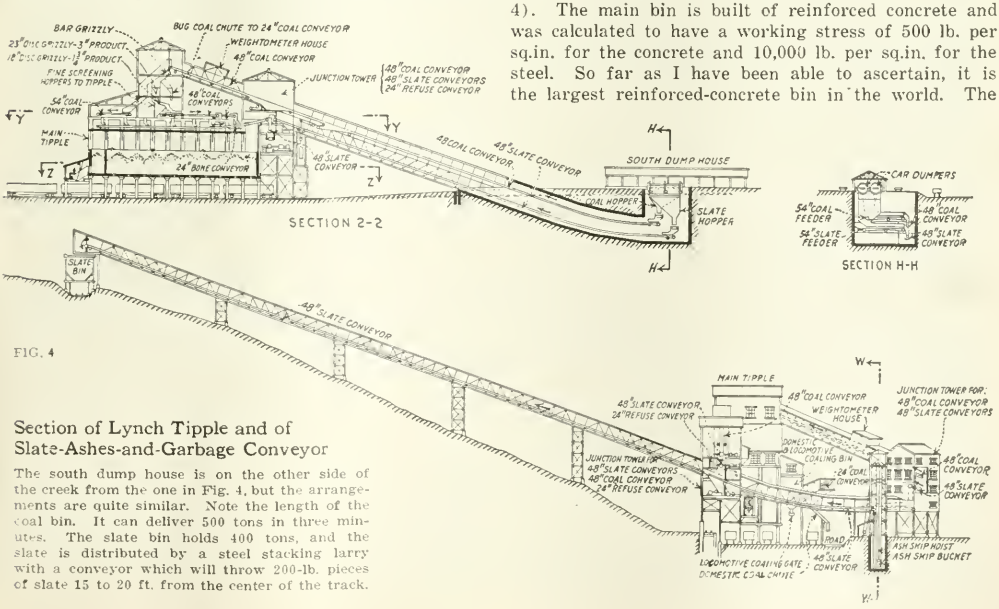


FIG. 4

Section of Lynch Tipple and of Slate-Ashes-and-Garbage Conveyor

The south dump house is on the other side of the creek from the one in Fig. 4, but the arrangements are quite similar. Note the length of the coal bin. It can deliver 500 tons in three minutes. The slate bin holds 400 tons, and the slate is distributed by a steel stacking larry with a conveyor which will throw 200-lb. pieces of slate 15 to 20 ft. from the center of the track.

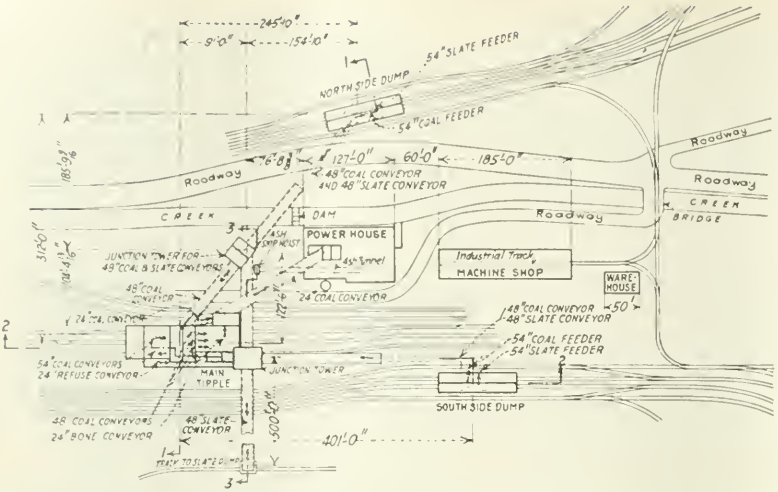


FIG. 5.

General Plant Layout

This illustration does not, however, show the trackage for the storage of 90-car railroad trains or that above the rotary dumps for 100 mine cars. The property is operated by two mines, one on each side of Looney Creek.

superstructure on top of the bin, the conveyor galleries, and the junction towers are of steel, covered by corrugated galvanized sheets. An idea of the size of the tipple may perhaps be obtained from the fact that there are 1,100 tons of structural steel in these structures and in the dump pits.

As it was realized that much dust would be forced through the openings in the picking-table floor by the coal dropped into the bin below, four large steel ventilators extending from the top of the bin through the top of the building were built. It was not thought that the coal would be dusty enough to cause any inconvenience in the rest of the structure, but it has been found that both at the dump pits and in the tipple house the dust furnishes a serious problem. For this reason a ventilating system is being provided. All machinery is electrically driven, using 440-volt induction motors and spur-gear speed reducers.

So-Called Anthracite of Virginia Really Is a Much Softer Coal

THE so-called anthracite of Virginia is not really anthracite but is a much softer coal, according to the U. S. Geological Survey. The coal mined in some parts of this field compares favorably, except that its ash content is greater, with the coal from the Pocahontas field, but that from other parts is harder, contains less volatile matter, and consequently approaches anthracite more nearly in general composition.

The coal is of lower Carboniferous (Mississippian) Age and is found at many places in the ridges of the Appalachian Valley from the Potomac River nearly to the Tennessee line. It is best developed, however, in Montgomery, Pulaski and Wythe Counties. It occurs in what has been called the Price sandstone, which outcrops in a narrow belt, dipping south at angles ranging from 20 to 30 deg., at the southern foot of Brush and Little Walker mountains, from a point six or eight miles northeast of Blacksburg to a place almost due north of Pulaski. At that place the outcrop turns to the south, and it pursues a zigzag course around anticlinal and synclinal points to Pulaski, where it passes beneath and is concealed by the Shenandoah ("Valley") limestone.

The coal also occurs in Price Mountain, southeast of Blacksburg, where it lies in an anticlinal fold and dips under the Shenandoah limestone in all directions. In Wythe County the coal and associated rocks form an overturned syncline just north of Max Meadows, but its outcrop is largely concealed by a tongue of the Shenandoah limestone that has been thrust over upon it. The coal also reappears at the foot of Little Walker Mountain, northwest of Wytheville, and extends westward nearly to Marion, in Smythe County.

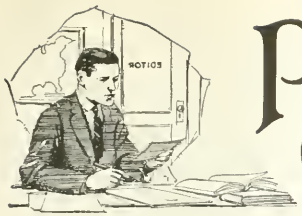
Two beds of coal have been mined in this field, known as the Big or Merrimac bed and the Little or Langhorne bed. The Merrimac bed seems to be present throughout the part of the field mentioned above, with a thickness ranging from 5 to 11 ft., but in every mine the bed contains many shale partings that can be separated from the coal only with difficulty, and consequently the coal as it is put upon the market contains a large percentage of ash. The Langhorne bed also is generally present throughout the field, but so far as known it is thick enough for commercial mining only west of New River and north of Pulaski, where it ranges in thickness from 3 to 5 ft. In that part of the field west of Wytheville the coal beds are generally thinner and more impure than they are farther east.

The chemical composition of the coal is shown by the accompanying analyses. All the analyses represent the Merrimac bed, except that from Little Walker Mountain north of Pulaski, which is from the Langhorne bed. The analyses show that the most objectionable feature of this coal is its large percentage of ash.

The analyses also show that the coal ranges in rank from semi-bituminous to semi-anthracite, but that none of it approaches the composition of Pennsylvania anthracite. According to U. S. Geological Survey standards, bituminous coal has a fuel ratio of less than 3; semi-bituminous, 3 to 6; semi-anthracite, 6 to 10; and anthracite, 10 or more. Those whose fuel ratio is less than 6 should be sold as semi-bituminous or "smokeless" coals, and those whose fuel ratio is more than 6 should be sold as semi-anthracite. The present practice of putting them all on the market as Virginia anthracite should not be permitted, as the term is misleading.

ANALYSES OF COAL FROM MONTGOMERY, PULASKI AND WYTHE COUNTIES, VIRGINIA

Location	Moisture	Volatile Matter	Fixed Carbon	Ash	Sulphur	B.t.u.	Fuel Ratio
Price Mountain:							
South side.....	3.6	9.5	67.6	19.3	0.46	11,850	7.12
North side.....	3.0	10.9	64.2	21.9	0.68	11,670	5.89
Brush Mountain:							
Near Blacksburg.	1.9	14.0	68.9	15.2	0.52	12,740	4.92
Poverty Gap, New River....	1.6	13.3	61.5	23.6	0.67	11,400	4.62
Little Walker Mountain, north of Pulaski.....	4.6	10.0	71.3	14.1	0.57	12,520	7.13
Syncline northeast of Max Meadows	3.8	9.4	62.2	24.6	0.75	10,960	6.62



Problems of Operating Men

Edited by James T. Beard

Plain- vs. Roller-Bearing Tests

Comparative Tests of Plain- and Roller-Bearing Equipment of Mine Cars, at Carbondale, Pa., Conducted with Absolute Fairness —Witness Corrects Certain Statements Reflecting on Said Tests

GLANCING through some back numbers of *Coal Age*, my attention was arrested by certain statements made by W. H. Noone, in his letter, *Coal Age*, Vol. 18, p. 449, which tended to discredit the tests made at Carbondale, Pa., Nov. 19, 1916.

These tests were made by the Hyatt Roller Bearing Co., in the presence of a large number of mining engineers and mine officials. The object of the tests was to demonstrate the superiority of roller-bearing equipment for mine cars. Having been present, myself when these tests were made I feel competent to speak regarding them.

Personally, I was deeply interested in the tests, having been engaged for more than a year previous in the design and construction of a dynamometer car to be used in making similar tests. In that work I was associated with the Engineering Department of the University of Illinois. The design of the Illinois car had been completed in June, 1915, and it was not until June, 1916, that we had any knowledge of the same class of work being undertaken by the Hyatt Company.

At the Carbondale tests, I was given every opportunity to inspect the equipment of the cars and became thoroughly familiar with every detail of each test. The result was that I had an intimate knowledge regarding the preparation that had been made to render the results reliable as a means of comparing these two types of bearings for mine-car wheels.

Type of Bearing Used in Tests

On p. 450, in the issue of *Coal Age* to which I have referred, Mr. Noone says, "It is my belief that the poorest type of plain-bearing equipment was used, at the time of making that test." This statement is far from being correct. As a fact, the cars were mounted on one of the best types of plain bearings, known as the Fleming self-aligning type.

Care had been taken in the selection of cars whose bearings had been well run in and were in the best of condition for giving favorable results in the tests. I wish it could be said that the roller bearings used in the tests were in equally good condition. Had that been the case, I believe a less value than 13 lb. per ton would have been found for the drawbar pull on the roller-bearing cars.

It so happened that axles of a somewhat higher carbon content had been ordered for this test and had only reached the mine a day and a half before the test was to be made. No flat-nosed finishing tool had been used after the turning; and it could be readily imagined that the axles were in no condition to give the best results in a test of roller bearings.

Owing to the shortness of the time, there was only opportunity for making one trip into the mine and return, so that it can be truthfully said the roller-bearing cars used in the test had not been run in, as the distance they had traveled would not exceed six miles at the most.

Rate of Acceleration in Starting the Two Trips

Again, Mr. Noone refers to the pull required to start the plain-bearing trip, as being twice that needed to start the roller-bearing cars. His remarks on this point seem to imply that the whole truth has not been told. He says, "No mention is made . . . that the trip mounted on roller bearings was started slowly and gradually, while the trip mounted on plain bearings was started off at two miles per hour, that speed being picked up at the beginning."

Evidently Mr. Noone did not know that an electric type of speed indicator was used, which had to attain a certain speed before the pen would indicate correctly. As a result, the speed curve follows the zero line, on the chart, a short distance before rising.

No! The plain bearing trip did not start off at two miles an hour, as Mr. Noone supposes, although it accelerated more rapidly than the roller-bearing trip. It is true, as he states, however, that the roller-bearing cars covered twice the distance the plain-bearing trip was hauled, before they attained the same speed.

In order to complete the discussion of this point, let me say the initial pull required to start a trip must overcome the static friction and be sufficient, besides, to accelerate the mass until the desired speed is attained.

Taking the data from the blueprint, as closely as possible, I estimate that it took the plain-bearing trip about 13.5 sec. to reach a speed of two miles per hour, while the roller-bearing trip required about 20 sec. to attain the same speed. The first estimate is equivalent to an acceleration of 0.15 mi. per hr. per second, while the second shows the acceleration of the roller-bearing trip was 0.10 mi. per hr., per sec.

Converting these into feet per second. per second, and finding the force required to accelerate a ton at that rate, shows that the plain-bearing trip required an accelerating force of 13.8 lb. per ton, while the roller-bearing trip needed only 9.2 lb. per ton, owing to the acceleration being more gradual.

Computing the Starting Force

The total starting force for plain bearings, computed from chart and weight of trip, was 178.6 lb. per ton The same for roller-bearings was 90.6 lb. per ton. Subtracting from these total values the force, per ton, required for acceleration gives for the force, per ton, required to overcome static friction alone, 164.8 lb. for the plain-bearing trip and 81.4 lb. for the roller-bearing trip.

Thus, after making full allowance for the fact that the plain-bearing trip was started at a 50 per cent greater speed we see that it took more than twice the pull to overcome static friction only, in plain-bearing cars, as compared with roller-bearing equipment.

In closing, let me say, I have no reason to question the absolute good faith in which Mr. Noone made the statements to which reference has been made. I am confident he was sincere and had no desire to cast any reflections on the development that science has made possible in mine-car equipment.

A. C. Callen,
Professor Mining Engineering.
West Virginia University,
Morgantown, W. Va.

Working Pitching Seams

Chute mining limited to seams having an inclination not less than thirty degrees.

REFERRING to the inquiry regarding the working of a steep seam of coal, and the reply suggesting the method known as "chute mining," *Coal Age*, July 28, p. 142, it would seem that the reference here was to a seam having an inclination of 33 deg., instead of 33 per cent.

The angle of repose of bituminous coal on sheet iron when both are dry is 26 deg. Then, assuming the chutes are lined with sheet iron, the angle of inclination should not be less than 30 deg. to enable the coal to slide freely down the chute, and it seems probable, there-

fore, that this reply assumes a pitch of 33 deg.

A 33 per cent pitch corresponds to an angle of inclination slightly more than 18 deg. referred to horizontal measurement, or 19 deg. referred to inclined measurement. In either case, adopting chute mining would necessitate pushing the coal down the chute even if they were lined with sheet iron, which would be both expensive and dangerous.

Rooms Turned on the Strike in a Seam Pitching 20 Deg.

The Owl Creek Coal Co., at Gebo, Wyo., are mining on a 20-deg. pitch. The main haulage slope is driven on the full dip of the seam and cross-entries or strike levels are turned at right angles to the main slope. From the cross-entries or levels, stub slopes are driven on the full dip of the seam and rooms are turned to the right and left of these on the strike of the seam.

The miners push their coal to the mouths of their rooms, from which point it is drawn up to the levels above by a small hoist located at the head of each stub slope. On the levels, locomotives haul the coal to the main slope where it is hoisted to the surface.

It may be of interest to know that the coal is cut, in this mine, by standard Goodman shortwall machines, which are also used in drawing back the pillars. No difficulty is experienced in making these machines cut up the pitch.

In drawing back the pillars, the rooms are widened on the high side and the machines are operated successfully cutting along the rib. For driving the slopes, the company's mechanics have mounted a breast machine on a truck. It is arranged in such a manner as to allow of its being swung from side to side, in order to cut the full width of the slope or entry.

Charles M. Schloss.

Denver, Colo.

Model Room Switches

Safety and security of operation assured by attention to details in laying a mine switch.

AVOIDING danger of derailment of cars at mine switches brings the suggestion, from an Indiana trackman, that the use of guardrails, at switch points and frogs, will be effectual, *Coal Age*, June 30, p. 1163.

It is unnecessary to enlarge on the necessity of avoiding the derailment of mine cars, at room switches. Not only is this important, in order to prevent loss of time and the expense of putting the car back on the track, but there is every possibility of some one getting hurt when a car weighing anywhere from 1 to 3 tons is derailed and must be replaced on the track.

There is one objection to having too many guardrails, however, especially in machine mining where the machine cable is attached to the trolley, or power line, located on the opposite side of the track from that on which the rooms are turned. There is always danger of the cable being caught or fouled in one of these guardrails when the machine is proceeding toward the face of a room to cut the coal.

Let me suggest the importance of giving attention to a few essential points when laying a room switch or parting, as we call it, if we are to lessen the risk of accident by derailment. The points I have in mind are:

First, where locomotives or cutting machines must pass over a switch and enter the room, or where cars of large dimensions and capacity are employed, never use less than a No.-2 frog, in laying a room switch. This will give a good length of lead rail that will allow the locomotive or cutting machine to pass in and out of the room with the utmost freedom.

Choice of Latches or Rail Points

Now, a word about latches and switch points. From my own experience, I do not favor the use of latches, for iron under 30 lb. per yd., or where animal power is used in hauling. The latches are hard to keep clean and in repair and there is danger from the common practice of drivers to kick the latch when riding on the front end of a car, which is a dangerous habit.

In the use of rail points, under the conditions just mentioned, there need be little danger of derailment if the switch is properly laid and a No.-2 frog employed. The point rails should be nicely pointed and made just a trifle higher than the rails they parallel. Care must be taken to lay all rails to a true gage.

In locomotive haulage, using 6-, 8- or 10-ton locomotives, all switches should be of the latch type and made of heavier iron than in animal haulage. The switch should be thrown by a lever, parallel to and 36 in. from the rail, so that there will be no danger of a snapper or driver tripping over it and falling. While writing this, I have wished that I could always have these arrangements, which would go far toward making a model mine in respect to haulage.

Gans, Pa. R. W. Lightburn.

Cut Mine Timbers to Measure

Mine accidents largely due to the dull axes and saws of miners. Timbermen as important as safety inspectors.

LOOKING over the examination questions of the last bituminous mine inspectors' examination, held at Pittsburgh, Pa., as published in *Coal Age*, Aug. 11, p. 221, my attention was arrested by one question in particular, which asked for the cause of the greatest number of accidents in mines.

The answer stated very properly that the chief cause of these accidents were falls of roof and coal at the working face; and recommended, as a means of reducing the number of such accidents, the employment of safety inspectors to look after the men; a plentiful supply of timber of the proper kind to be kept constantly on hand, in each working place; and, lastly, a systematic method of timbering wherever that is practicable.

I agree fully with these suggestions, but do they go far enough? Is it not true that with the employment of safety inspectors in our mines, the number of accidents still continues high in comparison with the death rate in some other countries?

Now, what I have to say, is not to be understood as recommending that safety inspectors should be eliminated or their employment discontinued. Instead, my idea is that not sufficient attention is given to the matter of sending timber into the mine already cut to the required length.

We all know that the majority of miners do not keep their axes and saws in condition. When the posts sent in to them are not the right length most miners will throw them aside, for the present, rather than take the time to cut them to the proper length with a dull axe or saw. The miner continues loading his coal and the needed posts are not set in time to avoid the accident that is almost sure to follow.

Allow me to suggest, here, that good timbermen are as important, at the working face of the mine, as safety inspectors. In a large percentage of the mines of this country, the timber sent to the working face for the miners' use is not cut to the proper length and, as just mentioned, is not available for instant use.

Cutting Timber in Mine the Cause of Many Accidents

The conditions just described have a tendency to make miners careless in respect to the timbering of their places, which we all know must be done promptly when needed and not put off for a more convenient time. I am not classifying every miner on the same level; but I honestly think the sending of timber into the mine, before it is cut to the right length, is the underlying cause of a great number of accidents.

It may be argued that it is the duty of the safety inspector to see that the miners keep their tools in good condition and cut and set timbers promptly in their places. This is no doubt true; but the delay in the work of loading when timbers must be cut is the miners' excuse for not setting his posts till he has finished loading his coal.

My thought recurs to a mine where the timbermen are each assigned to a certain section of the workings and charged with the duty of measuring the length of timber required in each place, in that particular section. A timberman notes his measurements in a book, together with the number of posts and cap-pieces on hand in each place, after which he proceeds to the timber yard, cuts what posts are needed and loads them into cars to be taken, by the driver, to where they are wanted.

It is needless to say that when each working place is thus supplied with props of the right length and cap-pieces, the miner has no excuse for not setting his timbers promptly, as required; and, as a result, the accident list in that mine is greatly reduced.

Poston, Ohio. J. H. Taylor.

Inquiries Of General Interest

Determining Hydrostatic Pressures in a Mine With the Aneroid

Altitude Aneroid Readings Converted Into Equivalent Inches of Mercury or Atmospheric Pressure (lb. per sq.in.) —Difference in Altitude Approximate Difference in Elevation

ONLY recently I came across the letter of an Oklahoma mining engineer, inquiring into the use of the aneroid for determinig hydrostatic pressures in the mine. The inquiry appeared in *Coal Age*, June 16, p. 1084, and the reply of the editor drew attention to points that must be observed in taking such readings, but did not show how to calculate the hydrostatic pressure on the air from the readings taken.

Some time ago I had occasion to determine, if possible, the pressure on the air at different points in our mine, by the use of the aneroid. My technical knowledge of the subject will not permit me to go further than to present a few figures taken from my notebook, which I believe will be of interest in this connection.

The accompanying sketch or diagram (Fig. 1) shows, relatively, the down-

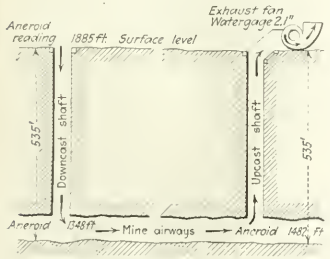


FIG. 1. DIAGRAM, SHAFT MINE

cast and upcast shaft, the position of the exhaust fan, depth of shafts, the surface line and the seam below, these being each practically level. On the diagram, also, I have indicated the aneroid readings taken at the surface and at the foot of each shaft. These readings were taken from the altitude scale of the aneroid and represent, more or less closely, the height in feet above sea-level or tidewater.

It will be observed that the difference of the readings taken at the surface and at the foot of the downcast shaft, 1,885 — 1,348 = 537 ft., checks the actual depth of the shaft within 2 ft. But the reading taken at the foot of the upcast shaft (1,482 ft.) would indicate a difference of 1,482 — 1,348 = 134 ft. between the elevations at the foot of these two shafts.

As previously stated, however, the seam is practically level and its elevation we understand is about sea level. Therefore, the difference in the two altitude readings taken in this level seam must represent the pressure, in feet of air column, due to the resistance met by the air current in passing from the foot of the downcast to the foot of the upcast shaft.

From tables giving the barometric height, for different elevations above sea level, I find that there is a difference of 29.925 — 29.39 = 0.535 in., for the first 500 ft. above tide. Then, to find the difference for 134 ft., I used the proportion

500 : 134 :: 0.535 : x = 0.143 in.

Multiplying this by the specific gravity of mercury (13.6) gives the corresponding water-gage reading, as 13.6 × 0.143 = 1.94 in. This does not include the resistances of the two shafts, but only represents the resistance of the mine airways.

Finally, for the purpose of checking the readings of the aneroid, I took a water-gage reading at the intake orifice of the fan and found it to be 2.1 in., which is slightly greater than the water gage estimated as due to the resistance of the mine airways. If there is a formula or method of calculating hydrostatic pressures, from aneroid readings, it would be of interest in this connection.

MINE ENGINEER.
————, W. Va.

We are glad this correspondent has again drawn attention to the inquiry regarding the use of the aneroid barometer for ascertaining mine pressures. As he states, the reply made in *Coal Age*, June 16, p. 1084, did not give the necessary calculations, as no specific case was mentioned.

Many engineers have used the aneroid to determine elevations and pressures underground, but generally with unsatisfactory results. In most cases, the difficulty has arisen from a lack of understanding of the instrument.

The use of the aneroid, in mines, is complicated by reason of the readings being taken at different elevations and being variously affected by the ventilating pressure due to the resistance of the airways.

In the present instance, the correspondent has taken the readings from the altitude scale of his instrument, which was an error, as the altitude readings taken did not correspond to the actual elevations of the points above sea level.

As is well known, the density of the atmosphere decreases as the elevation above sea level increases. For this reason, 500 ft., on the altitude scale of an aneroid, corresponds to a less difference in pressure at the higher altitudes than at lower elevations.

The correspondent states that the seam of coal is practically at sea level, which makes the elevation at the surface about 535 ft. above tide. The readings observed from the altitude scale showed a difference of 537 ft., or 2 ft. greater than the measured depth of the shaft.

This result should have shown, at once, that something was wrong, as the difference in reading should have been much less than the depth of the shaft, taking into consideration the resistance that the shaft offers to the passage of the air current. This resistance acts to counterbalance and destroy the lesser effect of the weight of the air column in the shaft and decrease the difference of pressure.

As shown in Fig. 2, mining aneroids have two scales, the outer or altitude

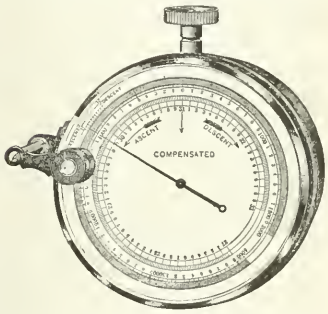


FIG. 2. MINING ANEROID

scale being adjustable, which permits it to be shifted so that its graduation will correspond to any observed barometric reading.

The best results are obtained when the known elevation of the point of observation above tide on the altitude scale is shifted to correspond to the observed reading of the mercurial barometer, at the time of observation.

Referring now to Fig. 1, which is a diagramatic representation of the points in question as prepared from the correspondent's sketch, the first step is to find the respective atmospheric pressures corresponding to the observed altitude readings at the surface and the bottom of each shaft.

For this purpose we assume a height or altitude h = 1,885 ft. and an absolute temperature T = 460 + 60 = 520 deg. F., in the following equation (see Mine Gases & Ventilation, Beard, p. 16):

$$\log p_h = 1.1672 - \frac{h}{122.68\ T}$$

The pressure corresponding to an altitude reading of 1,885 ft., as found

from this equation, is $p = 13.73$ lb. per sq.in. In like manner the pressure for the altitude reading 1,348 ft., taken at the bottom of the downcast shaft, is $p = 14.00$ lb. per sq.in.; and that for the reading 1,482 ft., taken at the bottom of the upcast shaft, is 13.93 lb. per sq.in.

Now, subtracting the calculated pressure at the surface (13.73) from that at the bottom of the downcast shaft (14.00) gives for the difference of pressure $14.00 - 13.73 = 0.27$ lb. per sq.in. More exactly, by the use of seven- or ten-place logarithms, this difference is 0.269 lb. per sq.in.

Since the elevation of the seam is said to be practically sea level, the normal atmospheric pressure is 14.696 lb. per sq.in. Subtracting from this the calculated difference of pressure between the top and the bottom of the shaft, gives for the normal pressure at the surface $14.696 - 269 = 14.427$ lb. per sq.in.

Having thus found the respective normal pressures for the top and the bottom of the downcast shaft, we substitute these in the equation previously given and solve for h. But log 14.696 = 1.16720; and log 14.427 = 1.15918, which substituted in the equation gives, for the estimated depth of the shaft, $h = 511.6$ ft.

It is clear that the observed difference of pressures between the top and bottom of the shaft would have been greater but for the resistance of the shaft to the air current. In all aneroid work in mines, for the purpose of determining pressure on the air, it is necessary to know the elevations of the several points of observation, in order to estimate the resistance of the shaft or airway.

For example, to determine the shaft resistance in this case, substitute the measured depth, $h = 535$ ft., in the equation previously given, and find for the atmospheric pressure at the surface $p = 14.415$ lb. per sq.in. Then, subtracting this from normal sea level pressure at the bottom of the shaft gives $14.696 - 14.415 = 0.281$ as the difference of pressure due to the depth of the shaft.

The difference of pressure calculated from the observed reading was 0.269 lb. per sq.in. Therefore, the shaft resistance in this case is $0.281 - 0.269 = 0.012$ lb. per sq.in., or 1.728 lb. per sq.ft., which corresponds to a water gage of $1.728 \div 5.2 = 0.33$.

Again, each of the readings taken at the foot of the downcast and upcast shafts, respectively, being practically sea-level readings, no allowance has to be made for difference in elevation. In this case, therefore, the resistance of the airways between these two points is $14.00 - 13.93 = 0.07$ (exactly, 0.067) lb. per sq.in., or 9.648 lb. per sq.ft., corresponding to a water gage of $9.648 \div 5.2 = 1.85$ in.

Finally, assuming the resistance of the two shafts is $2 \times 0.33 = 0.66$ in. water gage, the total water gage reading in the fan drift would be $1.85 + 0.66 = 2.51$ in. It is hardly possible to obtain a correct water-gage reading at the intake orifice of a fan, which was said to be 2.1 in. The water-gage reading should always be taken on the air drift, at a sufficient distance from the ventilator to afford a steady uniform reading.

Examination Questions Answered

Illinois Mine Managers' Examination, Springfield, May 2, 3, 1921

(Selected Questions)

QUESTION—*With a 38-hp. fan we are producing 100,000 cu.ft. of air per minute; how many cubic feet will we get from a 30-hp. fan, in the same airway?*

ANSWER—Assuming the same efficiency for each fan and no change in the circulation of air in the mine, the quantity of air passing will vary with the cube root of the power on the air. In other words, the quantity ratio is equal to the cube root of the power ratio, which gives in this case

$$\frac{Q}{100{,}000} = \sqrt[3]{\frac{30}{38}} = \sqrt[3]{0.78948} = 0.92422$$

The quantity of air produced is then

$$Q = 100{,}000 \times 0.92422 = 92{,}422 \text{ cu ft. per min.}$$

QUESTION—(*a*) *How many degrees are there in a circle, and* (*b*) *what angle is included between the bearings N87½° E and S15° W?*

ANSWER—(a) There are 360 deg. in a full circle.

(b) The angle included between the two bearings given is found by subtracting the azimuth of the first bearing from that of the second. The azimuth of a bearing is the angle measured from the north point of the meridian around to the right. Thus the azimuth of the first bearing is equal to the angle of the bearing, that being in the northeast quadrant.

The angle of the second bearing lying in the southwest quadrant is found by adding 180 deg. to the angle of bearing, which gives $180 + 15 = 195$ deg. Then, the angle between the two bearings is $195 - 87\frac{1}{2} = 107\frac{1}{2}$ deg.

QUESTION—*Is it proof of good ventilation, in a gaseous mine, when a very rapid current of air is passing through a small airway? Give reasons.*

ANSWER—The rapid air current may furnish a good quantity of air, which if properly distributed in the several districts of the mine would give good ventilation at the working face, where the current velocity must be low, say not exceeding 4 or 5 ft. per second, in order to avoid the danger of the flame being blown through the gauze of the safety lamps. But it will be necessary to keep all safety lamps out of the main air-course where the air is traveling at such a high velocity.

However, the fact that a rapid current of air is passing in the main airway is not of itself proof that the mine is well ventilated, particularly if the sectional area of the airway is very small. Good ventilation will depend on the velocity of the air at the working face and the gaseous condition of the mine atmosphere.

QUESTION—*How many cubic yards of earth have been excavated from a shaft 37 ft. long, 12 ft. wide and 750 ft. deep?*

ANSWER—The sectional area of this shaft is $12 \times 37 = 444$ sq.ft., or $444 \div 9 = 49\frac{1}{3}$ sq.yd. The depth of the shaft being $750 \div 3 = 250$ yd. the number of yards of earth removed is $49\frac{1}{3} \times 250 = 12{,}333\frac{1}{3}$ cu.yd.

QUESTION—*What conditions would guide you in determining the widths of entries and rooms?*

ANSWER—The width of entries in mines is determined by considering, first, the physical conditions, such as the nature of the roof, floor, and coal, depth of cover and thickness of seam; and, second, the practical conditions relating to the kind of haulage employed, size and capacity of mine cars and necessary clearance. Entries leading toward old abandoned works should not be more than 8 ft. wide.

The width of rooms is determined by the physical conditions, such as nature of the roof, floor, and coal, thickness of seam, presence of gas or water in the strata, fault lines or slips in the roof; and, practically, by the method of working employed, manner of cutting the coal and length of time the rooms must be kept open.

QUESTION—*A slope dips 1 ft in 8 ft., for a distance of 504 ft, measured on the slope. What is the difference in elevation between the mouth of the slope and its face; and what is the horizontal distance between these points?*

ANSWER—In this case, the inclination being 1 in 8, measured on the slope, the total dip or the vertical height of the mouth of the slope above its face is $504 \div 8 = 63$ ft.

Since the slope, the vertical height and the horizontal distance form a right triangle, the horizontal length of the slope is $\sqrt{504^2 - 63^2} = 500$ ft.

Engineers from Country Over Visit Anthracite Region

Wilkes-Barre Meeting of A. I. M. E. Attended by About Five Hundred Persons —Guests Visit Wyoming and Lehigh Regions—Inspect Marvine Breaker, Hauto Electric Plant and Large Strippings—Much Progress Outlined in Papers

By R. Dawson Hall*

With W. J. Richards, president of the Philadelphia & Reading Coal & Iron Co., in the chair, the American Institute of Mining and Metallurgical Engineers opened Sept. 12 its 124th meeting, at which it celebrated its fiftieth year of existence. On May 16, 1871, the Institute was founded in Wilkes-Barre, and this year in memory of that fact it held its summer meeting in that town.

The first paper presented was one by H. D. Kynor, assistant to the general manager of the Hudson Coal Co. The presentation was accompanied by large line drawings and the paper was discussed by Cadwallader Evans, Sidney J. Jennings, W. J. Richards and George S. Rice. Speaking of the marked decline in mechanically-mined anthracite—1,508,634 tons being so produced in 1920 and 2,021,161 tons in 1918—Mr. Kynor said the falling off was largely in the production of the Pennsylvania Coal Co., which in the year 1920 had been faced with many labor troubles which resulted in lowered production. It should be noted, however, that the Delaware, Lackawanna & Western R. R. Coal Department also reduced its tonnage in 1920 to one-half that of 1918. The Hudson Coal Co. and the Scranton Coal Co., to say nothing of the Temple Coal Co., made large gains.

Ashley Planes Still Better Than Railroad

The paper by C. H. Stein on "The Ashley Planes for Handling Freight Traffic" was presented in brief by Secretary F. F. Sharpless. Douglas Bunting spoke favorably of the planes and declared that while a back track was in existence and coal could be, and had been, hauled by that connection, it had not been found possible to operate loaded cars on it profitably. The track was used solely for the return of empty cars. Sidney J. Jennings said that in South Africa planes had been abandoned as more expensive to operate than heavy adverse grades, as more skilled workmen had to be employed. Edwin Ludlow declared that when a Western manager took charge of the Philadelphia & Reading R. R. some time ago he put the Mahanoy plane out of commission, alleging that it was not a profitable way of conducting railroading. After a month's experience he decided that the plane was more profitable to operate than the ordinary road over which he was attempting to raise the cars.

Graham Bright declared that the planes expressed up-to-date practice of twenty years ago but today it would seem that they should be electrified. There were three separate power houses to be maintained and an extremely bad load factor. It would be better to use electricity. A common generating station would greatly reduce costs or, better yet, power could be purchased. He could not see how hoists of 1,200 hp. could handle the load at thirty miles an hour. It appeared to him that a 5,000- or 7,000-hp. hoist would be required

Donald Markle's paper on "Anthracoal" followed, and William Griffith questioned if anthracoal and chestnut anthracite were really comparable, unless the ash content of the anthracite were known. Mr. Markle said that anthracite had 16 per cent of ash and anthracoal 18 per cent and so the coal chosen for comparison with anthracoal was not unduly ashy; in fact, it was a coal which might be expected to give good results.

Carbocoal Cannot Be Made Out of Anthracite

E. M. Chance asked in what way anthracoal differed from carbocoal. Charles Dorrance said that while there might be some resemblances in the two products, carbocoal could not be made out of anthracite and that the processes and products were essentially different. In reply to E. W. Parker, the author said that he had not coked anthracite and coal-tar pitch in non-recovery ovens and therefore could not say with certainty if the coking process really would be self-sustaining when the carbonizing was done in such ovens. Asked by George H. Ashley if anthracoal would take anthracite out of the steam market, Charles Dorrance declared that anthracoal was superior to any briquet ever manufactured and that 500 or 600 tons of the product have been made and tested. It remained however, to be seen if anthracoal could be produced at a price that would enable it to compete with rival fuels. In particular the developers of the process do not know if it will generate enough to continue the carbonization of the pitch.

William Griffith's fear was of a shortage of coal tar and Edwin Ludlow wanted to know if a low-grade oil of asphaltic base could be used in place of that substance. This material, Mr. Markle declared, had been tried but without favorable result. In reply to George S. Rice, Mr. Markle said that slush and coal tar could be carbonized into anthracoal without grinding but as

R. A. QUIN
General Manager, Susquehanna Collieries Co., whose hearty co-operation assisted in making the meeting a success.

*Editor, *Coal Age*.

the particles of slush passed through the process without losing their indentity the coarse particles were apt to rub off in storage and give the purchaser much trouble with the powder thus liberated from the product.

John Griffen then read his paper "Slush Problem in Anthracite Preparation" and Mr. Blood of New York in a written paper discussed the possibility of using fine anthracite for the generation of power for the super-power project. He said that in the anthracite region power could be generated at 5.7 mills per kilowatt-hour whereas at New York the cost is 7.4 mills and in Philadelphia 7.3 mills. The power from the anthracite region could be transmitted to the seaboard for 6.5 mills.

Anthracite Field Produces 15 Per Cent of U. S. Coal

In the evening of Monday, with C. F. Huber in the chair, E. W. Parker delivered his lecture on the anthracite region, with the aid of lantern slides, explaining that 15 per cent of the present output of coal in the United States comes from the anthracite field, occupying less than 500 square miles and a little more than one-tenth of 1 per cent of the whole coal area of the United States, which aggregates about 400,000 square miles. Speaking about the antiquity of the anthracite industry R. A. Quin informed the meeting that the firm of A. B. Cochran mined and shipped coal from Schuylkill County as early as 1786. The figures usually given for the early production of the anthracite field are extremely misleading; there were so many sources of that early production and so many of them were earlier than the first statistically-recorded output that it is somewhat misleading to say with Mr. Parker that "as an industry anthracite is considered to have begun in 1820, when the Lehigh Navigation & Coal Co. (now the Lehigh Coal & Navigation Co.) shipped 365 tons, one ton for each day of a normal 365-day year, down the Lehigh and Delaware rivers to Philadelphia."

The trade was established, as Mr. Parker showed in his paper, during or before the Revolutionary War, and his decision to regard its commencement in 1820 is somewhat arbitrary and was disputed by William Griffith and later by Mr. Quin.

Following the article of E. W. Parker came that by H. N. Eavenson on the "Lynch Plant of the United States Coal & Coke Co." He stated that the cover over the mine was 1,500 ft. in the deepest part in the workings on the right bank of Looney Creek and 1,000 ft. on the left bank and that before the mine was completed 2,200 to 2,400 ft. of overburden would be reached in places. In reply to E. V. D'Invilliers' query as regards the summer water supply he said that there had been a considerable shortage and that the company was arranging a reservoir inside the mines. A drillhole about 70 ft. deep or thereabout was being drilled down to the coal in the bottom of Gap Branch. The water was to be run into rooms in the flood periods and held there by substantial dams so as to be available during dry periods.

Lynch Plant to Extract 250,000,000 Tons of Coal

In reply to Mr. Evans, who seemed to doubt the advantage of such a large expenditure as has been made on this plant, Mr. Eavenson declared that it was intended to extract 250,000,000 tons of coal from that area, which at 2,500,000 tons a year or upward would last 70 to 100 years. There were four seams above water level and one below. He added that one large central plant surely was more economical than several small plants, each requiring its quota of surface men.

Graham Bright commended the dimensions of the cars which have the wheel base as long as the gage is wide. He questioned, however, why the cars should be so low. Mr. Eavenson declared that the seam being worked often fell in "rolls" well below the regular height and made a low car desirable, and he stated that one reason for the use of these low cars was so as to be prepared to meet conditions in a seam located 20 ft. below the one now being worked. This seam is 3 ft. 6 in. thick.

George S. Rice urged that reliance on topping cars with coal to obtain car capacity should be avoided as it results in an excessive quantity of dust being deposited in the roadways and in consequent dust explosions. Mr. Eavenson said most of the spillage along roadways came not from the overbuilding of cars but from leaky and loose endgates. As the Lynch car had solid ends this scattering of coal was avoided.

In reply to C. E. Holder, Mr. Eavenson said an allowance of 50 gallons per day per person was sufficient to supply the employees with water. An allowance had been made of two rooms per employee. There were no tubs in the wash house, as the sanitary advisers of the Steel Corporation would have none of them, but there were seventy-one showers.

To C. T. Starr, who asked what the tonnage per man averaged, Mr. Eavenson said that the production was four tons per man when all employees—even the store men—were considered.

The morning following, Tuesday, Sept. 13, a trip was made in automobiles through the Wyoming Valley to Scranton along the course already described in *Coal Age*. This trip was broken by a visit to the Marvine Colliery at Plymouth, which was described in D. C. Ashmead's paper, but with all the superlatives left out. It is truly the latest word in breaker construction. Its cleanly factory-like appearance and solid fireproof construction make it look like a big Western copper mill. As its contents are not of a combustible character the building is doubtless as fireproof as it appears, which is more than can be said even of up-to-date factories.

At this plant were shown graphic charts, one for each working bed, drawn on a scale of 100 ft. to the inch. These showed by buttons the places being worked and the numbers of the men to whom they are apportioned, day-shift and night-shift men being denominated by buttons of different colors. Mules and locomotives also are represented—by pins. These working maps are brought to date once a week.

Make Five-Year Forecast of Development

Charts also show the fatalities from different causes by months. The forecast atlas contains maps and data showing a five-year forecast of development and projection. A glass-plate model shows the relative location of the workings in the various beds and the surface improvements above them. A large working model of the Loree breaker also was exhibited.

The visitors took an elevator to the top of the breaker and, passing down back and forth across the various floors, closely inspected the machinery, including the Deister-Overstrom tables and the Dorr classifiers. This installation is no longer experimental and certain it is that an air of permanence is as apparent here as elsewhere, and the results attained in the operation justify the confidence which the management reposes in its efficiency and expediency. Like all the newer wet breakers this structure is absolutely clean. There is no dust of any sort and as the water is well controlled no stray sprays make progress through the breaker unpleasant.

The trip ended at the International Correspondence Schools, where a generous lunch was served and the schools inspected. Two sessions were held, one on coal mining and the other on Americanization. At the first Douglas Bunting presented his paper on "Mine Fires." George S. Rice pointed out that the results obtained in sampling the gases in the sealed areas were at variance with those obtained from similar areas in bituminous mines.

In soft-coal mines, after sealing the air rapidly loses its free oxygen, the percentage of which may fall to zero. In the cases described by Mr. Bunting the oxygen percentage fell and then rose again. He said he would like to know the reason for this rise if the sealing was really tight. He wanted to know what indication led the officials to believe the fire was out. In bituminous mines the dropping of the carbon monoxide to zero was not found to be evidence that the fire was extinguished.

Mr. Bunting stated in reply that the company officials, while in doubt as to the results of their efforts, ventured

Beaver Meadow Breaker

A Lehigh Valley Coal Co. operation, located near Hazleton, Pa. The headframe is 225 ft. high, being one of the highest in the anthracite field.

in each case to proceed on the supposition that the fire was out. It was impossible to ascertain whether it was extinguished without entering the fire area, and fortunately in each instance the assumption proved entirely correct. The absence of carbon monoxide was regarded as an indication but not one on which any positive reliance could be placed. He could not explain why the oxygen content increased, for the seals were tight.

Mr. Rice questioned whether the fire was in the coal or in timbers, in that it was so easily extinguished, and Mr. Bunting replied that in each case there must be coal consumed. In the Nottingham fire little timber was burned but in the South Wilkes-Barre conflagration timber took a larger part. In both cases, however, the fire fed on coal as well as on wood. Breathing apparatus was not used in the sealing of the intake but was used when closing up the return.

H. H. Otto read a paper by J. D. Warriner on the peculiar conditions in the Panther Creek Valley, where the heavy slopes made extinction unusually difficult and where the fires cost sums of money reaching up to $180,000. Of course, the great Summit Hill fire had cost many times that sum. E. M. Chance said that the presence of carbon monoxide in itself indicates fire except where it arises from the imperfect combustion of explosives.

Brisk Fires Rapidly Generate Carbon Monoxide

Absence of carbon monoxide, however, does not show that the fire is out, but only that it is not brisk. Carbon monoxide is not readily formed at low temperatures. With brisk fires it is rapidly generated. Finally the carbon-dioxide percentage ceases to increase as the fire dies down. Then, at last, it may be said that combustion has ceased, but still the fire may not be out. The coal may be so hot that as soon as air reaches it it will blaze up again.

Mr. Warriner said that some of these mine fires occurred in places that had not been worked for some years, and there was a disposition to ascribe them to spontaneous combustion, gas ignition by sparks from falling rock and like mysterious causes. Whatever their origin they were stubborn and expensive to subdue.

Edwin Ludlow discussed the fire on Summit Hill, which is still burning and has been active since 1759. It is now cut off, however. It was thought that the cut-off was ineffectual, heated areas being found above the coal beyond the isolated section. But by boring the roof above the coal beyond the cut-off and by flushing it with culm, giving it large quantites of water, the crevices were successfully closed and the fire stayed.

The Midlothian mine of the Richmond coal field of Virginia had, according to H. M. Chance, a fire at about the 300-ft. level. The measure dipped at an angle of 30 to 35 deg. There was no fire below the 300-ft. level. It was decided to flood the mine, and as the water supply was insufficient it took two months to seal off the fire with water. There were unfortunately no holes to the crop, and though the water rose to within 20 ft. of the curbing of the shaft, it could not fill the 300-ft. level, for as soon as the rising water sealed off the area it ceased to be able to drive the air out and consequently could not rise as far as the fire, the compressed air preventing the water from penetrating all portions of the workings. Had boreholes been made to let the air out, the water possibly would have risen and done its work. However, after an eighteen months' wait the officials of the company pumped out the water and entered the mine, to find it still far from extinguished.

Put Out British Mine Fires Before They Start

Lieutenant Colonel J. A. C. Ritson, who is representing the British Government in this country, having been appointed to attend the International First-Aid and Mine-Rescue competition at St. Louis, spoke on British mine fires. He said that in South Yorkshire all the mines were dry, gaseous and from 2,400 to 3,300 ft. deep. There are fires at these mines at all times. The method of fighting them is, to use an Irish bull, to put them out before they start.

Attempts have been made to ascertain the prospect of fires by analyses of mine gases, but apparently the nose is the best guide. The gob stink is more readily determined than a change in the composition of the air. When the gob stink is noted the men are withdrawn and rock dust is spread over the area, which is then built off with packwalls. These in turn are coated with loose sand which is driven into the cracks. Loose dirt stoppings or brick walls are erected, and then sand is piled outside to prevent air seeping through any crack that might have developed. The air is regulated on the return so as to reduce to the correct quantity the ventilation current in the area being sealed. The air is shut off on the return last, but the work of blocking the return airway is not left entirely till after the intake is shut off. The bulk of this work is done before the intake is entirely closed, and the last work on the return is done after the last work on the intake.

In non-gaseous mines, which usually are damp, the fire, if in the middle of a pillar, usually is dug out and so removed. Some fire areas in Scotland have been unsealed after forty years and were found still burning. It is believed that they received air from the surface.

Mr. Ritson said that the old open-flame lamp must soon be done away with in Great Britain, as it has been the cause of only too many mine fires. R. V. Norris called attention to the fact that the National Colliery fire was extinguished by making an extremely deep and wide ditch around the shaft. The expense was enormous but was well justified by the outcome. George S. Rice mentioned the success at Butte achieved in the shutting off burning areas by the use of brattice cloth, chicken wire and the cement gun.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

THE general situation in business has changed little, according to the September bulletin of business conditions issued by the National City Bank of New York.

"The textile industries as a group," the bulletin states, "are an exception to the general situation. This is particularly true in cotton goods, which have blossomed out into something resembling a real boom. The mills are well sold up for the immediate future and in some lines until next spring, while prices have recovered on some goods up to 20 per cent. Foreign orders have been received in sufficient quantities to help the revival."

Under the caption "the situation waits," the bulletin continues, in part:

"It is not difficult to see what is the matter with industry in the United States and over the world. The situation is practically the same everywhere. The demoralization and poverty of Europe, resulting from the war, is of course a factor in it, but the chief cause even in Europe is not the losses of the war, but the unbalanced state of industry as between the producers of primary products on the one hand and the producers of manufactured products and the groups engaged in trading and transportation on the other hand.

"There seems to be nothing to do but allow the economic forces to work things out in their own relentless way. The workers in each industry have the privilege of saying that they will not come down until everybody else does, and perhaps not then. Nobody has authority to say who shall come down first, or that anybody shall come down. They will have to settle it among themselves.

"Notwithstanding the many discouraging factors in the situation, reports from over the country indicate that pessimism is less intense than earlier in the year. The crop has been made upon very low expenditures. The farmer has gone resolutely at the task of reducing production costs, and in so doing has set an example to all the industries.

"The way of real progress is not by the efforts of each group or class to get the better of others by methods which embarrass and curtail the production of wealth, but by intelligent efforts to increase production."

Freight Loadings Still Increasing

An increase of 892 in the number of cars loaded with revenue freight during the week ended Sept. 3, compared with the previous week, is shown by reports received by the Car Service Division of the American Railway Association. The total for the week was 830,601 cars. This is the largest week's loading since Dec. 11, 1920, and represents the fifth consecutive week of increase. As compared with the corresponding week of 1920 it shows a loss of 131,032 cars.

Sears-Roebuck Sales Gaining

Officials of Sears-Roebuck Co., Chicago, say business is improved, according to a report issued Sept. 14. Sales so far this month are only 20 per cent below September sales last year, with good indications from present daily reports that the percentage of decreases will be materially reduced during the remainder of September.

Repairing Cars for Erie R.R.

The Greenville Steel Car Co., the *Iron Age* reports, has secured new business that will keep the plant in steady operation for the next three months at practically full capacity. President F. L. Fay closed in New York recently a contract for repairing or rebuilding 500 steel cars for the Erie R.R.

More Steel Furnaces Start Up

Recent improvement in the iron and steel industry has been maintained and there are further signs of a moderate broadening in demand. The current month is more than holding its own compared with August, says *The Iron Trade Review*, in its weekly summary as of Sept. 15, and the volume of orders in some lines was the best of the year. Production was described as undergoing a slow but sustained increase, best illustrated by the blowing in of additional blast furnaces. No less than half a dozen furnaces have resumed since the first of this month, following an increase of more than 41 per cent in August. Structural steel orders made a favorable showing during the week, contracts placed totaling 15,000 tons. Railroad buying is again increasing.

Buffalo Has Less Unemployment

Survey of the unemployment situation in Buffalo by officials of the New York State Employment Department show a material increase in the number of workers who have taken jobs in August and the first two weeks of September. The investigation shows about 37,000 workers are now unemployed—a decrease of 2,600 from June.

Fewer Idle Now Than in 1914

Those who are disturbed over the 5,735,000 unemployed of today overlook that in 1914 there were 7,000,000 out of work, a larger percentage of whom were men and actual breadwinners than in the present unemployed, Secretary of Labor Davis said recently in a statement. Declaring that the country had just passed through a period when every effort was made to induce women and others who had not worked for wages or salaries before to "work and save starving Europe," Mr. Davis said present unemployment figures included great numbers of persons upon whose earnings no one actually was dependent.

Four Tin Plate Mills Start Work

Four additional tin plate mills were put on at the Laughlin works at Martins Ferry, Ohio, of the American Sheet & Tin Plate Co. on Sept. 1, according to the *Iron Age*. Of the twenty-three mills at this plant sixteen now are under power.

2,000 Auto Parts Makers Resume

The Willys-Morrow Co., Elmira, N. Y., which manufactures parts for the Willys-Overland automobiles, issued a call Sept. 9 for 2,000 former employees to return to work. The plant had been closed for several weeks.

Resuscitation of Business and the Railroads Awaits Reasonable Period of Stable Price Conditions*

Expeditious Tracing of Coal and Other Freight a Notable Feature of Carriers' Service Reconsignment Troubles Lightened—Handling of Claims Improves—N. Y. Central Campaign Helps to Move Winter Coal

By G. N. Snider †

SINCE that which we railroads produce cannot be stored in dull times to be sold in active times, we are a "service" rather than an "industry," and "service" should be—as it generally is—our motto and our creed. The service we believe in is that which comes from an intelligent appreciation of the needs of our patrons, balanced by and tested against those economic laws and forces which govern all successful business enterprises.

Contrary to a belief which sometimes seems amazingly prevalent, and which seems to have grown like a mushroom during the war, the railroads have no inexhaustible reservoir of riches upon which they can draw without regard to the consequences, but are dependent for their continued existence upon the profits they are able to make, and must oppose the theories of such people in view of the disagreeable facts the railroads must face.

With general resumption in business and a general reduction in labor and material costs, which are bound to come, the railroads would eventually make so much money if the present rates were continued that an orderly reduction in rates would be proper. Many unfair adjustments of rates are being remedied, largely by reductions, but the struggle between industries and sections for general reductions that will give them a preference over other industries and sections in the return to prosperity will soon have everybody in a turmoil.

Difficult for Railroads to Cut Maintenance Cost

The railroads have better reason than any others for wishing a resumption of business. Their constant expense of maintenance is tremendous, whether or not their traffic is heavy, and they cannot reduce it proportionately to their traffic except temporarily. Coal consumers who think that possibly there will be a reduction in rates on coal in the autumn will certainly be averse to storing their coal in the spring, and a retail dealer figuring along the same lines will surely hesitate and defer taking in in the spring any more coal than he can immediately deliver.

In my judgment the proper thing to do is for the railroads, or the Interstate Commerce Commission—there seems some conflict as to where the decision lies—to say very positively either that the rates will not be changed for the next seven months or a year and that if they are then to be changed they will be reduced by approximately so much on or about such and such a time. Business is adaptable. All it needs for profitable volume is some assurance of stable cost conditions for a reasonable time.

In giving service to the retailers the most recent constructive development on some of the railroads—including our own—has been the devising of a plan to expedite the tracing of coal and other freight.

You all probably know how car records were made up in the past. On a large system it was frequently seventy-two hours or more from the time of the movement before a record of it appeared on the record books, so when any tracing was necessary for current shipments the record books were found to be of little service and records could be obtained only by a great deal of telephoning and telegraphing to the junction or yards.

Then some budding genius, whose name unfortunately has not been preserved for the Railroad Hall of Fame, devised a plan so simple as to be wonderful. He took a large sheet of paper and divided it into 100 squares, numbering those squares consecutively from 0 to 99, and at the top of the sheet provided numerous symbol letters and spaces to record the movements of trains. Now the conductor's train sheet is transcribed at the yard on this large report, which is called a passing report. On symbol line "A," for instance, the train reference and movement is shown. Then all the cars in that train are marked in the appropriate squares according to the last two numerals of the car number, and opposite the car number in its appropriate square is shown the train symbol number from the top of the sheet. About 500 cars are shown on each sheet. These sheets are manifolded by a hektograph process and copies sent to the various general traffic officers, division traffic officers and the more important off-line traffic agencies and are usually there the next morning after train movement has transpired.

Now, if a retailer or anybody else wants to trace a car that is currently in transit he calls up the nearest traffic office, that office looks on the appropriate passing report, has only to look at four or five numbers in the square bearing the last two numerals of the car to be traced and, in nine cases out of ten, a record of that car can be given within two minutes from the time the retailer's request is received. It is a tremendous step in advance.

The other burdens of the retailers, so far as the railroads are concerned, are largely claims and reconsigning rules. The stringent coal-reconsigning rules which were required of the railroads by the Interstate Commerce Commission last September are no longer with us—normalcy has been restored.

Defective Equipment a Prolific Source of Loss

The handling of claims is now progressing much more rapidly than last year, for then the tremendous volume of work made it impracticable to expeditiously investigate and settle coal claims. We still have some old ones left but are settling them fast. We are interested, constructively, in the prevention of coal losses. Aside from pilferage, the chief cause of loss is defective equipment.

The war demands on open-top equipment were so great and it was so impossible to meet the country's demand for transportation and at the same time keep cars fully repaired while the business and financial situation precluded our buying new cars, that many of our present cars are in poor shape. However, as business improves and we have more money to spend we will be rapidly putting these cars in shape so that loss will again be at a minimum.

For many years the bill-of-lading rule as to amount of railroad's liability for loss in transit was expressed as the invoice value of the commodity at the place and time of shipment. That rule worked with substantial fairness during the years when we had no violent fluctuations in business. Now, because of a Supreme Court decision, railroad liability is for the fair market value as of the time shipment would ordinarily have reached destination, less, of course, transportation and other charges which could not be collected and were not assumed on the portion of the shipment that had been lost. This was hailed as a remarkable victory by the shipping interests while prices were rising, but has caused a great deal of grief since prices began to fall, for they have fallen faster than they rose.

The railroad in relation to the retail coal dealer should continue to supplement the efforts of the retailer to have the consumers take in their winter's coal in the spring and

*Abstract of address before convention of New York State Retail Coal Merchants' Association, Richfield Springs, N. Y., Sept. 8, 1921.

†Coal traffic manager, New York Central lines.

early summer. We have preached this in season and out of season along our lines for many years and have just recently promulgated the advertisement which you have all seen, called "Coal For The Winter." We most sincerely hope that advertising of this kind, given the wide publicity that this advertisement has received, will be a helpful factor in securing timely storage of coal, for we know it will relieve the consumer of distress and anxiety, will help the retailer and producer in the matter of their costs by evening up their distribution, will keep mine labor better satisfied because of evenness of working time and will help the railroads by increasing their summer load and lessening their winter load.

In the course of their 1912 investigation of all practices, etc., concerning anthracite coal the Interstate Commerce Commission, without any complaint before it, so far as I am aware, in 1916 ordered the reduction of one-line rates to the larger stations in New York running from Albany on the east to Rochester on the west. During the war and the coal shortage since, these differences in rates have not had a great deal of effect, but with the coming of normal business conditions they have worked a great advantage in favor of the communities and dealers having low rates and to the disadvantage of the communities and dealers having higher rates.

The railroad men, producers and retailers worked out a plan of advancing the low and reducing the high rates so as to restore substantial parity of rates between dealers, producers, communities and railroads that existed so many years prior to 1916 without complaint, and, having published the tariffs, submitted them to the Interstate Commerce Commission. The tariffs were first suspended by the Interstate Commerce Commission, which entered upon a hearing as to the reasonableness of the plan proposed, and at the hearing a great number of witnesses appeared in favor of the adjustment while the opposition to it was entirely professional in nature. Nevertheless the commission has just decided that although an equalization is desirable, the method proposed cannot be permitted to go into effect, satisfactory though it is to the railroads, to the producers and to the coal dealers, who are the three interests who have their money in the proposition. They have given us no idea what sort of an adjustment will be approved by them, but leave us to find some other method.

Conditions in the coal trade and with the railroads are not of the brightest but I feel confident that hard work, straight thinking and a cool-headed appreciation by the public of what these problems really are will in the end bring us to the top of the hill and the fair land of prosperity "flowing with milk and honey."

Cost of Mining Anthracite Totals $6.953 Per Gross Ton Loaded on Cars

COST of mining anthracite during the months of January, February and March, 1921, has been compiled by the Anthracite Coal Operators' Association. These figures represent eighteen collieries producing approximately five and one-half millions of tons of coal annually and embracing operations located in the upper and lower mining fields, and thereby giving a fair example of the individual operator's expenditures. It was found that the total cost loaded on cars at the mines during these three months was $6.953 per gross ton on a production of 1,113,627 tons of all sizes of coal, of which 67.77 per cent was chestnut and larger, and the balance, 32.23 per cent, was pea, buckwheat, rice and barley.

Broken, egg, stove and chestnut total 67.77 per cent of production; pea coal, 8.83 per cent, and buckwheat and smaller, 23.40 per cent. The realization on broken, egg, stove and chestnut averaged $8.821 per ton, the realization on pea coal was $6.377, while the average realization of buckwheat, rice, barley, birdseye and culm was $3.366. On the total production of 1,113,627 tons the realization was $7.329. The difference between the realization and the total mining cost was 37.6c., or an amount obviously insufficient to pay selling expense, interest and Federal taxes and leave any profit whatever.

If the smaller sizes had been sold at the prices quoted under date of Aug. 20, 1921, which were as follows: pea, $4.50 to $6; buckwheat, $2.75 to $3.50; rice, $1.75 to $2.50, and barley, $1 to $1.25, it would have made it necessary for the broken, egg, stove and chestnut to be marketed at $9.36 per ton, using the low price quoted above, and at $8.48 per ton on the basis of the higher price, in order to cover *merely the cost of production.* Out of whatever margin there may be between the figure of $9.36 or $8.48 (quoted above) and the actual selling price there must be provided (according to the report of the Federal Trade Commission, part 2, page 20):

"Reserves for uninsurable hazards, such as mine fires, floods, cave-ins, squeezes, strikes or other similar causes contributing to destruction of property and idleness at the mines (especially as revealed in greater overhead per ton by reason of lessened output); increased risk in the recovering of the capital involved in extra cost of development work under a normal régime of prices of coal; selling expense, where a selling organization, other than the mine office force, is maintained in order to market the product; interest on the investment, including borrowed capital; allowance for income and excess profits taxes; gross or net profit on the investment."

The Federal Trade Commission further explains "margin" as follows:

"The difference between the sales realization per ton and the f.o.b. mine cost per ton is the 'margin.' This 'margin' must not be confused with what is often called *profit. Selling expense, interest, income and excess profits taxes, as well as other items,* must be deducted from it before the net profit available for dividends or surplus from the operation can be determined."

Whatever remains after these charges have been applied against the *margin* is the *profit* available for distribution to stockholders or owners of the property. The cost figures quoted are not theoretical figures but are those actually arrived at under the accounting system of the Federal Trade Commission, the U. S. Fuel Administration and the Treasury Department of the United States for the purpose of arriving at income and excess profits taxes, so that they are not open to question. These collieries are all considered to be well-operated and well-managed mining properties.

The U. S. Fuel Administration, after a thorough investigation, stated that there is for each ton of annual production an investment of from $7.50 to $8. It would be difficult to persuade investors to put money into an industry where their prospective distribution and dividends were less than 10 per cent, owing to the hazards and risks of the business and because money in many much safer investments can earn 8 per cent today.

On this basis the "margin" above referred to should be

COST AND TONNAGE OF FRESH MINED COAL FOR THREE MONTHS ENDED MARCH 31, 1921

Number companies reporting	7
Number collieries reporting	18
Tonnage	1,113,627
	Cost per Ton
Labor	$4 937
Supplies	991
Royalty—Current and advanced	184
Depletion on coal land	074
Amortization of cost of leasehold	011
Depreciation	284
Suspended cost of stripping	
Contract stripping and loading	
Taxes—other than income and excess profits	132
Insurance—general	038
Insurance—liability or workmen's compensation	097
Office salaries, legal expenses and miscellaneous	705
Total mining cost	$6 953

PERCENTAGE OF SIZES AND REALIZATION ON COMMERCIAL TONNAGE

	Per Cent of Sizes	Realization per Ton
Broken	10 71	$9 174
Egg	12 79	8 948
Stove	17 73	8 829
Chestnut	26 54	8 757
Pea	8 83	6 377
Buckwheat	13 53	4 052
Rice	5 66	2 860
Barley	4 15	1 857
Birdseye or boiler	0 02	1 068
Culm	0 04	640
Total		$7 329

sufficient to cover all the charges to be paid out of it as referred to in the Federal Trade Commission's explanation and leave the operator a reasonable *net profit*.

The U. S. Fuel Administration allowed brokers and commission men 20c. per ton for selling anthracite in the East and 30c. per ton in the West, an average of 25c. per ton. Assuming that half of the investment in anthracite properties is borrowed money, interest charges would amount to approximately 24c. Improvements would add another 18c., or a total of 67c. to come out of "margin." To this total of 67c. there must be added an allowance for income or excess-profits taxes and for reserves for uninsurable hazards. If any balance then remains it is *net profit*.

It must be borne in mind that anthracite sizes smaller than chestnut are sold at less than cost of production. The entire profit, therefore, must be obtained from the chestnut and larger sizes, the selling prices of which would have to be considerably higher than the figures which have been quoted as being necessary to cover merely the *cost of production*.

August Coal Receipts at Duluth-Superior Dropped Below Last Year's Rate

COMPARATIVE receipts of coal by docks at Duluth-Superior for August and for the same period last year were as follows, as compiled by the Tomlinson company, Duluth vessel agents:

	1920		1921	
	Anthracite	Bituminous	Anthracite	Bituminous
Northwestern	64,600	152,000	100,547	178,741
Berwind		115,100		89,966
Pittsburgh	19,600	179,900	37,600	74,000
Carnegie	28,400	154,000	35,599	60,826
Hanna	57,800	88,300	36,235	41,144
Reeves	7,500	5,800	6,266	8,650
Boston		20,200		10,898
Inland		68,100		117,625
Clarkson		62,500	7,160	47,180
Northern	17,100	47,500	50,189	64,324
Zenith Furnace		75,600		18,976
Philadelphia & Reading	18,500	27,000	60,501	35,096
U. S. Corporation		239,300		134,900
Reiss	7,800	44,300	33,790	94,898
Pursglove		33,100		14,365
Lehigh	32,400		27,888	
Great Lakes		52,800	9,530	115,167
August receipts	253,700	1,365,500	412,305	1,106,756
Total to August 1	603,770	1,685,400	785,900	5,422,500
Total to September 1	857,470	3,050,900	1,198,205	6,529,256

Anthracite receipts excess of last year, 340,735 tons.
Bituminous receipts in excess of last year, 3,478,356 tons.

Increase of Wage in Connellsville Region

AFTER another week of strikes, meetings and conferences, the Connellsville coke region has finally settled the grievances and all companies operating, including W. J. Rainey, Inc., have finally adopted the Frick scale, which is what the men demanded. On Friday, Sept. 9, the men at Tower Hill No. 1 plant of the Hillman Coal & Coke Co. struck and demanded the Frick scale, following similar action on the part of the men at all three plants of the American Coke Corporation and the Republic plant of the Republic Iron & Steel Co. the day before. That evening the Hillman Coal & Coke Co., the Republic Iron & Steel Co., the American Coke Corporation, the Brier Hill Coke Co. and the Connellsville Central Coke Co. notified their men that they would pay the Frick scale, and on Saturday the men at Tower Hill No. 1 returned to work, and on the Monday following the rest of the idle men at the plants just mentioned followed their lead.

W. J. Rainey, Inc., on Sept. 13 posted a notice that the Frick scale would be restored but that no coal would be mined for the open market. The entire output will be shipped to the Rainey-Wood byproduct plant at Swedeland, in the eastern part of the State. Stewart, Paull, Fort Hill and possibly Elm Grove will work. Allison will be idle and the mine workers are protesting that the work should be divided evenly.

The Washington Coal & Coke Corporation also announced on Sept. 13 that it would pay the Frick scale. The Oliver-Snyder Co. also has adopted it, so that once again the Frick scale is the scale of the region, practically all the independent companies having fallen into line.

August Anthracite Shipments 112,355 Tons Greater Than Those of July

SHIPMENTS of anthracite during August, as reported to the Anthracite Bureau of Information, in Philadelphia, amounted to 5,575,115 gross tons, as compared with 5,462,760 tons in the preceding month and with 6,207,653 tons in August, 1920. The decrease from August, 1920, was due chiefly to continued light demand for all sizes except stove, and to a continuance of scattered colliery suspensions caused by market conditions and petty strikes.

Shipments by originating carriers, in gross tons, were:

	August, 1921	July, 1921
Philadelphia & Reading	1,116,844	1,039,078
Lehigh Valley	924,649	946,387
Jersey Central	544,007	507,942
Lackawanna	953,014	926,850
Delaware & Hudson	756,982	691,132
Pennsylvania	360,817	384,780
Erie	628,280	619,365
New York, Ontario & Western	98,355	110,605
Lehigh & New England	192,167	236,621
Totals	5,575,115	5,462,760

Passage of Refunding Bill Would Enable Roads to Pay $150,000,000 Coal Bill

PROMPT passage of the railroad refunding bill is generally recognized as the most important single step that could be taken at this time to improve the situation in the coal industry. The railroads owe no less than $150,000,000 for coal. If that obligation could be discharged, it would relieve the industry from the greatest single burden it has been called upon to bear. There is every reason to believe that the refunding bill will be pushed energetically and that it will have become a law before Dec. 1.

The National Coal Association is co-operating with the Chamber of Commerce of the United Sates in the collection of exact data as to outstanding railroad accounts.

Lewis to Represent Miners at Unemployment Conference; 10,500 Idle in Alabama

JOHN L. LEWIS, president of the United Mine Workers, probably will represent coal miners at the conference on unemployment to be held in Washington, which is expected to begin Sept. 26. Government departments dealing with mining have prepared for the conference up-to-date information as to the status of employment this year and last year. It shows that there is a normal employment in anthracite coal mines, but heavy unemployment in bituminous mines. Coal mines in the Birmingham (Ala.) district in normal times furnish work for 26,221 men. Twenty per cent of these have gone into other occupations and of the remaining 20,977 about one-half are unemployed, making a total of 10,500 miners idle, and only 40 per cent of normal working.

Congress Reconvenes; Coal Industry on Qui Vive as to Coal Legislation

CONGRESS reconvened Wednesday, Sept. 21, after a month's recess, and its assembling opens up the possibility of coal legislation. The coal-stabilization bill of Senator Frelinghuysen, of New Jersey, is on the Senate calender subject to consideration at any time, and shortly before the recent recess the Senator announced that he would attempt to obtain action after the recess. Senator Penrose, of Pennsylvania, chairman of the Senate Finance Committee, plans to make the tax-revision bill the order of business just as soon as the session opens. The House is not expected to get down to legislative activity until Oct. 1. The session of Congress also will permit the committees of both houses to consider other legislation affecting the coal industry.

Bituminous Mines Closing Entire Week Gain in Number; Those Working Full Time Decrease

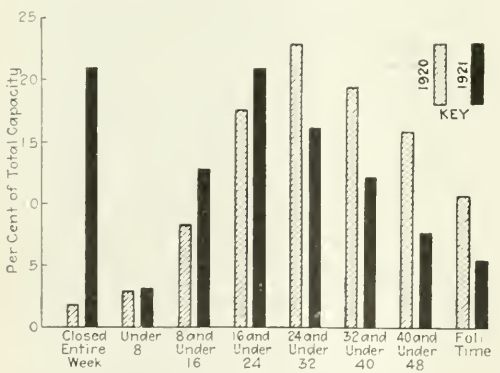
IT IS a familiar fact that from 50 to 60 per cent of the rated capacity of the country's soft-coal mines has been closed down during recent months on account of lack of demand. In the week ended Aug. 20, for example, the average running time was only 42.8 per cent of full time. It has been clear that the average did not reflect the condition at every mine, for into it went many mines entirely idle as well as some which by reason of low costs or fortunate contracts were able to work full time.

Account of the 2,519 mine reports made to the Geological Survey for the week ended March 26, 1921, showed that 710 mines were idle during the entire week. There are always a few mines closed through local strikes or mine disability, but in times of active demand the number entirely idle is small. A sample count in August, 1920, for instance, showed only 96 mines entirely idle, and the Mingo strike alone accounted for half of these. From the following table it will be seen that the number of mines closed down during an entire week has steadily increased since last March. At that time it was 28 per cent of the total number reporting to the Geological Survey; at present it is around 36 per cent. This fact is the more remarkable because the trend of production during the same period has been upward rather than down. It indicates that as the depression is prolonged more and more mines are closed pending a revival of business.

NUMBER OF IDLE, FULL-TIME AND PART-TIME MINES REPORTING WEEKLY TO THE GEOLOGICAL SURVEY *a*

Week Ended	Closed Entire Week	Working Part Time	Working Full Time	Total Number Reporting
Aug. 21, 1920	96	2,407	337	2,840*b*
March 26, 1921	710	1,687	122	2,519
July 16, 1921	874	1,633	171	2,678
Aug. 20, 1921	970	1,547	180	2,697

(*a*) Includes only commercial operations of some size. (*b*) See note (*a*) appended to succeeding table



WORKING TIME AT SOFT COAL MINES TODAY AND A YEAR AGO

During the week ended Aug. 20, 1921, a total of 2,697 mines, representing 59 per cent of the production of the country, reported production and hours worked to the Geological Survey. It was found that 970 of these mines were closed down the entire week, that only 180 worked full time, and that the remaining 1,547 worked part time. The capacity of each mine thus grouped by time worked was then found, the total capacity of the entire 2,697 being 10,499,000 tons per week. In the diagram the black columns represent the percentage of this total capacity which fell in each time group. Thus 21 per cent of the capacity fell in the group of mines which were closed the entire week, 2.9 per cent in the group producing but working less than eight hours, and so on. The shaded columns show the corresponding data for the same week of 1920. The diagram brings out strikingly how large a part of our mine plant is now entirely idle. Whereas a year ago only 1.2 per cent of the capacity was entirely closed (and most of that on account of the Mingo strike) at present an ordinary week finds more than 20 per cent of the capacity producing no coal and therefore giving employment to almost no men.

Comparisons such as these, however, based on the number of mines, ignore the fact that the smaller properties are the first to close. A more accurate indicator of the importance of the group of idle mines is given in the following table, which shows the percentage of full-time capacity represented by mines closed the entire week, by those working one day, two days, and so on, up to full time. The table shows that during the week in question 21 per cent of the capacity reporting was closed the entire week, as against 1.8 per cent in the corresponding period of 1920. In other words, slightly more than one-fifth of the capacity reporting to the Geological Survey produced no coal and therefore gave employment to practically no men during the week of Aug. 20.

Of course a mine may be closed one week and operate the next, so that the proportion of the capacity closed down for two weeks without a break might be less than 21 per cent, and the proportion closed down a month without a break considerably less than 21 per cent. On the other hand, the number of mines closed down during the week of Aug. 20, which resumed production the following week, would be offset by others which had been working but which dropped into the class of those completely idle. Other recent weeks would, therefore, show about the same proportion closed for an entire week.

It may be asked, How representative is the group of mines upon which the table is based? The tonnage included is 59 per cent of the total for the country. The operations are not wagon mines, but all commercial properties of some size. The average weekly capacity of the 970 mines closed down the entire week was 2,280. The average for the total reporting—2,697—was 3,890 tons, above the country average for commercial mines.

From the way the figures are assembled it is clear that there is a tendency to omit the mines closed down. For those districts such as central Pennsylvania and most of the Trans-Mississippi States, from which the Geological Survey collects reports direct from the operators without the assistance of a local association, there are doubtless many mines closed down concerning which the Survey receives no information. In other districts, where the reports are assembled by secretaries of local associations, an effort has generally been made to report the mines not operating as well as those continuing to produce, but even so, there are naturally many smaller operations not connected with associations which cannot be covered by the local secretary. From these facts it is obvious that were it possible to get complete reports, the number and capacity of the group closed down the entire week would be proportionately greater—perhaps very much greater.

WORKING TIME AT BITUMINOUS COAL MINES, WEEK ENDED AUG. 20, 1921, COMPARED WITH CORRESPONDING WEEK IN 1920 *(a)*

(Based on reports to the Geological Survey from operators producing about 59 per cent of the output, excluding coal coked at mine.)

Time Group:	Number of Mines 1920	Number of Mines 1921	Per Cent of Rated Capacity 1920	Per Cent of Rated Capacity 1921
Mines closed down entire week	96*b*	970	1 8*b*	21 0
Mines reporting production but working less than 8 hours	67	69	2 9	3 2
Mines working 8 and less than 16 hours	261	280	8 4	12 9
Mines working 16 and less than 24 hours	500	407	17 6	21 0
Mines working 24 and less than 32 hours	590	327	23 0	16 2
Mines working 32 and less than 40 hours	513	263	19 5	12 2
Mines working 40 and less than 48 hours	476	201	16 0	7 9
Mines working full time of 48 hours or more	337	180	10 8	5 6
Total, all mines	2,840	2,697	100 0	100 0

(*a*) The week selected for analysis in 1920 (Aug. 16-21) corresponds to that for 1921. It so happened, however, that the week of Aug. 21, 1920, was marked by short-lived strikes in Indiana and in two districts of Illinois. To avoid the abnormal condition indicated by these strikes, the figures for the week ended Aug. 14 were used for Indiana, and for the Belleville and Williamson County districts of Illinois those for the week of Aug. 28 were used. As no reports were available from the Harlan district for the week of Aug. 21, those for Aug. 14 were used; and for the same reason the Utah reports for the week of Sept. 25 were employed. None of these substitutions affects the comparability of the data for 1920 and 1921. (*b*) Of the group entirely idle in 1920, 43 mines representing 1 per cent of the capacity were accounted for by the long-drawn out strike in the Kenova-Thacker (Williamson) field.

Four Coal Men Named for Unemployment Conference; To Convene Sept. 26

AMONG the delegates to the unemployment conference appointed Sept. 20 by President Harding are several representatives of the coal industry. The conference will convene Sept. 26. Secretary of Commerce Hoover will be chairman, but it is expected that the body will be separated into groups to consider the problems relating to the various industries. The coal men include John T. Connery, of Chicago, president of the Miami Coal Co.; W. K. Field, of Pittsburgh, president of the Pittsburgh Coal Co.; E. M. Posten, of Columbus, Ohio, president of the New York Coal Co. Edgar E. Clark, who was a member of President Roosevelt's anthracite commission of 1902 and formerly chairman of the Interstate Commerce Commission; Harry S. Robinson, of Los Angeles, who was chairman of the 1920 Bituminous Coal Commission, and John L. Lewis, president of the United Mine Workers, were also named as delegates, as was predicted in earlier advices, printed on page 469.

Railroads Pay 64c. Per Freight-Train Mile For Fuel; 57.5c. in 1920

IN A REPORT on freight-train service for the first six months of 1921 the Interstate Commerce Commission states that the cost of fuel per freight-train mile was $0.640 as compared with $0.575 in 1920. The cost of coal per net ton, invoice plus freight, for both freight-and passenger-train service was $4.33 per ton as against $3.72 in 1920. The cost per 1,000 gross ton miles, excluding locomotive and tender, for fuel was $0.455 as against $0.411 in 1920. The net tons of coal charged to account 394 was 45,611,000 as against 55,662,000 in 1920. For the passenger-train service the cost per passenger train mile of fuel in the 1921 six-months period was $0.288 as against $0.266 in 1920.

United Mine Workers, in Convention, to Take Up Wage Question

THE biennial convention of the United Mine Workers of America began its sessions in Indianapolis Tuesday, Sept. 20, with the wage question the topic of paramount interest in the minds of the delegates. John L. Lewis, president of the international union, has declared against wage reductions, and the convention probably will be asked to indorse this policy. Present wage agreements between miners and operators expire next March 31, and meanwhile new scales must be negotiated by both the bituminous and anthracite miners.

No time for the convention's adjournment has been set, but the international officers expect that sessions will continue at least two weeks, with most of the real convention work getting under way late the first week.

FEW MEN AT COLORADO FUEL & IRON MINES.—According to General Manager Wertzel only 1,332 men are now employed at the mines of the Colorado Fuel & Iron Co. as against 3,375 working at normal times. On Sept. 10 the Colorado Industrial Commission commenced to investigate the reduction in wage and hearings were commenced at Walsenburg and will be continued in the various districts in which the company has mines. No disturbances have occurred, but Governor Shoup has ordered a number of State Rangers to the affected districts with strict orders to repress any movement leading to disorder.

ONE MINE CLOSED FOR REPAIRS, REST GO ON STRIKE.—Because the G. M. Jones Co.'s No. 209 mine, near Athens, Ohio, was shut down for repairs the men considered they were discriminated against and induced the men at Mines Nos. 210 and 211 of the same company to go on strike for the purpose of having Mine No. 29 placed in operation. The controversy, which involved 250 men, was settled Sept. 14. The mines are operated by the Ohio Collieries Co.

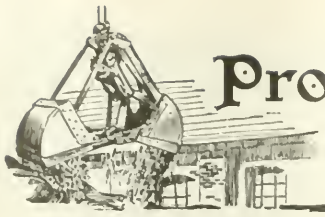
THE RETAIL FOOD INDEX issued by the U. S. Department of Labor through the Bureau of Labor Statistics shows that there was an increase of 4.3 per cent in the retail cost of food to the average family in August as compared with July. Prices of forty-three food articles are reported to the Bureau of Labor Statistics each month by retail dealers in fifty-one important cities. From these prices average prices are made for each article. These average prices are then "weighted" according to the quantity of each article consumed in the average workingman's family. From January, 1913, to December, 1920, twenty-two articles of food were used in this index, but from January, 1921, forty-three articles are included in the index number.

Coal Produced in the United States During 1919*

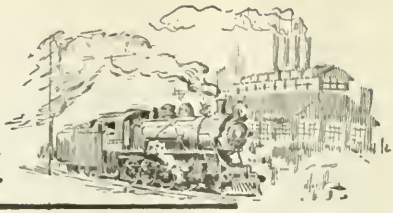
(In Net Tons)

State	Loaded at Mines for Shipment	Sold to Local Trade and Used by Employees	Used at Mines for Steam and Heat	Made into Coke at Mines	Total Quantity	Total Value	Average Value per Ton	Number of Employees—Under-ground	Sur-face	Total	Average Number of Days Worked
Alabama	13,869,680	200,535	541,149	925,357	15,536,721	$45,937,681	$2 96	20,660	6,214	26,874	239
Alaska	57,676	733	2,265	.....	60,674	343,547	5 66	103	63	166	280
Arkansas	1,351,266	22,984	54,770	.....	1,429,020	5,288,844	3 70	3,096	718	3,814	136
California and Idaho	2,448	3,591	515	.....	6,554	22,174	3 38	54	23	77	59
Colorado	9,438,120	412,986	287,199	185,115	10,323,420	28,748,534	2 78	8,931	2,898	11,829	225
Georgia	15,028	679	4,600	33,030	53,337	198,033	3 71	108	60	168	284
Illinois	55,540,051	3,374,419	1,948,138	.....	60,862,608	140,075,969	2 30	75,013	10,007	85,020	160
Indiana	19,423,744	804,624	683,920	.....	20,912,288	46,345,750	2 22	25,316	4,671	29,987	148
Iowa	4,849,636	610,937	164,119	.....	5,624,692	17,352,620	3 09	10,873	1,493	12,366	176
Kansas	4,919,654	136,202	168,868	.....	5,224,724	15,917,053	3 05	8,173	1,753	9,926	182
Kentucky	27,907,773	978,857	677,227	472,204	30,036,061	73,891,049	2 46	35,530	10,068	45,598	189
Maryland	2,899,931	75,374	46,381	.....	3,021,686	8,255,984	2 73	4,422	972	5,394	179
Michigan	901,263	11,458	83,824	.....	996,545	3,864,228	3 88	1,851	253	2,104	179
Missouri	3,414,223	422,479	143,096	.....	3,979,798	12,766,366	3 21	7,235	2,079	9,314	175
Montana	2,887,620	185,356	163,393	.....	3,236,369	8,644,344	2 67	3,318	805	4,123	194
New Mexico	2,583,097	38,615	44,011	473,033	3,138,756	9,750,833	3 11	2,918	827	3,745	273
North Carolina	3,229	387	3,373	.....	6,989	26,871	3 84	37	12	49	100
North Dakota	607,634	217,902	15,423	.....	840,959	2,100,303	2 50	758	314	1,072	216
Ohio	33,054,103	2,161,716	659,571	1,292	35,876,682	79,496,301	2 22	41,336	8,288	49,624	164
Oklahoma	3,462,294	125,312	178,995	35,512	3,802,113	14,544,901	3 83	6,996	1,452	8,448	184
Oregon	10,917	3,103	4,719	.....	18,739	63,794	3 40	53	15	67	259
Pennsylvania (bit.)	120,704,245	5,141,075	3,305,764	21,607,070	150,758,154	365,430,504	2 42	143,838	30,712	174,550	218
South Dakota	450	13,939	28	.....	14,417	45,707	3 17	43	3	46	164
Tennessee	4,744,543	128,420	146,631	193,611	5,213,205	14,448,168	2 77	8,976	2,547	11,523	201
Texas	1,629,795	3,920	46,941	.....	1,680,656	4,527,640	2 69	3,018	626	3,644	227
Utah	4,051,464	101,233	81,706	396,920	4,631,323	12,760,613	2 76	2,709	1,148	3,857	239
Virginia	7,558,507	165,433	117,577	1,485,313	9,326,830	23,774,941	2 55	9,471	2,115	11,586	247
Washington	2,681,244	79,150	175,253	54,800	2,990,447	10,691,222	3 58	3,801	1,235	5,036	217
West Virginia	73,672,527	2,548,896	1,097,232	1,717,898	79,036,553	196,551,015	2 49	74,350	20,355	94,705	200
Wyoming	6,906,592	98,263	214,883	.....	7,219,738	18,751,024	2 60	5,815	1,471	7,286	221
Total bituminous	409,148,754	18,068,578	11,061,571	27,581,155	465,860,058	$1,160,616,013	$2 49	508,801	113,197	621,998	195
Pennsylvania anthracite	76,128,970	2,360,821	9,602,410	.....	88,092,201	364,926,950	4 14	107,829	46,742	154,751	266
Grand totals	485,277,724	20,429,399	20,663,981	27,581,155	553,952,259	$1,525,542,963	$2 75	616,630	159,939	776,569	209

* Preliminary summary issued by the U. S. Geological Survey, Sept. 17, 1921.



Production and the Market



Weekly Review

PRODUCTION of bituminous coal is at a rate but slightly above that in August, when, except during the first week, it was from 7,500,000 to 7,750,000 tons. As an indicator of general business activity, bituminous-coal production is unequalled, but, unfortunately for the coal producer, there is no positive indicator to show in advance how demand will be next week or next month. A stiffening in coal prices is, of course, positive evidence of better demand, but we may have an increase in production and a drop in prices, such as has happened in several market centers recently. A small increase in the call for coal revealed such a general desire to share in the business that the quantity of coal shipped on consignment broke even the low price.

Now, there is nothing in the course of either production or prices in recent weeks such as would indicate any change in the near future. The interest of buyers in the possibility of an upturn in the coal market is equally as great as that of the producer, because a mistake on the part of the buyer in changing his business from spot to contract at the proper time means as much to him as to the producer.

Indications Are Encouraging to Coal Industry

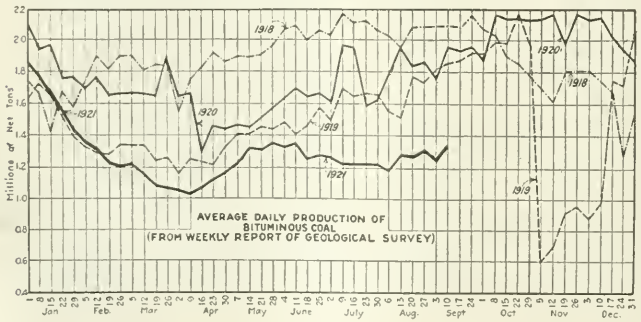
It is outside the coal market, therefore, that we must turn to for signs of encouragement. Such signs are not lacking. Financial observers say that every sign now is a sign of promise and point out that the mercantile community is about convinced that prices will be no lower this winter or next spring than now, and, acting on this feeling, they may be expected to begin buying for consumption and, what is more important, to fill depleted stocks of merchandise. It is significant that car loadings of manufactured goods, as shown by the railroad figures, are increasing somewhat faster than loadings of other material. If nothing else will do it, the seasonal requirements for coal for what industry is going, coupled with household demand, in the territory west of where hard coal is burned, will strengthen the coal business by the time frost comes, but it is for evidence of real improvement in basic conditions, that we are seeking. The Department of Commerce Survey of Current Business for August, published this week, shows among other things that the consumption of wool is rapidly increasing; of cotton is halting; that the news print mills are heavily stocked (with paper) and production and sales have been curtailed since the first of the year; that in the building industry, residential and business building activity exceeds greatly that for industrial purposes; that steel-ingot production and exports have declined together; that grain exports (particularly of corn) and meat exports (particularly hog products) are very large, and that shipments of automobiles from factories are declining from the high point this year in June.

On the whole, the above-ground supply of steam coal is considered sufficient to absorb the shock of any increase in demand that the most optimistic can foresee, save only that attendent on the expected strike of coal mines next spring, and that is still some distance off.

COAL AGE index of spot prices for Sept. 20 is unchanged at 91. This is the third consecutive week of firm quotations which go to make up this index. While some steam prices have been depressed by the heavier volume of resultant coals made because of the increased domestic demand, the fact that industry in general is absorbing this steam tonnage with no great price concessions is indicative of a better outlook.

BITUMINOUS

As expected, the Labor Day holiday cut into production during the week ended Sept. 10. The total output was 7,035,000 net tons as against 7,615,000 in the latest full-time week. The production rate per working day, however, increased during the shorter week and further improvement is shown in the reports for the first two days of the following week (Sept. 12-17), when loadings totaled 55,134 cars.



Estimates of Production
(NET TONS)

BITUMINOUS COAL

Week Ended	1921	1920
Aug. 27 (b)	7,753,000	11,383,000
Sept. 3 (b)	7,615,000	11,167,000
Sept. 10 (a)	7,035,000	10,685,000
Daily average	1,320,000	2,016,000
Calendar year	271,716,000	365,081,000
Daily average, calendar year	1,273,000	1,707,000

ANTHRACITE

Aug. 27 (b)	1,893,000	1,868,000
Sept. 3 (b)	1,800,000	1,114,000
Sept. 10 (a)	1,508,000	562,000
Calendar year (a)	62,108,000	61,619,000

BEEHIVE COKE

Sept. 3 (b)	58,000	396,000
Sept. 10 (a)	60,000	438,000
Calendar year	3,900,000	14,890,000

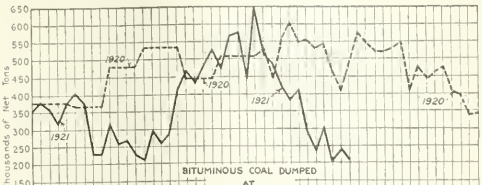
(a) Subject to revision. (b) Revised from last report.

Industries, while in an improved position, are still cautious about their fuel orders and are buying on the spot market only. The market fails to reflect favorable influences. At the same time, especially in the Middle West, inquiries for tonnage thirty days hence are rapidly increasing, accompanied by a request that the buyers be protected on the quotation for two or three weeks.

At present steam coals are in increasing oversupply. The seasonal demand for domestic has forced much resultant coal on the bargain counter and the wise purchasing agent is availing himself of the offers of choice coals at attractive figures. Retail stocks of household coal are growing, as the ultimate consumer is buying only in small lots, due to a desire to economize as well as to the hope that something may yet force down mine prices or freight rates.

The foreign market is absolutely stagnant. Loadings at Hampton Roads during the week ended Sept. 16 were the lowest in five years. Total dumpings for all accounts during that period were 190,211 gross tons, as compared with 216,740 the week preceding. Coastwise bargains and bunker business constitute present activities at the piers, although the New England contract movement is being maintained at the rate which has prevailed for the last thirty days.

The all-rail movement to New England declined to 2,470 cars during the week ended Sept. 10 from 2,580 cars the corresponding week of 1920. Pennsylvania grades all-rail are difficult to sell because of the close competition of waterborne coal.


Thousands of Net Tons
BITUMINOUS COAL DUMPED AT HAMPTON ROADS BY WEEKS
1920
1921
Jan Feb. Mar. April July June July Aug Sept. Oct Nov. Dec.

Slightly higher quotations have appeared in the New England market. There is more interest being shown by the smaller buyers, who have been inactive for weeks. There is less tendency to quote at the low level which prevailed a week ago. Pocahontas and New River have strengthened to $5 f.o.b. Hampton Roads while a few days ago considerable tonnage could be picked up at $4.80.

Aside from some late buying of special coals from Kentucky and West Virginia, there is little activity in the Lake

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

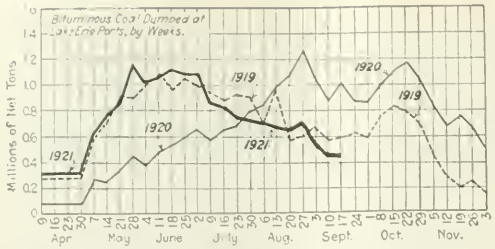
	Market Quoted	Aug. 16, 1921	Sept. 6, 1921	Sept. 13, 1921	Sept. 20,† 1921
Low-Volatile, Eastern					
Pocahontas lump	Columbus	$5.20	$5 35	$5 20	*$4 75@$5 00*
Pocahontas mine run	Columbus	3 00	3 15	3 15	*2 65@ 2 85*
Pocahontas screenings	Columbus	2 40	2 30	2 45	*2 00@ 2 10*
Pocahontas lump	Chicago	5 25	5 15	4 95	*4 50@ 5 00*
Pocahontas mine run	Chicago	3 00	2 50	3 10	*2 50@ 3 50*
*Smokeless mine run	Boston	5 50	5 15	5 00	**4 90@ 5 15**
Clearfield mine run	Boston	1 90	1 95	1 95	1 65@ 2 20
Cambria mine run	Bostoo	2 55	2 40	2 35	2 00@ 2 65
Somerset mine run	Boston	1 70	1 75	1 75	1 45@ 2 00
Pool 1 (Navy Standard)	New York	3 15	3 25	3 40	*3 00@ 3 50*
Pool 1 (Navy Standard)	Philadelphia	2 95	2 95	2 95	**2 90@ 3 25**
Pool 1 (Navy Standard)	Baltimore	2 50	2 50	2 90	*2 70@ 2 80*
Pool 9 (Super. Low Vol.)	New York	2 55	2 45	2 60	*2 25@ 2 50*
Pool 9 (Super. Low Vol.)	Philadelphia	2 35	2 35	2 35	**2 25@ 2 50**
Pool 9 (Super. Low Vol.)	Baltimore	2 25	2 20	2 50	*2.25@ 2 50*
Pool 10 (H. Gr. Low Vol.)	New York	2 25	2 20	2 30	*2 00@ 2.35*
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2 05	2 05	2 05	1 90@ 2 15
Pool 10 (H. Gr. Low Vol.)	Baltimore	2 10	2 00	2 20	*2 15*
Pool 11 (Low Vol.)	New York	1.95	2 05	2 15	*1.75@ 2 00*
Pool 11 (Low Vol.)	Philadelphia	1 75	1 80	1 80	1.75@ 1 90
Pool 11 (Low Vol.)	Baltimore	1 75	1 80	2 00	2 00
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1 85	1 80	1 90	*1 65@ 2 00*
Pool 54-64 (Gas and St.)	Philadelphia	1 65	1 70	1 70	1 60@ 1 75
Pool 54-64 (Gas and St.)	Baltimore	1 60	1 60	1 70	1 50@ 1 85
Pittsburgh se'd gas	Pittsburgh	2 70	2 65	2 65	2 55@ 2 75
Pittsburgh mine run (St.)	Pittsburgh	2 10	2 25	2 25	*2 20@ 2 35*
Pittsburgh slack (Gas)	Pittsburgh	1 70	1 70	1 70	**2 00@ 2 25**
Kanawha lump	Columbus	3 45	3 45	3 45	3 25@ 3 65
Kanawha mine run	Columbus	2 10	2 15	2 15	2 00@ 2 25
Kanawha screenings	Columbus	1 50	1 30	1 30	*1 10@ 1 30*
Hocking lump	Columbus	3 15	3 20	3 20	**3 00@ 3 50**
Hocking mine run	Columbus	2 15	2 15	2 15	2 00@ 2 25
Hocking screenings	Columbus	1 50	1 30	1 25	*1.10@ 1.25*
Pitts. No. 8 lump	Cleveland	3 25	3.25	3 25	3 00@ 3 50
Pitts. No. 8 mine run	Cleveland	$2 30	$2 30	$2 25	*$2.05@$2.20*
Pitts. No. 8 screenings	Cleveland	1 80	1 65	1 60	*1.50@ 1.60*
Midwest					
Franklin, Ill. lump	Chicago	3 80	3 65	3 65	3 25@ 4 05
Franklin, Ill. mine run	Chicago	3 30	2 95	2 95	*2 85@ 3.50*
Franklin, Ill. screenings	Chicago	1 75	1 85	1 95	*1 10@ 2.65*
Central, Ill. lump	Chicago	2 90	2 70	2 70	2 40@ 3 00
Central, Ill. mine run	Chicago	2 15	2 40	2 40	2 00@ 2 75
Central, Ill. screenings	Chicago	1 55	1 75	1 65	*0 90@ 2 25*
Ind. 4th Vein lump	Chicago	3 60	2 95	2 95	2 35@ 3 50
Ind. 4th Vein mine run	Chicago	3 10	2 55	2 55	*2 00@ 2 75*
Ind. 4th Vein screenings	Chicago	2 15	1 70	1 70	*1 15@ 2 15*
Ind. 5th Vein lump	Chicago	2 90	2 90	2 90	2 50@ 3 25
Ind. 5th Vein mine run	Chicago	2 45	2 50	2 50	*2 00@ 2.75*
Ind. 5th Vein screenings	Chicago	1 65	1 75	1 75	*1 10@ 2 15*
Standard lump	St. Louis	2 65	2 50	2 65	**2 50@ 3.00**
Standard mine run	St. Louis	1 75	1 85	1 95	1 85@ 2 00
Standard screenings	St. Louis	1 10	0 85	1 75	*0 80*
West. Ky. lump	Louisville	3 00	3 05	2 75	2 25@ 3 25
West Ky. mine run	Louisville	2 45	2 35	2 25	2 05@ 2 40
West Ky. screenings	Louisville	1 70	1.25	1 30	*1 00@ 1 55*
South and Southwest					
Big Seam lump	Birmingham	3 75	3 85	3 75	3 25@ 4 25
Big Seam mine run	Birmingham	2 15	2 15	2 15	2 00@ 2 25
Big Seam (washed)	Birmiogham	2 40	2 40	2 40	2 25@ 2 50
S. E. Ky. lump	Louisville	3 65	3 50	3 50	3 25@ 3.75
S. E. Ky. mine run	Louisville	2 35	2 35	2 15	2 00@ 2 35
S. E. Ky. screenings	Louisville	1.70	1 55	1 50	1 40@ 1 60
Kansas lump	Kansas City	5 65		5 75	5 75
Kansas mine run	Kansas City	4 40		4 25	4 25
Kansas screenings	Kansas City	3 25		2 50	2.50

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	Sept. 6, 1921 — Independent	Sept. 6, 1921 — Company	Sept. 13, 1921 — Independent	Sept. 13, 1921 — Company	Sept. 20, 1921† — Independent	Sept. 20, 1921† — Company
Broken	New York	$2 61	.....	$7.60@$7 75	.....	$7 60@$7 75	.....	$7.60@$7 75
Broken	Philadelphia	2 66	$7.60@$8.20	7.75@ 7 85	$7 60@$8 20	7 75@ 7 85	$7 60@ $8 20	7 75@ 7 85
*Broken	Chicago	5 62	12 75	12.65	12 75	12 65	12 75	12 65
Egg	New York	2 61	7.75@ 8 15	7.60@ 7 75	7 75@ 8 25	7 60@ 7 75	7 75@ 8 25	7 60@ 7 75
Egg	Philadelphia	2 66	8.10@ 8.35	7 75@ 7.85	8 10@ 8.35	7 75@ 7 85	8 10@ 8 35	7 75@ 7 85
*Egg	Chicago	5 62	12 80	12.65	12 80	12 65	12 80	12 65
Stove	New York	2 61	8.25@ 8 50	7 90@ 8.10	8 25@ 8.50	7 90@ 8 10	8 25@ 8 50	7 90@ 8 10
Stove	Philadelphia	2 66	8 25@ 8.60	8 00@ 8.35	8 25@ 8 60	8 00@ 8 35	8 25@ 8 60	8 00@ 8 35
*Stove	Chicago	5 62	13 40	12 90	13 40	12 90	13 40	12 90
Chestnut	New York	2 61	7 75@ 8 15	7 90@ 8 10	7 75@ 8 25	7 90@ 8 10	7 75@ 8 25	7 90@ 8 10
Chestnut	Philadelphia	2 66	8 20@ 8 75	8 05@ 8.25	8 20@ 8 75	8 05@ 8 25	8 20@ 8 75	8 05@ 8 25
*Chestnut	Chicago	5 62	13 10	12 90	13 10	12 90	13 10	12 90
Pea	New York	2 47	5 00@ 5 35	6 05@ 6 45	5 00@ 6 00	6.05@ 6 45	5 00@ 6 00	6 05@ 6 45
Pea	Philadelphia	2 38	4.50@ 5 50	6 15@ 6.25	4 50@ 5 50	6 15@ 6 25	4 50@ 5 50	6 15@ 6 25
*Pea	Chicago	5 62	11 10	11 00	11 10	11 00	11 10	11 00
Buckwheat No. 1	New York	2 47	2.75@ 3 50	3.50	3.00@ 3 50	3.50	*2 75@ 3.50*	3 50
Buckwheat No. 1	Philadelphia	2 38	2.50@ 3 00	3.50	2 50@ 3.00	3 50	2 50@ 3 00	3.50
Rice	New York	2 47	1.75@ 2.50	2.50	2 00@ 2 50	2 50	2 00@ 2 50	2 50
Rice	Philadelphia	2.38	1.75@ 2.00	2.50	1 75@ 2 00	2 50	1 75@ 2 00	2 50
Barley	New York	2 47	1 10@ 1 50	1 50	1 25@ 1 50	1 50	1 25@ 1 50	1 50
Barley	Philadelphia	2 38	1 00@ 1 25	1.50	1 00@ 1 25	1 50	1 00@ 1 25	1 50
Birdseye	New York	2 47	.....	2 50	.....	2 50	.....	2 50

*Prices and freight rates, net tons; quotations f.o.b. cars, Chicago.
†Advances over previous week shown in **heavy type**, declines in *italics*.



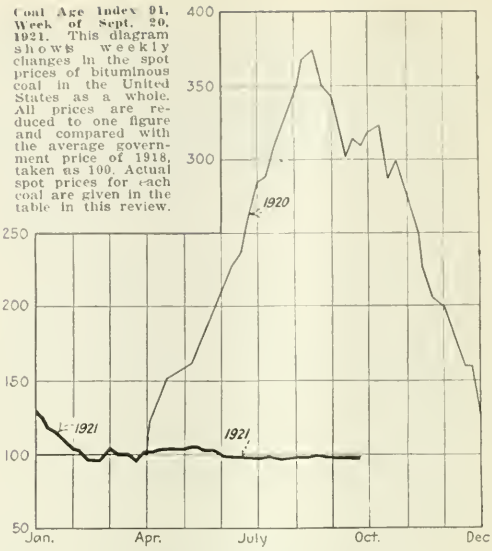
trade. Upper Lake docks are well supplied and no shortage is feared this winter. The Northwest is taking heavier shipments from the docks and it appears that this movement will soon reach normal. The dock space made available by this movement is being filled promptly by the arrival of cargoes from the lower ports. Lake dumpings during the week ended Sept. 17 were 477,371 net tons—455,387 tons cargo and 21,984 tons vessel fuel—as compared with 453,927 tons during the preceding week. Movement for the season to-date now stands at 17,670,651 tons as against 13,945,709 tons in 1920.

ANTHRACITE

Production of hard coal during the week ended Sept. 10 was 1,508,000 net tons as against 1,800,000 tons in the week preceding, according to the Geological Survey. The decrease was almost entirely caused by the observance of Labor Day.

Domestic sizes are moving more easily but demand is still below expectations. Independent producers are obtaining a premium on the larger sizes although pea and the smaller coals are frequently in distress.

Lake dumpings are declining. During the week ended Sept. 14 the Buffalo piers moved 101,400 net tons, as compared with recent weekly dumpings of around 175,000 tons. Rail shipments to New England were 1,806 cars during the week ended Sept. 10, as compared with 2,479 tons during the preceding week.



Coal Age Index 91, Week of Sept. 20, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.

COKE

The production of beehive coke still remains in the doldrums. During the week ended Sept. 10 the output was 60,000 tons, only 2,000 tons in excess of the previous week.

The labor situation among the independent Connellsville operators is now fairly well cleared. The majority have advanced to the Frick scale of Aug. 1 and a resumption of operations has followed at several plants. Prices have been trending upward in the past week.

Foreign Market And Export News

Coal Paragraphs from Foreign Lands

ITALY—Total imports during August were 474,378 tons, according to a cable to *Coal Age*. The tonnage came principally from England, United States, Germany, France and Belgium. Prices have declined considerably owing to the keen competition between Great Britain and the United States. Cardiff steam firsts are 225@235 lire, on wagons, a decline of 45 lire from last quotations; American steam is 190@200 lire as compared with 250@260 lire, quoted Sept. 8.

GERMANY—Production in the Ruhr district for the week ended Sept. 3 was 1,741,810 metric tons, according to cabled advices to *Coal Age*. This compares with 1,787,085 tons in the week ended Aug. 27.

BELGIUM—There is still much uneasiness in the industrial coal market, and production continues in excess of demand. It is hoped, however, that the improvement in the iron and steel industries will lead to better conditions. Orders for domestic coal are still larger than can be dealt with and deliveries are irregular. It is thought that the high prices which ruled immediately after the armistice will return this winter. Cobbles are quoted at 121 and 123 francs on wagons.

SPAIN—With a better rate of operation now prevailing, Asturian coal mines are endeavoring to compete with English coal. Prices at Barcelona are from 5 to 10 pesetas lower than those reported two weeks ago. Quotations are: screened, 115 pesetas; cobbles, 105, and smalls, 80 pesetas.

Hampton Roads Exports Lowest in Five Years; No Business Offering

Exporting continues to decline to the point of comparative inactivity. During the week ended Sept. 15 only four vessels cleared with coal for foreign ports, the lowest weekly record of the last five years.

Movement of coal coastwise is steady, with the bunker business holding its own. At the end of the week, however, vessel tonnage awaiting cargo had reached a total of only 16,600, with no ships scheduled as bound for this port for coal.

Prices remain comparatively unchanged, with special quotations being made to dispose of demurrage coal. New England movement is on contract for the most part.

Accumulations at Tide are gradually diminishing. They have reached approximately 175,000 tons, which is 50,000 tons below the average. Practically no movement of high-volatile coal was noted during the week, in spite of attractive prices. Nearly 100,000 tons of this grade is now on hand. The local situation, so far as foreign cargoes are concerned, is not likely to improve before next year.

PIER SITUATION

	Week Ended Sept. 8	Week Ended Sept. 15
N. & W. Piers, Lambert's Point:		
Cars on hand	1,761	1,323
Tons on hand	92,405	67,680
Tons dumped during week	95,864	84,787
Tonnage waiting	4,000	13,500
Virginian Ry. Piers, Sewall's Point:		
Cars on hand	1,640	1,647
Tons on hand	82,000	82,350
Tons dumped during week	74,125	52,601
Tonnage waiting	2,769	2,000
C. & O. Piers, Newport News:		
Cars on hand	2,116	1,945
Tons on hand	105,800	97,000
Tons dumped during week	46,751	52,823
Tonnage waiting	3,300	1,100

British Producers Storm Foreign Markets

French Buyers Get Low Quotations—American Exporters Find Competition too Stiff—British Mines Must Secure Outlet for Surplus Coal

Production in the United Kingdom for the week ended Sept. 3 was 4,143,900 gross tons, according to cabled advices to *Coal Age*. This represents a slight increase over the preceding week.

Newcastle shippers express considerable satisfaction over the purchase by the Turin gas works of 10,000 tons of gas coal and by the Milan gas works of 40,000 tons, for September and December delivery. The price on the smaller tonnage was reported as 26s. 9d., much below current quotations.

The serious effect of wages on the cost of production is shown by the closing down of several pits. In the last of the pits shut down, coal was costing 30s. per ton to raise.

On the other hand, the general opinion in Cardiff, is that the British export coal trade is in satisfactory position in spite of the high railroad rates and the cost of production. Producers feel that they have reached the stage where they can now practically eliminate the American exporter on the basis of present costs. As a result, they feel that foreign purchasers will undoubtedly prefer Welsh coal to American. Foreign purchasers are withholding orders, hoping for a still further price reduction. This action is only having the effect of increasing the British quotations. The opinion prevails that pressure must be brought to bear to bring about a reduction in railway and dock rates, which would enable British producers to reopen the mines that are now closed.

Unprecedentedly Low Prices Quoted On British Coal at Rouen

Demand for industrial coal is extraordinarily weak, whereas on account of the nearing winter the house coal demand increases slightly. With the production of French mines, existing stocks and the German coal deliveries, even on the basis of the present reduced quantities, France has more coal available than is needed. Belgian competition has already compelled the Nord and Pas de Calais mines to reduce their prices on briquetes and ovoids.

English exporters, who are overburdened with coals are quoting incredibly low prices. To illustrate this, Newcastle prime large coals are offered at 105 francs delivered on wagon or barge at Rouen. Freight on the Seine being 5 francs per ton, this gives a total of 110 francs c.i.f., Paris, whereas from the Pas de Calais, an equivalent fuel cannot at present be supplied at less than 130 francs. In other sections, Welsh smalls are quoted delivered. Paris, at the equivalent of the cost at mines in the Nord and Pas de Calais.

This position is becoming alarming for the French producers who, if British exporters can go on quoting the above prices, will have to turn to the miners for a reduction in wages, in order to be able to stand this competition.

The French State Rys. have placed contracts in London for 20,000 tons of best Monmouthshire large coals on the basis of 83 francs c.i.f., immediate delivery.

Stocks of coal in France at the end of July were estimated at 4,491,645 tons, according to *Commerce Reports*. These were distributed as follows: 1,350,350 tons at the French mines, 269,179 tons in the Saar Basin mines, 536,130 tons at the French ports, and 1,663,200 tons with the railroads.

Imports, including British, German and American coals, via French ports were 274,000 tons in the week ended Aug. 11, compared with 236,000 tons in the week of Aug. 18.

Great fear is expressed in regard to supplying Paris with coals next winter. Owing to the long abnormal draught, which has considerably reduced the draft on canals, and extensive repair work on the Northern canal system which is not proceeding as fast as was expected, more than 600 barges loaded with coal and bound for Paris have now been idle for weeks.

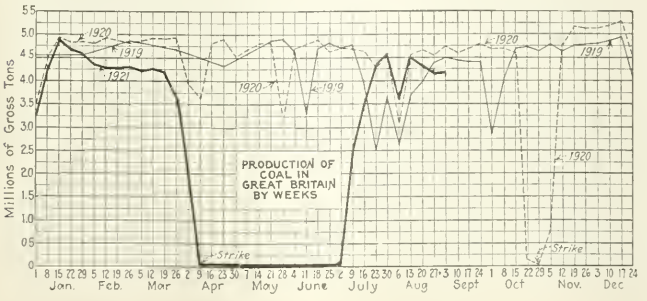
THE GREAT NORWEGIAN SPITZBERG COAL MINING CO. is at present making extensive developments on the Island of Spitzberg. It is expected that during the present year the Great Norwegian Coal Mining Co. will be able to ship 100,000 tons.

British Regaining Export Stride

During the period of the British strike, American exporters were quick to take advantage of the inability to continue the exportation of British coals. With the resumption of the collieries in Great Britain, much of this trade has deserted American shippers, as shown in the following table of exports:

	U. S. Tons	Britain Tons
January	2,248,448	1,700,000
February	1,258,670	1,728,000
March	1,151,840	1,986,000
April	1,153,927	*607,000
May	2,500,374	*14,000
June	3,314,513	*8,000
July	2,649,989	*816,000
August		3,103,000

*Duration and effect of strike.



Export Clearances, Week Ended September 15

FROM HAMPTON ROADS

	Tons
For Canal Zone:	
Am. SS. Cristobal for Cristobal	9,606
For Cuba:	
Am. SS. Montoso for San Juan	3,913
For Dominican Republic:	
Am. Schr. Rosalie Hull for Sanchez	1,130

FROM PHILADELPHIA

For Brazil:	
Br. SS. Glenearn for Rio de Janeiro	3,035

Pier and Bunker Prices, Gross Tons

(Foreign Bunker Quotations by Cable to Coal Age)

PIERS

	Sept. 10	Sept. 17†
Pool 9, New York	$5 75@$6 00	*$5 75@$5 85*
Pool 10, New York	5 50@ 5 85	*5 50@ 5 60*
Pool 9, Philadelphia	5 80@ 6 00	5 80@ 6 00
Pool 10, Philadelphia	5 40@ 5 70	5 40@ 5 70
Pool 71, Philadelphia	6 00@ 6 25	6 00@ 6 25
Pool 1, Hampton Roads	4 80@ 5 25	4 80@ 5 25
Pools 5-6-7, Hampton Roads	4 50	**4 50@ 4 80**

BUNKERS

	Sept. 10	Sept. 17†
Pool 9, New York	$6 20@$6 30	*6 10@ 6 20*
Pool 10, New York	5 95@ 6 05	*5 85@ 5 95*
Pool 9, Philadelphia	6 10@ 6 30	6 10@ 6 30
Pool 10, Philadelphia	5 75@ 6 00	5 75@ 6 00
Pool 1 Hampton Roads	5 10@ 5 25	**5 15@ 5 25**
Pool 5, 6, 7, Hamp. Rds	4 65	**4 60@ 4 80**
Welsh, Gibraltar	50s. f.o.b.	50s. f.o.b.
Welsh, Port Said	64s. f.o.b.	64s. f.o.b.
Welsh, Singapore	75s. f.o.b.	75s. f.o.b.
Welsh, Rio Janeiro	75s. f.o.b.	75s. f.o.b.
Welsh, Algiers	50s. f.o.b.	50s. f.o.b.
Welsh, Malta	60s. f.o.b	60s. f.o.b.
Welsh, Lisbon	57s 6d. f.o.b.	57s.6d. f.o.b.
Welsh, La Plata	70s. f.o.b.	70s. f.o.b.
Welsh, Madeira	57s. 6d. f.a.s.	57s.6d. f.a.s.
Welsh, Teneriffe	57s. 6d. f.a.s.	57s.6d. f.a.s.
Welsh, Genoa	58s. f.i.b.	58s. f.i.b.
Durham, Newcastle	35s.@37s.	35s.@37s.
Belgian, Antwerp	110 fr.	110 fr.

C.I.F. Prices, American Coal

(In Gross Tons)

	Sept. 10 Low Vol.	Sept. 10 High Vol.	Sept. 17† Low Vol.	Sept. 17† High Vol.
River Plate	$10 75	$10 20	$11 00	$10 20
French Atlantic	9 75	9 30	*9 65*	*9 20*
United Kingdom	9 65	9 30	9 65	9 20
West Italy	10 05	9 60	*9 85*	*9 40*
Scandinavia			11 60	11 15
Cuba	7 25	6 85		

Current Quotations British Coals f.o.b. Port, Gross Tons

Cardiff	Sept. 10	Sept. 17†
Admiralty Large	33s.	*31s.6d.@32s.6d.*
Steam, Smalls	19s.	**19s.@19s.6d.**
Newcastle:		
Best Steams	28s.9d.	**28s.@30s.**
Best Gas	27s.6d.	**27s.6d.@28s.6d.**
Best Bunkers	28s.6d.	*27s.6d.@28s.*

† Advances over previous week shown in **heavy type**, declines in *italics*.

Reports From the Market Centers

New England

BOSTON

Slight Improvement in Prices—Marine Freights Unchanged—All-Rail Movement Light—Anthracite in Better Request—Steam Moves With Less Difficulty.

Bituminous—While the current level of prices remains unchanged, there are instances of slightly firmer quotations than were reported a week ago. They would hardly be mentioned were it not for the extremely dull period we have been passing through for many weeks. At the same time it betrays slightly more interest on the part of certain small buyers. It is apparent also that the Hampton Roads agencies are less disposed to sell slack at the $1 per net ton basis that was so freely quoted three weeks ago.

Pocahontas and New River shippers are still very actively canvassing this territory. Practically all the smokeless interests are engaged in the drive to place coal, and there is noticed a steady increase in the volume shipped coastwise. With dullness along the line of the railroads and in the West, only in the direction of New England is there any encouragement whatever for new business. There is still a tendency to send coal forward unsold, but it should be said that most of the agencies are less brash about naming low figures. Several factors here seem at last to have discovered that mere price-cutting will not of itself move coal in a market that is under such heavy pressure to sell.

As yet there is disclosed no tendency toward higher marine freights. Depending on size, barges and sailing vessels continue to be quoted 90c.@$1.15, Hampton Roads to Boston. It is quite likely, however, that freights will not be marked up in the near future, leaving it to the coal shippers themselves to make the first move upward, when the way seems open.

Movement all-rail remains on a light basis. The railroads are taking coal only sparingly, and the territory as a whole has been so flooded by offers of the smokeless coals from rehandling plants at New Haven, Providence, Boston, and Portland that buyers take only the remotest kind of interest in the Pennsylvania grades.

At the New York and Philadelphia piers dumpings are at a low ebb. The marine differentials operate so much in favor of movement from Hampton Roads that there is apparently as little request for tonnage to move bituminous from Philadelphia and from New York as there is desire on the part of vessel and barge owners to place their tonnage on any basis that could reasonably be offered under present conditions.

Anthracite—Domestic sizes are improving steadily. Stove is actually in short supply with most of the companies, and chestnut and pea are now being moved with very little difficulty, except on the part of certain of the independents.

Somewhat to the surprise of the trade there is also a better demand for certain of the steam sizes. It is felt there will be a renewal of interest in the buckwheats if the all-rail tariffs on these sizes can be somewhat reduced.

Tidewater—East

NEW YORK

Anthracite Domestic Moves Easily—Steam Demand Improved—Bituminous Market Spotty—Local Trade Not Affected by Dissolution of Tidewater Coal Exchange.

Anthracite—There are further indications that the situation has improved. Demand from the wholesaler and the retail dealer is stronger and all domestic coals are moving easily. Even though production is slower plenty of coal is being shipped to market to take care of all requirements. Salesmen are kept constantly in the field to prevent accumulation. They report most of the yards well supplied with small prospect of much increase in business until the cooler weather drives customers to the market.

Stove coal continues to lead. Chestnut is moving easier here. An occasional quotation of $8.60 is heard for stove but the average has been around $8.50. Pea still lags with quotations varying considerably and according to the amount of coal on hand.

The steam sizes are in a healthy condition. Demand is regular and quotations for the better coals are up to company circular.

Bituminous—Market conditions are disappointing. The bright features of the early part of the week later disappeared and demand seemed to be at a standstill. The trade is anxiously awaiting the increased business which they believe ought to be here soon. The discontinuance of the Tidewater Coal Exchange is not expected to cause any inconvenience here. For the past several weeks more coal has been consigned to interests outside the pools than otherwise.

Demand is spotty with not much change in prices. Consumers are not as well supplied with coal as it was expected they would be after a summer of low prices, but it is believed the first touch of cool weather will drive in many new orders.

Loaded boats are not numerous in this harbor and quotations for them do not vary much from the mine price basis. The cheaper coals are scarce. Because of this there is comparatively little of Pool 11 to be had.

Local houses report many inquiries received and some new business but it is not up to expectations. There is little or no export activity and practically no fixtures from this market. Bunkering demand has been quiet.

BUFFALO

Other Soft Coal Coming This Way—Shadow of Car Shortage—Anthracite Sluggish.

Bituminous—Considerable effort is being made to introduce certain coals into this market that were formerly kept out by long distance and high freight rates. It is becoming common for this or that section to reduce the cost of mining until, so far as actual cost is concerned, the coal could easily compete with those that come in regularly. Not so very long ago there was little or no No. 8 coal selling here, but a few freight adjustments brought it in.

Until the labor problem is settled in some uniform way there will be more or less special trouble in coal, as well as other industries directly affected by it. Until it is smoothed out there is going to be slow business generally.

The car supply is still good, but certain shippers look for a shortage of large proportions before winter. The leading railroads appear to be looking for it also and are doing considerable advertising in an effort to induce the shippers to buy coal early. Prices are slack enough to provoke delay, being $3 for Youghiogheny gas lump, $2.75 for Pittsburgh and No. 8 steam lump, $2.50 for Allegheny Valley mine run and $1.75@$2 for slack.

Anthracite—The idea that prices are to come down still prevails and the local papers help it on although they accept the money that the operators are spending in advertising to show that their profits are small. This may not be exactly misrepresenting the people, but it is surely misguiding them.

The fact that profits are not high is shown by the dullness of the independent trade. These mines are now offering coal $7.75@$8, which is lower than the line prices, yet business is slow. The local demand has improved a little of late and it will of necessity continue in that way until retailers are busy again.

Lake—Shipments have fallen off, being for the week 35,400 tons for Duluth and Superior, 21,200 for Milwaukee, 16,000 for Chicago, 10,000 for Port Arthur, 9,500 for Sheboygan, 6,800 for Waukegan and 2,500 for Hancock; total, 101,400 tons.

Coke—Demand is still light, though

continued labor troubles in the Connellsville region have reduced the supply. Furnaces have not increased their activity materially, though some of them are taking an increased amount of iron ore.

BALTIMORE

Stronger Tone to Bituminous Market—Conditions Still Unprofitable—Anthracite Consumers Being Fed with Misinformation.

Bituminous—Trading which for the past ten days has shown a stronger tone is still operating on a more or less unnatural and demoralized basis. Some of the operations having headquarters here report that they are unable to market their product, largely because they are in a high wage scale district, and are buying for distribution in the open market while keeping their own operations closed. The situation as a whole means that Pennsylvania R.R. coal for the most part is higher than either B. & O. or Western Maryland fuel.

Then again there are Pennsylvania operations which are offering the highest class at $2.25@$2.40. This is explained by the fact that these operations are required to maintain a working force and are able to sell even at a slight loss because it helps to defray actual necessity operation cost.

In such times of keen competition as this there is naturally a line of individual selling that is way off-color. For instance, one shipper caught at Tide with considerable Pool 34 was being charged with a demurrage cost of about $2 per car per day, was hawking the same around the trade as low as 50c. a ton and freight rate.

Anthracite—The situation continues to grow more and more unsatisfactory. Householders refuse to buy and the flow of coal to Baltimore has dwindled to such an extent that the shortage here will soon be around 120,000 tons, or two months normal supply.

Meanwhile the paper which stirred up the trouble for the retail coal men and caused purchasers to hold off buying because they thought they were to get lower priced coal this winter, is printing a lot of bunk about the possibility of a great rush about "river coal dredged from the bed of the Susquehanna" and which is supposed to get on the market through a newly organized concern at prices that will knock the spots out of things.

PHILADELPHIA

Moderate Anthracite Buying—Some Cut on Pea—Steam Coals Dull—Bituminous Displays Some Betterment—Prices More Firm.

Anthracite—September business thus far accomplished is far below the hopes of retailers. They now anxiously await the first frost as the next mile-post toward real business.

Yards continue to maintain their capacity stocks and producers actually are having less difficulty than usual to move their production, with pea, of course, excepted. Despite this condition, the lowest price on pea coal recently has been around $5, and this figure, even though it usually covers a doubtful grade of coal, has given certain retailers an opportunity to quote publicly a low delivered price, some being as low as $10.25. This has led some dealers to shade prices 25c.@ 50c. on stove and nut.

Steam coal cannot be reported as improved, as the size in best demand—buckwheat—is only being taken moderately, with rice and barley almost uncalled for. The big storage yards of the companies are showing heavier piles each week of all steam sizes.

Bituminous—It can at least be said that with the middle of the month passed the outlook is somewhat better. Numerous shippers report greatly increased inquiries and the percentage of business accruing therefrom is considerably higher. Consumers seem to be trying to get under cover for a fair portion of their winter requirements, and it has not been unusual of late to find a buyer who asks for a price to be protected over a period of two or three weeks. These previously had contracts and as they have not stocked up are now endeavoring to get ahead.

Recent buying has been confined to the best grades and while quotations have not raised very much, and in some cases not at all, yet it has a tendency to firm up the ruling market prices and would seem to indicate an increase by the first of October.

Industrial conditions seem to be better, as all of the furnaces under way are still operating and while they report light business in sight, they admit the receipt of occasional new orders.

The Tide trade is almost only a memory. Bunker business is also very light, with considerable competition for all that offers.

Nothing has developed in the contract situation, and the consumer without agreement still is of the opinion that a contract for the balance of the season at present quotations is of no particular advantage.

Canada

TORONTO

Business Continues Quiet—Anthracite Stove Scarce—Some Improvement in Demand for Slack.

Trade continues light for the season, as most domestic consumers are still holding back and buying only for present requirements. Dealers are carrying large stocks of all grades except stove, which is the kind most in demand and is increasingly scarce.

Bituminous is selling slowly as most of the coal-using industries are very quiet, but there is a slightly increased demand for slack, though not sufficient as yet to affect the price. Quotations are as follows:

Retail:	
Anthracite egg, stove, nut and grate	$15 50
Pea	14.00
Bituminous steam	11 00@ 11 50
Domestic lump	12 25
Cannel	16 00
Wholesale f.o.b. cars at destination:	
¾-in. lump	7 75@ 8 50
Slack	6 00@ 6 75

Northwest

MINNEAPOLIS

Chilly Weather Stimulates Business—Dock Trade in Better Shape—All-Rail Hard Hit.

A touch of chilly weather has been sufficient to start retail orders coming in a little faster and has served to stimulate orders from dealers. A good tonnage is now moving from the docks into the interior.

With this movement, comes a relief at the docks, since it makes room for the coal still to arrive. The movement has already begun to decline, due to vessels being taken off the coal business for various reasons. It seems quite probable that there will be a sufficient tonnage on the docks, even with reduced movement for the remainder of the period of navigation. The requirements of the season are unlikely to be as heavy as in more active years.

The all-rail supply, while slow in moving forward, is likely to be of a considerable tonnage. It will probably be cut down somewhat from the fact that some of the business of past years which went to all-rail shippers, has this year been closed by contract to dock concerns.

Just now, things are proceeding in something of a routine manner. There is little difficulty in transportation circles. Cars are in ample supply and there is no heavy rush of traffic to make any trouble.

Railroad men have been grumbling about the reduced wage schedule and have been voting on a strike order. In local railroad circles, it is understood that the vote has been strongly for a strike. But unless this does occur, the weather is likely to be the sole cause of activity or otherwise in the coal game in the Northwest.

MILWAUKEE

Improved Demand—Coke in Liberal Supply, but Strongly Held—Lake Receipts Decline.

There is a decided betterment in the demand for fuel from all sources. A much heralded cold wave caused a general survey of empty bins, and a consequent mild rush to cover. The situation was aided by the receipt of a goodly amount of stove size anthracite, the scarcity of which has been hampering retail deliveries. However, because of the high price of coal and the unemployment situation, there will be more "hand-to-mouth" deliveries in the coming winter than ever before.

Shipments to the interior show a satisfactory improvement. There was never as much coke on hand in Mil-

waukee as at the present time. Nevertheless, the Solvay people hold their product at $15 per ton for domestic sizes. Gas coke is being advertised at $12.50 for nut sizes and $11 for small nut.

Lake receipts thus far during September have slackened up considerably. Seventeen cargoes in all have been received, aggregating 55,000 tons of anthracite and 80,938 tons of soft coal.

September prices of anthracite and bituminous, prevailing in Milwaukee, are shown in the following table, compared with those for the same date last year. These prices are subject to an additional 75c. carrying charge where the coal is carried in. The striking feature of the yearly comparison of these prices is that anthracite quotations, which cover the retail domestic trade, are uniformly higher this year than last while the bituminous steam prices are materially lower than those prevailing in September, 1920.

Anthracite	Sept. 17, 1920	Sept. 17 1921
Egg	$14 80	$15 85@$15 95
Stove	15 05	16 10@ 16 20
Chestnut	15 05	16 10@ 16 20
Pea		14 35@ 14 45
Buckwheat	11 50	12 10
Bituminous, steam trade		
Yough. and splint lump	12 50	8 00
Yough and splint mine run	11 50	7 25
Yough. and splint screenings	10 00	6 25
Hock. and Pitt. lump	12 50	7 75
Hock. an Pitt. pile run	11 50	7 00
Hock. and Pitt. screenings	10 00	6 00
Poca. lump, egg and nut	15 25	13 25
Poca. mine run	12 00	8 50
Poca. screenings	11 00	7 25
Ill. and Ind. lump		8 00
Smithing	13 00	9 00

DULUTH

Better Interior Movement Makes Room for Continued Receipts—Prices Firm—Transportation Conditions Are Excellent.

Despite indications of decreased shipments from lower ports, coal continues to arrive here in a volume which is only slightly less than heretofore. Last week twenty-eight cargoes came into port of which eight were anthracite and ten are reported on the way of which three are hard coal.

The needs for the winter in bituminous have been filled several weeks ago and anthracite would be sufficient if it continued coming in the quantities which have been recorded in the past two months. It is felt that docks with mine connections are sending coal to the Head-of-the-Lakes so as to have a supply on hand in the emergency of a possible strike of miners next April.

Shipments from the docks here to points throughout the Northwest have gained appreciably in the last week and are now promising to more than take care of the inflow to the harbor. Officials of one dock claim that anthracite is going off their dock as fast as it comes in, but the general report is that hard coal is still slow although picking up. The movement in bituminous is encouraging.

Railroads are in excellent condition to handle a large volume of coal and shippers report that never within the past six years have cars been received so quickly at sidings for loading, and been hauled out so soon after loading. An increase of 50c. in Pocahontas has been made. General hardening of soft coal prices is evident. Screenings are $4 with no sellers below that figure and lump and run of pile are firm at $7 and $6.25. Pocohontas is now $10.

Inland West

CHICAGO

Industries Hammer Steam Prices — Seasonal Domestic Call—Smokeless In Distress.

All spring and summer the big buyers of steam coal have had bargains offered to them, in short, they have been pampered. These buyers believe, now that there is a better domestic demand, they will be able to buy steam coal at even lower levels than heretofore; consequently, they are holding back and letting the operators bid against each other. In Chicago proper prices on screenings have slumped very badly. What little mine run has been coming has also been sold at a sacrifice. Most of the industries have enough coal on hand to take care of immediate needs, but should there be a general revival of business they would find themselves short of coal.

There is a seasonable demand for 6-in. lump coal. Chicago dealers are getting a little foretaste of what is to come, as practically all of the operators are oversold on the lump size. They have, however, plenty of furnace and small egg to offer, but the dealers do not want this size, and will not take it unless forced to. The fact that any coal is scarce at this time is proving to be considerable of a surprise to the retail trade.

There was some price cutting on smokeless this week as it was quite possible to buy high grade Pocahontas lump as low as $4.50 at the mines. Smokeless mine run is being sold as low as $2.40. This price, however, does not apply to "distress coal" which has had to be moved at lower figures.

Some of the best informed sales agents are openly predicting that the demand for domestic coal will be extremely short this year; in fact it has been said that the retailers will have on hand all the coal they want for the winter months by Nov. 1. It must be borne in mind, however, that the retailer has been buying very little coal all summer and so far this fall.

COLUMBUS

Better Domestic Demand — Steam Trade Still Slow and Screenings Extremely Weak—Prices Are Unchanged.

Retailers have been having a good run of business and with low stocks have been compelled to enter the market. This is especially true in the city districts. Farmers are still too busy to look after their fuel supply, but better buying from agricultural sections is expected soon. The tone of the trade has improved to a certain extent and it is now believed that the worst of the slump is over. Retail prices are holding firm in all sections.

There is little demand for steam and this is one of the drawbacks to a more active domestic trade. Public utilities are about the only big buyers for the small sizes and these are not sufficient to absorb the increasing supply. Manufacturing is slow in resuming and little is expected from that source for some time.

Lake trade is not brisk and Ohio mines are about stopped on their orders. Shipments from the lower ports are gradually being reduced.

It is believed that not a great deal of tonnage will be shipped from Ohio to the Northwest during the remainder of the season.

ST. LOUIS

Some Domestic Activity—Steam Conditions Show No Improvement—Lump Prices Are Advancing.

There is a little domestic improvement principally on the cheaper grades of coal. Mt. Olive is in the lead. Last week a large tonnage of coke, approximately 100 tons a day, was being delivered to customers who in the past had been using Carterville coal for the most part.

Locally steam is slow. There is no activity and nothing to indicate that conditions will show any improvement as yet. Here and there a little coal moves in storage, but it is small.

Country domestic orders show improvement. Country steam conditions are not promising except to the extent that there will be a good demand later and coal may be hard to get.

On account of the inability to move steam, lump coal is a little bit scarce and operators are inclined to advance prices. Some operators are accepting lump orders only when accompanied by orders for nut and egg.

An advance of 25c. per ton has been announced by one or two of the larger retail dealers, effective Sept. 20.

CINCINNATI

Smokeless in Distress—Fall Business Grows—Retail Prices Firm and Mine Quotations Hold.

The steady grind of fall business was apparent this week with few price changes but a much better flow of orders and inquiries. River business also has been picking up. Though smokeless prices have fallen in the wholesale market no effort has been made by retailers to reduce their quotations.

Bituminous mine run business was better. Prices still remained $1.60@$1.75 for spot Kentucky offerings and $1.75@$1.85 for West Virginia. Slack sagged with the re-entry of Logan County and other West Virginia trouble centers resuming. A price of $1@$1.25 ruled on southeastern Kentucky and $1.25@$1.35 for West Virginia. Lump and block went forward in fair volume at $3@$3.50 for Kentucky and West Virginia selling down to $2.75 for

spot and up to $3.50 for well-known brands.

The slump in smokeless prices still continues, some No. 3 Pocahontas going as low as $4.40, although quotations range $4.50@$5, egg can be bought around $4 and nut $3.25@$3.50. Mine run is variously priced and can be bought at $2.75 or a trifle lower. Slack ranges $1.50@$2.25.

Warmer weather of the past few days has again cut into the retail business, bringing it back in the ruck. Smokeless lump is quoted at $9.50, mine run at $7.75 and slack $6@$6.50. Bituminous lump is $7.75@$8.25, mine run $6.75 and slack $5.

DETROIT

Little Demand for Steam or Domestic —Receipts Are Small — Anthracite Trading Slow.

Bituminous—Neither steam nor domestic bituminous is in active demand. Some say steam inquiries are more frequent but the volume of sales shows no material improvement.

Among some of the buyers there is apparently an expectation that coal will be obtainable at a further price reduction after the close of the Lake season. Developments so far fail to support this theory. Shipments to Detroit have not increased, and instead of attempting to force their output on an unreceptive market, the mines are said to be offsetting reduced Lake shipments by curtailing production.

Three-inch lump from Ohio mines is quoted $3.25, 2-in. is $3, egg is $2.50, mine run is $2, and nut and slack $1.35. Four-inch splint lump from West Virginia is offered at $3.25, 2-in. at $3, egg at $2.50, mine run at $2, nut and slack at $1.50. Pittsburgh No. 8 three-quarter lump brings $2.40, mine run $2.10, nut and slack $1.65. Smokeless lump and egg is $5, mine run $2.90, nut and slack $1.60.

Anthracite — Buying by household consumers is not proceeding in a way to impress dealers with a feeling that winter requirements of their customers will be supplied. While demand is strengthened by a few days of chilly weather, interest immediately lags when temperatures become warmer.

CLEVELAND

Lake Shipments Tumble—Industrial Consumers Still Cautious—Coal Receipts Lower.

The coal trade continues to take a keen interest in industrial developments in this district. Buying has improved slightly but it has not measured up to expectations which were based upon reports of more activity in the steel mills and other lines. Some steel mills and various other plants have moderate stocks, due to the many weeks of curtailed operations. Interests thus situated are not in the mood to buy beyond present needs to any great extent until future developments in their respective lines become more clearly defined.

While not making any positive predictions a number of leaders believe that a coal famine is not impossible, in the event buyers suddenly decide to rush into the market. They cite as a precedent the recent violent advance of the cotton market, that came when buyers realized the crop was short and that stocks were low. No price changes have been announced in the last week, although slack is showing weakening tendencies.

With more than 17,000,000 tons of coal now shipped to the Northwest, the movement has taken a drastic slump. This business is in sharp contrast with last year when every energy was being strained to prevent a coal famine in the Northwest. Since it is not expected that more than 20,000,000 tons will be sent to the upper docks this season, it is seen that less than 3,000,000 tons remain to be moved. As a result, the season will drag to a normal close with dwindling shipments each week.

Bituminous receipts for industrials and dealers for the week ended Sept. 10 were 727 cars divided; industrial 504, retail 223 cars. This represents a decrease of 100 cars under receipts of the previous week.

South

LOUISVILLE

Eastern Kentucky Operators Endeavoring to Raise Domestic Prices—Demand for Steam Coal Slow—Very Little Improvement Shown.

Eastern Kentucky is endeavoring to increase prices 25c., due to near approach of larger business, and trouble in securing the kind of cars that are needed for shipping prepared coal to retailers and general grades to consumers who have no unloading equipment for hopper bottom cars. The slow demand for screenings is also having something to do with the effort to advance the price on prepared.

It is reported that the L. & N. is enforcing more rigidly its rule relative to cars loaded and not billed out, counting such cars against the next day's mine supply. It is claimed that this is an injustice in view of the fact that the road fails to supply the class of equipment asked for, with the result that the operator is not able to bill out all loads immediately.

Nut and slack is very draggy due to slightly better demand for prepared. Steam grades are weak in price, mine run having held up, but screenings are quoted 15c.@25c. lower. Western Kentucky fuels are rather steady in price.

BIRMINGHAM

Steam Market Unstable — Domestic Sizes Hard to Move—Production Due to Increase With Resumption of Furnace Companies.

There is little or no change for the better in market conditions. There is some intermittent buying in the spot market, sales being fairly active one day followed by a dull trade for several succeeding days, there being no semblance of a steady demand as yet.

The completion of the reserve oil stations of the Government at Mobile has perhaps served to cut off part of the requirements of this port, as vessels with provisions for both oil and coal fuel have chosen the former at the present low cost. Quotations remained stationary.

The domestic movement from the mines is restricted by the slack demand from dealers. Inquiry from without the immediate district is said to be slightly better, but trade conditions as a whole are very unsatisfactory. Wagon mines are placing considerable domestic coal direct to cellars of the consumers in the vicinity of Birmingham and coal is also being purchased in car lots by consumers to a greater extent than heretofore.

Production is now perhaps 65 per cent of normal. Several furnaces are due to be placed in blast in the next few weeks and preparations are being made to resume operations at some of the larger mines of the furnace companies.

Southwest

KANSAS CITY

Domestic in Good Call — Sluggish Steam Market Hampers Production—Better Outlook.

Light demand for screenings holds back production of domestic sizes and working time has not been materially increased the past week. Local consumers are buying more freely and country dealer trade is sending in orders for prepared sizes which necessarily have to take their turn in being filled.

Reduction of 28½c. in freight rates from southern Kansas fields promises some additional business. There is a better outlook for screenings ahead due to early expiration of oil contracts which cannot be renewed on the basis of original oil prices.

No immediate changes in prices on Kansas, Missouri, Arkansas or Oklahoma are likely but another 30 days promises an advance in all these fields if pressure of orders necessitates further sacrifice on screenings.

West

DENVER

Strike Called Off—Operations Resume —Investigation of Wage Conditions.

Operation of the mines of the Colorado Fuel and Iron Co. located in southern Colorado has been resumed. The 1,000 miners who walked out Sept. 1 in protest of a contemplated wage reduction, amounting to about 30 per cent, returned Sept. 12 after the Colorado State Industrial Commission held a preliminary hearing and ordered a restoration of the old wages pending a

full investigation of the whole matter.

The state law requires a 30-day notice where wages are affected or in case the men go on strike. The miners' union claimed a violation of this clause, the company contending that the miners agreed to the proposed cut in order to get more days' work.

E. H. Weitzel, manager of the company, declared that the proposed wage reductions would permit the company's steel plant to reopen; that it would make the cost of coal lower for the public, and would make more earnings for the miners, who, he said, would be able under the reductions to work more regularly, as coal production would be stimulated.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Demand Fails to Reflect Favorable Influences—Traffic Troubles Feared—Gas Slack Higher.

The market shows practically no response to several influences that should be considered distinctly favorable, including greater activity in the steel industry, some increase in other industries, and the progress of the season, which normally would bring a decided increase in demand for domestic coal at this time. Nor can it be said that there is a decided increase in demand without the Pittsburgh district feeling it on account of demand going to the non-union districts, for the Connellsville region has seen little improvement in coal demand, and any considerable increase would cause an overflow into the Pittsburgh district.

There continues to be a fair demand for gas coal, and prices are a shade better, particularly in slack, while recently there was a surplus of gas slack, causing it to go practically at steam slack prices, say at $1.75, when steam slack brought about $1.65. Gas slack now easily commands $2 and some sales have been made at $2.25.

Prices on steam coal are largely nominal or asking prices, while in gas coal there is a definite market.

CONNELLSVILLE

Labor Situation Cleared, With Most Independents Advanced—Demand Slightly Better—Production Unchanged.

The labor situation among the independent operators is now fairly well cleared. The majority have advanced to the Frick scale of Aug. 1 and the remainder will probably do so. The Rainey interest, which had undertaken a reduction from the July 1 scale has advanced at several coal mines, which supply the Rainey-Wood byproduct plant in the East, to the Frick scale, and it is understood will shortly do the same at coke works whose product has been sold. The understanding is that the Steel Corporation has no intention of touching the Frick scale this year.

Market demand for coke has increased somewhat. The Wickwire-Spencer Steel Co., Buffalo, is understood to have bought 10,000 tons of prompt at $3.25. Recently the Shenango Furnace Co. bought some prompt coke and also made a short-term contract, at about $3 in each case, but such a price could not be duplicated now. Some small lots of furnace coke have been sold to jobbers at $3.25, the jobber adding his margin. The A. M. Byers Co. is negotiating for coke to start its furnace.

Prices have been trending upward in the past week, but with a clearer labor situation may not go much farther. We quote: Spot furnace, $3.25@$3.40; contract, $3.25@$3.50; spot foundry, $4.25@$4.50.

The *Courier* reports production in the week ended Sept. 10, at 12,100 tons by the furnace ovens, and 26,170 tons by the merchant ovens, making a total of 40,270 tons, an increase of 910 tons.

UNIONTOWN

Coke Industry Shows Decided Betterment—Prices Up and Operations Resumed—Coal Market Still Backward.

Conditions in the Connellsville coke region took a decided change for the better last week. The outstanding developments were: Acceptance by all independent operators of the Frick scale of November, 1917, having a base of $2.29 per 100 bushels of pick mined coal. A decided stiffening in the market price of coke with quotations firm at $3.25@$3.50 and the possibility that a range of $3.50@$3.75 will appear shortly. Resumption of operations at the Garwood plant of the Aetna Connellsville Coke Co. following the receipt of a contract of 5,000 tons of furnace coke for the remainder of the year at a price around $3.25 per ton. Resumption of operations at the Leisenring No. 1 plant of the H. C. Frick Coke Co., one of the largest plants in the region, after a suspension throughout the summer.

Posting of notices by the W. J. Rainey, Inc., that the Frick scale would be put into effect with the resumption of limited operations ended the labor trouble in the region which had its origin when the Rainey company sought to reduce wages another ten per cent.

The resumption of the Leisenring No. 1 plant is considered more than usually significant. Throughout the period of depression the corporation has operated its mines fronting the Monongahela River because of the easy shipping facilities to the Clairton byproduct plant.

The need of the corporation now for tonnage apparently has increased to the extent that the mines further in the interior are to be called upon and the announcement of the Leisenring resumption was quickly followed by reports that other mines shortly would be put into operation.

The coal market is backward in reflecting the optimism of the coke trade. Sales continue to be sluggish and the market is faced with a persistent price resistance. Sales are few although there is a demand for slack which cannot be satisfied because of the difficulty in disposing of the three-quarter size. Steam coal is quoted $1.50@$1.60 with byproduct at $2.

UPPER POTOMAC

Demand Fails to Revive—Mine Idleness Grows—Operators Out of Spot Market.

No new market developments were observed during the week ended Sept. 10. Most of the mines along the Upper Potomac have been shut down since the beginning of the year and as a result of the protracted idleness, there is now some suffering among the miners. No spot business was available because producers were unable to meet the prices of nearby non-union fields with their lower production costs.

FAIRMONT AND PANHANDLE

Outlook Poor As Orders Fail to Materialize—Spot Market Sluggish—Lake Demand Subsides.

Fairmont

With the Labor Day idleness and the little demand, production touched its lowest point for the year during the period ended Sept. 10. Only 76 mines out of 301 in the Fairmont region were operating even part-time. The outlook for September was gloomy as inquiries were being reduced and orders were almost entirely lacking. Little or no coal was moving to Tidewater.

Northern Panhandle

Under the pressure of poor demand the output was being forced downward. Only a minority of mines were in operation producing a small tonnage for Northern and Western markets. The Lake demand had entirely subsided and spot business was extremely scarce. No satisfactory progress was being made in closing contracts.

EASTERN OHIO

Holiday Affects Production—Lakes in Continued Slump—Industrial Situation Improving Very Slowly.

Production for the week ended Sept. 10, was 295,000 tons, or about 56 per cent of the rated capacity of the mines for the five-day week. Owing to Labor Day, the output was some 50,000 tons less than the preceding week, but the daily production was over 1,000 tons in excess. The field has produced during the calendar year, 12,116,000 tons, which is approximately 53 per cent of capacity.

Railroads are taking more coal, both for immediate requirements and for storage, and reports indicate that at the present rate of production at least 46 per cent is going to the carriers for fuel. The public utilities are also storing coal in anticipation of their needs during the winter.

Shipments of Lake coal continue to decline and operators feel that the district will have difficulty in maintaining production on the same scale as during the past few months, as the demand from other quarters is not of sufficient magnitude to offset it. The daily accumulation at the lower docks is running less than 8,000 cars, and dumpings around 1,600 cars.

While Ohio's industrial situation is improving, it cannot be said that it is reflected to any considerable degree in the demand for steam coal, as the market continues very dull and both spot and contract inquiries are negligible. Likewise, there has been some softening in prices.

CENTRAL PENNSYLVANIA

Production Slightly Heavier—More Inquiries—Some Mines Resume.

But little gain has been made in production during September over August, the first five days' production being 10,797 cars, as compared with the same period in August of 10,002 cars. This small gain has been maintained up to the present time. Operators are receiving more inquiries now than at any time since the depression set in.

For the first time since April 1 Stineman No. 2 mine at South Fork, one of the largest operations in the district resumed operations, on Sept. 12. No. 4 resumed two weeks earlier. Argyle Nos. 1 and 2 and the Riverside, Sunshine and J. C. Stineman mines have all resumed on part time and the miners are confident that better times are ahead. The South Fork district has been exceptionally hard hit.

T. H. Watkins, chairman of the board of directors of the Central Pennsylvania Coal Producers' Association, will be one of the speakers at the American Mining Congress in Chicago on Oct. 17-22. This will be an important meeting and will deal with the problems growing out of the meeting of the U. M. W. at the convention which convened in Cleveland Sept. 20.

Middle West

MIDWEST REVIEW

Domestic Demand Not So Active—Steam Market Quiet but Outlook Improved—Labor Situation Better.

On account of the continued warm weather, there has been a mild decrease in the demand for domestic coal. This does not mean that there is no call, but the demand today is not as strong as it was a week ago although it is much stronger than it was back around the middle of August.

The steam market continues in the doldrums. The industrial outlook is much brighter than it has been at any time this year, but, at the same time, the improvement which has taken place has been so recent that the effect of it has not been felt as yet in the coal market. Owing to the increase in the demand for domestic, the steam tonnage has increased, and there has been some slight weakening of the market. One or two spot sales of good southern Illinois coal were made on the basis of $1 a ton. In the Indiana fields prices have been holding a little better as the lowest price we have heard quoted this past week on Indiana fourth vein screenings has been in the vicinity of $1.25 with some operators holding firm at $1.50.

The Middle West is still receiving large quantities of Eastern coal, but the bulk is of the smokeless variety. Block coal from West Virginia and Kentucky has been holding firm. This is because one or two of the larger dock companies who have been holding back all summer, have decided at this late hour to come into the market and purchase a few cargoes. These have been of such magnitude that they have absorbed the lump coal for the past few days from some of the better known producing fields in both West Virginia and Kentucky, especially the latter.

The labor situation is a little more favorable than it has been during the past month. In Indiana where some serious disturbances were experienced a few weeks ago, the situation has completely cleared up, as the last mines affected by the labor trouble have been reported as working since Monday. In Hardin County where fluorspar is produced, the differences between the operators and the miners have been adjusted for the time being. During the early part of the disturbances, in view of the fact that the fluorspar miners had very aggressive support from the coal miners from the Harrisburg field, it was thought that disturbances might spread; but all danger of this has passed away.

SOUTHERN ILLINOIS

Domestic Demand Good—Steam Still Lagging — General Conditions Not Much Improved—Prices Unsatisfactory.

The Carterville field presents a peculiar condition at the present time. There is an unusually good demand for lump coal, with nothing at all for the other sizes, with the exception of egg. In other years when the demand for lump became good, it correspondingly brought egg and nut with it.

In the Duquoin field, as well as Jackson County, some improvement is noticeable in working time. Prices are coming closer to the association figures in the Carterville field, but steam is very hard to move and railroad tonnage is light. Average working time is three days.

Mt. Olive shows very little change. There is, however, more working time and a stronger demand for domestic coal. There is very little steam business in any direction. Country price on domestic is $3.75. The city price is $3. Screenings on the open market range about $1. The railroad tonnage is good from this district.

The Standard field is still working along on the ragged edge of production cost. Screenings are down to 60c., 2-in. lump is selling $2.10@$2.25 and 6-in. lump $2.75@$3, with steam nut as low as $1.75 and egg from $2 up.

The steam market seems to hold back everywhere. There is no movement and if there were an increased demand for lump it would necessitate a higher price and the dumping of screenings.

Most of the tonnage moving now is going to the country for domestic. Railroad coal shows little improvement. Movement of loads and empties is slowing up.

WESTERN KENTUCKY

Production Is Light, but Prices Fairly Well Maintained—Industrial Concerns Behind on Contract Consumption.

Mines are maintaining prices in spite of the fact that many are running less than two days a week, and the only full-time mines are shipping railroad coal, or in cases where heavy contracts are held. Screenings are a little weak, and some stock sold as low as 95c. during the past week. Some industrial concerns are far behind in taking contract fuel, resulting in mines having to go out in the open market in search of business to take care of this slump.

Although the coal traffic bureau since 1917 has added through rates to 7,784 points, the members have not developed their selling organizations to take care of the newly opened districts as yet, resulting in no great improvement in business traceable to the larger sales field.

However, it is noted with interest that more coal is now moving to the Northwest, while Southern business has been fair. Arkansas movement under the new rates should be good, and prospects are for very fair late fall business in Central Freight Association territory.

Middle Appalachian

LOW-VOLATILE FIELDS

General Dullness Prevails—No Tide Movement and Western Markets Hardly Absorb Offerings—Lake Trading Quiet.

NEW RIVER AND THE GULF

New River mines suffered the usual loss of production because of Labor Day during the week ended Sept. 10. Tidewater buying was almost completely at a standstill, with prices around $5 per gross ton, f.o.b. piers. Spot shipments to Western markets were heavier but were limited for the most part to prepared sizes.

Slim production at Winding Gulf operations was due to the general dullness prevailing at Tidewater. Few spot sales were made and contract business had to be relied upon in order to run. However, more Tidewater tonnage was going from this region than from New River.

POCAHONTAS AND TUG RIVER

Pocahontas production reached the lowest point for the year during the early part of September, not being over 30 per cent with no market losses reaching almost 340,000 tons. Contract shipments were materially curtailed and little or no Tidewater coal was moving. Slack was a drug on the market and dropped to as low as $1, while prepared sizes were also weaker.

Instead of improving, Tug River production declined even further. There was virtually no market for spot coal except in the lump sizes and slack could hardly be moved at any price. Tidewater business was at a standstill and a minimum was going to the Lake. Companies experienced difficulty in securing equipment even for the small amount of coal they had on orders.

HIGH-VOLATILE FIELDS

Labor Day Idleness Fails to Cause Loss of Marketable Production—Western Domestic Business Improves—Outlook Slightly Better.

KANAWHA

During the week ended Sept. 10 most of the miners who had joined the army of invasion against Mingo had returned to work, but the week's output was small because of the Labor Day idleness. Market conditions did not make for a large production, although steam demand was increasing encouragingly.

LOGAN AND THACKER

Considering what the Logan region had been through during the preceding week and because of the holiday, an excellent showing was made by Logan mines. Industrial and domestic sales were gradually increasing, which enabled several producers to resume work after a long suspension. Western shipments were in fairly large volume but there was no Tidewater movement.

Poor markets precluded larger operations in the Thacker field, but production was not under 40 per cent with much of the coal going to the railroads. There was an undercurrent of optimism in evidence with the belief that business would be materially improved before October.

NORTHEASTERN KENTUCKY

There was no perceptible change in market conditions, prepared sizes being the only coal in demand. This, of course, weakened the demand for steam coals and it was becoming increasingly difficult to market them.

VIRGINIA

Approximately 80 per cent of the mines are not being operated and the prospects are for a further reduction in output because of the poor market. Activity was more marked along the mines on the Interstate and the C. C. & O. than on other roads in the region.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Steam Market Quiet—Domestic Heavier—Tennessee Mine Closings Bring Orders—Prices Firm.

While there seems to be little change in the steam market, except, perhaps, more strength in nut and slack, block is moving better than at any time during the depression and not a few of the larger operations are sold up for the balance of the month.

The present spurt in the market may be due in part to the closing down of a number of mines in eastern Tennessee, the trade ordinarily furnished from these shifting their business to eastern Kentucky. It is understood that these mines will start up again Oct. 1.

West

UTAH

Business Lacks Usual Fall Snap—Industries Barely Stirring.

The volume of business being done is nothing like that which was expected by this time. The price disturbance of a few weeks ago is believed to be largely responsible for consumers withholding their storage orders. The general public still believes that prices are going to fall before the cold weather sets in.

News Items From Field and Trade

ALABAMA

The Bonnie Coal Co. has been incorporated in Bibb County with a capital stock of $15,000 and has opened a slope mine near the Bibb-Jefferson County line between Eoline and Blocton. William Jones, of Tuscaloosa, is the principal promoter of the new development.

G. St. J. Perrott, associate physical chemist of the United States Bureau of Mines Experiment Station, Pittsburgh, Pa., is to be sent to Birmingham, Ala., to study the physical properties of coke in relation to its production and use in the blast furnace.

The Daniel-Duffee Coal Co., recently organized, will operate coal properties in the Birmingham section. Robert L. Daniel is president and C. G. Duffy secretary and treasurer.

The Alabama Fuel & Iron Co. of Overton, are reported by the *American Machinist* to be in the market for coal mine hoists and pumps. **The Woodward Iron Co.** of Birmingham, are contemplating the purchase of two electric mining locomotives, storage battery type.

ALASKA

Reports to the Interior Department indicate that the Navy Coal Commission has been doing considerable development work in mining coal in the Chickaloon field during the year. A number of buildings have been constructed in the establishment of a permanent mining camp, including a hotel, a power house, an office, a hospital, a first-aid building and cottages for employees. Prospecting for coal has been carried on at Coal Creek, Gravel Creek and Kings River in the same general field. Development, however, has been difficult on account of extensive faultings and foldings of beds and the presence of intrusive rocks. At Eska the Alaskan Engineering Commission has produced about 200 tons a day for railroad use this year. In the Nenana lignite field between Seward and Fairbanks on the government railroad under government leases the **Healy River Coal Company** has been mining 50 tons a day for domestic use in the vicinity of Fairbanks. Two small mines were operated in the Broad Pass District under government leases, about 1,000 tons having been produced from each mine, most of the coal being used for domestic purposes.

COLORADO

W. A. Ream has been appointed general manager of the Colorado Collieries Co., successors to the Western Collieries Co. with offices in Denver.

Coal mining on a limited scale on leased government lands by community organizations and small developers has been made possible through **Chief M. D. McEniry** of the Denver field division of the United States general land office in Denver in obtaining a reduction of the bonds required by the government of coal mining operators. The bond for $15,000 formerly required was termed excessive and prohibited small-scale mining. A new amendment to the coal mining regulations pertaining to government lands provides a bond equal in amount to one-half of the investment for development when that investment is less than $10,000, but in no case shall the bond be less than $1,000.

ILLINOIS

Alexander Eisenstein, president of the Fidelity Coal Co. of Chicago, who has been through Poland distributing relief funds, returned on the Savoie, recently.

A new coal company has been organized and a mine has opened north of Kewanee. It is called the **Eagle Coal Co.** and is operated by Carlson, Reiff and Sons. Dumps and all mine equipment have been installed.

The Williamson County Board of Review of Assessments has increased the total assessed valuation of the mines in that county approximately 30 per cent. The most notable change made was the reduction of the **Sanford Coal Co.** from an assessed valuation of $400,000 to $100,000. However, the others were all given a boost.

M. T. Anderson, of the Logan Coal Co., and formerly of the Chicago, Wilmington & Franklin Coal Co., has accepted a position with the Union Colliery Co., and will be located in Chicago.

The Taylor Coal Co. is making extensive improvements at its mine at Freeman in Williamson County. The company is expending about $200,000 in various improvements.

A suit has been filed in the circuit court at Benton, in Franklin County, against the **Southern Gem Coal Corporation,** which operates what is known as the "west" mine at West Frankfort, asking that an injunction be issued restraining the company from operating its mine in its accustomed manner. The suit is brought by a school district, the Union Hospital and about fifty residents in the vicinity of the mine, alleging that the huge volume of smoke and offensive gases issuing from the mine cause much annoyance and jeopardizes the health of the citizens and the children attending the school.

The Willisville Coal & Mining Co., of St. Louis, operating seven mines in Illinois, recently completed the concreting and enlarging of the main shaft of the Gulf mine operated at Sparta. Construction of a large concrete tipple over the main shaft is also being completed.

The City of Murphysboro has notified the **Gartside Coal Co.** that the coal company will be held for damages that may occur to the subsiding of the surface on North Fourteenth St., and also for any other damages that may result therefrom. Considerable private property in Murphysboro is also showing signs of sinking.

The Ridge Coal Mining Co. has decreased its capital from $300,000 to $150,000.

INDIANA

Fire of undetermined origin partly destroyed the largest washhouse at the **American No. 1 coal mine**, two miles south of Bicknell, recently. Workmen repaired the damage and the miners are at work again.

The Atlas Mine, owned by the **Pike County Coal Co.**, Petersburg, has resumed operations, giving employment to 400 men. The Atlas mine is the biggest mine south of the B. & O.

The Higgins Martin Coal Co. at Terre Haute, has filed a certificate of preliminary dissolution with the secretary of state.

Deputy State Mine Inspector George Stevely has announced that an examination for mine and fire bosses and hoisting engineers will be held in the Wiley high school building, Terre Haute, Oct. 1. Stevely will conduct the examinations.

IOWA

Coal fields, recently discovered at Farmington, have attracted the attention of several Illinois men who have been preparing to enter this particular Iowa field. They have purchased the mining equipment from a defunct mine at Cuba, Ill. The men are **William Street, James Street** and **Ora Burbridge**, all of Peoria, Ill., and **Orin** and **Charles Pitcher**, all of Hanna City, Ill.

The Capitol City Coal Co. of Pella has struck a 6-foot vein west of this town. The coal is of excellent quality. A switch will be laid to the Rock Island tracks and the mine will be developed on a large scale.

KENTUCKY

The Scuddy Coal Co. has filed amended articles increasing its capital stock from $150,000 to $200,000.

W. D. Faulkner, field representative of the Harlan Coal Co., jobbers of Louisville, has moved into new quarters in the Post Office Building, Harlan.

The Sunlight Mining Co., of Sunlight, has incorporated with a capital of $300,000, T. W. Crow, Nashville, Tenn., and J. B. Ramsey and J. B. Boddis, Madisonville, being the incorporators. This organization for a year or more has been developing a coal stripping operation near Madisonville, which represents one of the few and by far the largest project of its kind in the state.

Notice has been filed of the dissolution of the **Harlan Coal Mining Co.**, Louisville, which sold its mining operations in Harlan County, at Coxton and Kayu, to the Koppers interests of Pittsburgh last year. The same interests operate the **Harlan Coal Co.**, which is a separate and distinct concern, and which handles a jobbing business. Both companies were formed by K. U. Meguire.

The production of coal in Kentucky for the first six months of 1921, as compared with the corresponding period last year, shows a decrease of 5,963,150 tons, or 29.23 per cent. according to the official report of the chief inspector of mines. The proportionate decrease in working time was much greater, indicating higher labor efficiency. Eight coal mining districts are covered in the report and all of them show a diminished output.

According to reports from Whitesburg, there is a noticeable improvement in the Elkhorn and Hazard fields. Several mines that have been practically at a standstill for several months, have resumed full-time. Among these are cited the **Elkhorn Collieries Co.** at Thornton Creek, the **Apex Coal Co.**, **The Acme By-Products Co.**, **The Logan-Elkhorn Coal Co.**, at Whitaker and Parsons.

James Henderson, secretary of the Creech Coal Co. of Twilla, has left for a visit to his old home in Scotland. His father recently died there and part of Mr. Henderson's visit will be spent in the duty of settling up his estate.

At Louisville, the new retail coal handling plant of the **R. C. Tway Coal Co.** was placed in operation recently. This is said to be one of the fastest operating retail plants in the section. Link conveyors are used.

The Walkers Branch Mining Co., of Bristol, Va., has filed suit in the Federal Court, at Covington, asking for a receiver for the **Walkers Branch Fuel Co.**, of Hazard, and seeking to recover $100,000 and interest, alleged due on notes, the suit involving title to three tracts of coal land in Perry County near Hazard. Judge A. M. J. Cochran granted the request for a receiver, and named C. E. Bullard.

MICHIGAN

W. L. Hessey and **W. H. Hyre**, formerly of the general office of the Hooper-Mankin Fuel Co., at Huntington, have been placed in charge of a newly established district office at Battle Creek, Mich.

Detroit's common council has approved the purchase of 15,000 tons of nut, pea and slack bituminous for use of the city waterworks from **Charles F. Sweeney**, Detroit wholesaler, at a price of $5.04½ delivered in the pumping station bins. The coal comes from West Virginia and will cost $1.55 a ton at the mines. With 15,000 tons previously purchased, this completes the supply for the waterworks for the coming winter.

MINNESOTA

H. S. Harmon, of the Pittsburgh office of the Carnegie Dock and Fuel Co., visited Duluth recently on a tour of inspection of the company's docks. The new scales of the company, at Duluth, went into service early in September. The scales have a capacity to weigh up to 300 tons.

W. H. Forbes, treasurer of the Northwestern Fuel Co., of St. Paul has passed his vacation by an automobile trip along the north shore of Lake Superior. He inspected the company's docks at Duluth whi'e in the city.

NEW YORK

T. H. Watkins, president of the Pennsylvania Coal & Coke Corporation, will be one of the speakers at the American Mining Congress convention at Chicago, Oct. 17 to 22.

The United States District Court for the Southern District of New York has granted the Lehigh Valley R. R. Co. another extension, to Sept. 24, in which to file its segregation plan in accordance with the decree of the United States Supreme Court.

OHIO

Word has been received at the Sub-District Miners headquarters that Mine Rescue car No. 5, from Washington, D. C., will be brought to Bellaire in October for exhibition. It is expected that the car will be kept in Bellaire about a week in order that all miners in the district may have an opportunity to see the exhibit. A movement may be started in Bellaire soon to get funds for the purpose of erecting a building on the north side of the Miners' temple for housing a Mine Rescue Station.

The breach of contract suit of the **Wigarb Mining Co.**, a West Virginia corporation, against the **Tildesley Coal Co.**, of Cincinnati, was dismissed in the United States District Court in Cincinnati by Judge J. E. Sater, upon application of the plaintiff. It was stated that this was without prejudice and that the costs were assessed the defendant.

John Stirnkorb, sales manager for the Reliance Coal Co., Cincinnati, has returned from a two weeks' vacation. **Captain John Hatfield**, president of the company, is in Canada.

The Automatic Reclosing Circuit Breaker Co. of Columbus, announces that it has engaged the services of **Ralph R. Rugheimer**, who will be responsible for its activities in the coal fields of eastern Kentucky, Virginia and southeastern Ohio.

The Elcon Engineering Co. is the name of a new concern which has opened offices in Columbus, with E. S. Hetrick as president and general manager. The company is doing a general contracting and engineering business, specializing in elevating and conveying equipment for handling commodities, especially coal.

PENNSYLVANIA

The Silver Lake Coal Co. has notified the Secretary of the Commonwealth that its capital stock has been increased from $5,500 to $300,000. Twenty-three deeds have been placed on record in Schuylkill County in a transaction which conveyed to the Silver Lake Company 3,328 acres in Barry and Foster townships. A mortgage of $200,000 was placed on record at the same time.

The Big Four Coal Mining Co. has been formed with a capital of $200 000 to operate properties in the anthracite field. Michael J. Kelly, Curwenville, is treasurer.

The Troy Hill Coal Co. is being organized by John P. Ruffner and John R. Fulton to operate coal properties in the western part of the state. The company is represented by Horace F. Baker, 1711 Oliver Building, Pittsburgh.

The Maple Grove Coal Co. has been incorporated under state laws to operate properties in the Johnstown section, with capital of $160,000. H. R. Miller, Johnstown, is treasurer.

C. O. Norris and H. J. Thompson, who constitute the **Cassidy Coal Co.**, of Curwensville, Clearfield County, have closed a deal whereby they became the owners of the Samuel Smeal farm in Pike township. It is said it will require twelve years to remove the coal from the new tract. The Cassidy mines have been operating six days a week and the operators expect to continue at a largely increased output.

The Albany Coal Co., a small operation on the Monongahela River, near Brownsville, which has in the past worked union right on the edge of the non-union coke region field, has started up, open-shop, on a reduced wage scale.

The American Coke Corporation, which has been working steadily shipping coal at three plants at Orient, Martin and Linn, is now down to one or two days a week at all three.

A charter has been issued to the **Fairlamb Co.**, of Philadelphia, to deal in coal, coke, sand, lime and cement. Capital stock is $125 000 and the treasurer is John F. T. Lewis, of Broomall. The other incorporators are George H. Van Sciver and J. B. Van Sciver, Philadelphia.

A. F. Strouse, formerly of the Industrial Engineering Co. and recently with the H. C. Frick Coke Co., has established offices in Pittsburgh, for the practice of industrial engineering, specializing in power costs, economics, purchased power problems and electrification of industrial plants.

Clay F. Lynch, of Greensburg, Pa., general superintendent of the H. C. Frick Coke Co., has been named president of the Union Trust Co. of Greensburg which expects to open its doors for business about Oct. 15.

Chief of Mines, Seward E. Button, of the Department of Mines, Pennsylvania, acting upon the complaint of the **Pennsylvania Coal Co.**, Dunmore, that the mining methods of the **Suffolk Coal Co.**, whose property adjoins that of the complainant, will result in letting water and quicksand into the workings of the Pennsylvania company, has appointed a commission to investigate and make a report, composed of Inspectors Augustus McDade, 7th District, in which the two companies are located; Frank Kittle, 13th District, and Josph Walsh, 14th District.

TENNESSEE

The Etna Coal Co. has been acquired by new interests, headed by **R. F. Riddle & Sons**, Chattanooga. The new owners are planning for the development of the company's holdings and are said to be considering the installation of new machinery.

The Kentucky Fuel Co. of Cincinnati has opened an office in Knoxville with T. J. Gilbert, former secretary and treasurer of the Furnace Gap Coal Mining Co. of Manchester, Ky., in charge.

The Staub Coal Co., Tracy City, has acquired property in the vicinity of Daisy, and plans for the establishment of a new plant with initial daily capacity of about 500 tons. A list of equipment for installation is being arranged.

UTAH

The Mutual Coal Co. has ordered its third Sullivan undercutting machine as well as Sullivan drill equipment for sinking a new shaft at the company's coal mines near Rains.

Construction of special coaling barges and a mammoth storage dock at Alameda, Cal., in San Francisco Bay, at a cost of $700,000 will make possible the use of more Utah coal for trans-Pacific liners and coastwise vessels, according to **Frederick A. Sweet**, president of the Standard Coal Co., recently returned from the coast.

The Great Western Coal Mines recently filed a plat of their new town of Great Western. The new company has opened offices at Helper.

VIRGINIA

As result of the pronounced falling off of business, coal offices in Norfolk are cutting down their forces very noticeably, and in some instances are preparing to close. **The Kentenia Coal Co.'s** office, which has been in charge of E. M. Robinson, closed Sept. 1, and its business was removed to the Bluefield, W. Va., branch.

[illegible] receivers have been appointed for the Interstate Coal & Dock Co.'s holdings at Norfolk, as result of the suit instituted in New York under the title **Turbo Collieries Co., et al vs. Interstate Coal & Dock Co.**, it being alleged the latter owes $800,000 in unpaid bills to the plaintiffs. Elis McClellan Preston and John B. Johnston are the receivers named with a restraining order to accompany the receiving them full and uninterrupted authority in disposing of the assets of the company.

WEST VIRGINIA

The office of general manager of the Elkhorn Piney Coal Mining Co. made vacant by the resignation of **Garland Fletcher**, will not be filled until late in the fall. Meanwhile, **E. R. Phillips**, of Huntington, W. Va., will remain in the Huntington office nominally in charge. Most of the mines of this company are not shipping coal at present.

In connection with the driving of a new entry at its plant at Balir in the Coal River field, the **Holdred Collieries Co.** is engaged in building a new tipple which will be equipped with shaker screens, picking tables and all other equipment for getting out prepared sizes. This company is under the management of D. O. Wing.

In the Cabin Creek region, the **Wyatt Coal Co.**, with general offices at Charleston, is pushing work on a new tipple at its Sharon mine and on a new tipple at its Wake Forest mine.

The capital stock of the **Hartland Collieries Co.**, of which John B. Hart, of Charleston, is president, has increased its capital stock from $500,000 to $2,000,000. This issue is to be divided into 10,000 shares of common and 10,000 shares of preferred stock, having a par value of $100 per share.

A. B. Hayes, of the sales force of the Jamison Coal & Coke Co., Pittsburgh, spent a few days in the Fairmont field during the early part of September.

W. C. Posten of the Greenmar Coal Co., of Elkins, was absent from his office for a few days during the early part of September on a hunting trip.

It has been announced by the Consolidation Coal Co. that **J. O. Brooks** is appointed superintendent of Mine No. 25 at Pinnickinnick. He had been acting as superintendent of Mine 21 at Gypsy. **B. G. Ash**, superintendent of Mine 25 has been transferred to Mine 21.

T. H. Johnson, of Bellaire, Ohio, who heads the Chesapeake Coal Co., was a recent business visitor in the Fairmont field.

A Jeffrey conveyor, capable of handling 2,100 tons a day, has been installed by the **Delmar Coal Co.**, at its Ruth mine not far from Hilderbrand, and is rated as probably the largest conveyor of its kind in the region. Much better time was made in installing the conveyor than had generally been anticipated.

The West Virginia and Kentucky By-Products Coal Co., of Huntington, has been organized with a view to operating in both Kentucky and West Virginia. Those principally interested in the new concern however are: R. L. Vaught, Dr. G. L. Howard, J. W. Van Valkenburgh, Frank Hess, all of Huntington, and L. J. Kidd of Richmond, Va.

The general office building and company store building of the **Empire Fuel Co.**, at Huston, between Cedar Grove and Montgomery, in the Kanawha field, were destroyed by fire recently. It is believed that the fire was of incendiary origin. The mine had been operating on a non-union basis for the last year, about 200 men being employed.

Louis T. Krebs, manager W. A. Marshall & Co., Morgantown, has returned to the New York office after a vacation and business trip in Montreal and Quebec. He reports that conditions in the Dominion are a little more brisk than they were a month ago.

Mr. Krebs will assume the duties of the Fairmont office as well as the Morgantown office.

J. E. Jones has been appointed superintendent of the Shamrock Fuel Co., succeeding **Charles Upchurch**.

J. J. McSwarney, of Baltimore, who is the vice-president of the New England Fuel & Transportation Co., spent a few days recently in the Fairmont region on a visit to the properties of the New England company.

A coal charter has been granted to the **Mary Elizabeth Coal Co.** of Huntington, $500,000. H. H. Morris, John H. Holt, W. K. Cowden, C. S. Williams, Homer E. Holt Huntington, incorporators.

BRITISH COLUMBIA

The Harewood Mine of the **Western Fuel Corporation of Canada**, Nanaimo, has been reopened. The company is reported to have secured contracts that necessitate an increased output. Consequently, not only the Harewood, but the Wakesiah, Reserve, and No. 1 mines must be worked to their capacity.

Six of the latest type of Paul Breathing Apparatus have been purchased by the British Columbia Department of Mines for the Cumberland (V. I.) Mine Rescue Station. This is one of the coal mine centers of the Canadian Collieries (D), Ltd.

NOVA SCOTIA

Westgarth F. Brown, chief mineral inspector of woods and forests in Great Britain, is inspecting the Nova Scotia mines of the British Empire Steel Corp. in the capacity of an expert on submarine mining. He will probably also examine the iron ore mines at Wavana, Newfoundland, and will consult with the mining staff of the corporation as to submarine mining practice in Cape Breton.

Traffic News

On Sept. 26 the Illinois Central will publish a new tariff on coal from western Kentucky mines on its road to points on a number of lines in Central Freight Association territory. Connecting lines which will be affected include the B. & O., Big Four, Wabash, Grand Trunk, Michigan Central, New York Central, Pennsylvania, Pan-Handle and Toledo, St. Louis & Western. This will open a large territory.

Press reports are to the effect that the Henry Ford interests, operating the D. T. & I. R.R., Ford motor interests, and mines in Kentucky, are planning terminal facilities at Ashland, Ky., with a bridge across the Ohio River at that point, with the idea of eventually extending a line down into the coal fields of the state. This is an old plan which has been commented on at some length. However, it is reported in the latest dispatches that official announcement has been made concerning the plans for securing necessary terminal sites.

Three important rate cases as they relate to the transportation of coal in the Buckeye State were recently scheduled to start at Columbus. The first to be taken up is what is known as the "Ohio Case," which is the echo of a decision of the Ohio Utilities Commission last January in which the railroads were prohibited from making their full advances as per tariffs filed. In these tariffs carriers sought to make the Inner Crescent the base by allowing the 40 per cent increase and by maintaining the old differential give Ohio mines an advance of 50 and more per cent and the outer crescent about 36 per cent. The next scheduled is the Henry Ford case of the D. T. & I. where he seeks to make a reduction of 20 per cent on all coal freight rates. This is challenged by other carriers. The third case is that of the Southern Ohio Coal Exchange in which the differential between Ohio districts as compared with the Inner and Outer Crescents is challenged.

Officials of the Chesapeake & Ohio, Big Four and Baltimore & Ohio railroads have been inspecting branch lines in the Louisville district.

The Denver & Rio Grande Western R.R. has purchased 700 new Western Pacific coal cars for use in Utah and will take 1,000 more later.

The New York, New Haven & Hartford proposes an increase in the rate on both soft and hard coal from Springfield to Armory, Mass., from 42c. to 80c. per gross ton.

The Utah Fuel Co. is seeking to recover $48,000, alleged excessive charges when the U. S. Government was in control of the D. & R. G. The increase is said to have amounted to $7 a car. The case is being heard by H. C. Keene, examiner for the Interstate Commerce Commission.

Preliminary surveys have been completed by the **Louisville & Nashville R.R.** on a proposed extension from Bettyville, Lee County, Ky., across sections of Lee County and through Clay and Bell counties to Loyal, Harlan County. If the construction of this route is held feasible, work will begin at once.

In the complaint of the **Duquesne Coal & Coke Co.** the commission holds that interstate rates on bituminous coal from mines west of Pittsburgh in Pennsylvania and West Virginia on the Pittsburgh and West Virginia Ry. to points north and east are unduly prejudicial.

In the complaint of the **Michigan Builders Supply Co.** the I. C. C. decides that rates from Nov. 25 to Nov. 12, 1918, on anthracite coal from Carbondale, Jessup, Scranton and Winton, Pa., to Detroit were unreasonable because they exceeded $3.70 a ton.

In the complaint of the **Endicott-Johnson Corporation**, an I. C. C. examiner recommends that the rate on bituminous coal from Morris Run, Pa., to Endicott and Johnson City, N. Y., was not unreasonable.

The complaint of the **Wayne Coal Co.** has been assigned for hearing before an examiner at Pittsburgh, Sept. 30.

The Northwestern Traffic and Service Bureau of Minneapolis complains to the I. C. C. against unreasonable rates on hard and soft coal from various mines in the United States to destinations in the Northwest states by reason of the increase under General Order No. 28.

Obituary

William Baxter Myers, treasurer of the Bethlehem Fabricators, Inc., died recently in Bethlehem, Pa.

William H. Buehrig, formerly a well-known coal operator and also banker of Minier, Ill., died recently at his home in that city.

Ray Hickerson, coal mine operator of Rushville, Ill., lost his life recently in an attempt to rescue his ten year old son who had fallen into an abandoned mine shaft, when black damp immediately overcame him.

John S. Field, chairman of the board of directors of the Consumers Co., died recently at his home in Chicago, at the age of 74 years. He was a director of several subsidiary lines of the New York Central and was active in church and charitable work.

Edmund L. Penruddocke, age 52, a well-known mechanical draftsman, died recently at his residence in Birmingham. Mr. Penruddocke was connected with the Tennessee Coal, Iron & Railroad Co. at the time of his death, and had previously been in the employ of the Sloss-Sheffield Steel & Iron Co. for a number of years.

Michael White, general superintendent of the Springfield District Coal Mining Co. died recently at his home in Springfield, Ill. He was also for five years superintendent for the Peabody Coal Co., at Sherman, and was well known in mining circles.

Coming Meetings

The annual Institute Meeting of the **Alabama Coal Operators' Association** is scheduled to be held at the Empire Mines of the Empire Coal Co., at Empire, Walker County, Oct. 4. This is the first meeting to be held by the Institute in several years, the sessions having been dispensed with during the war.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The twenty-fourth annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

American Manufacturers Export Association will hold its twelfth annual convention at the Waldorf-Astoria, New York City, Oct. 5 and 6. Secretary A. W. Willmann, 160 Broadway, New York City.

National Safety Council will hold its annual congress at the State House, Boston, Mass., Sept. 26 to Sept. 30 inclusive. Secretary, S. J. Williams, Chicago, Ill.

The Coal Mining Institute of America will hold its annual meeting at Pittsburgh, Pa., Dec. 7, 8, and 9. Secretary H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

An Industrial Relations Conference for all industries in the State of Pennsylvania has been arranged for Oct. 24 to 27 at Harrisburg, Pa., by the Commissioner of Labor and Industry, C. B. Connelly.

The sixth annual convention of the **National Association of Purchasing Agents** will be held Oct. 10-13 at Indianapolis, Ind.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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Dramatic Suspense?

PRESS reports indicate that the United Mine Workers will withhold the formulation of their "demands" until after the first of the year, and not, as has been customary, outline their program at their annual convention, now in session. So much of what transpires in union circles now may be defined as internal politics that failure to announce whether they are willing to strike for a 20-per cent raise or one of 60 per cent need cause no surprise. The present officers will make their stand for retention on an aggressive program of radical demands.

The consumer of coal, both hard and soft, should not overlook the almost certainty of protracted coal-mine suspension beginning next April. No one can afford not to protect himself by storing in the next six months whatever he needs for a protracted period from April 1—possibly to July 1, 1922. The coal miners will not accept the inevitable reduction without a long struggle.

Advertising Anthracite Ethics

THREE of a projected series of twelve large newspaper advertisements of the anthracite producers have appeared in 100 daily papers in the territory served by hard coal. A huge expenditure is thus indicated. Is it a necessary expenditure? Is it wise? Will it accomplish its purpose? These are questions that the coal trade is asking. Whatever the series as a whole may develop it is clear from those that have appeared that the purpose behind this campaign is to explain prices. Reproductions of these advertisements will be found on pages 509 and 510 of this issue.

In watching the unfolding of this campaign it is well to have in mind that it is not a campaign to sell anthracite coal—that commodity sells itself in time. It is a campaign to explain to consumers why prices of hard coal have not been reduced, why alone of things used by the ordinary citizen it is going up instead of declining. The public, reasoning by analogy, thinks that as a matter of course the price of hard coal must be due for a drop and to an undetermined but doubtless considerable extent, and for that reason has not purchased as usual the past summer against this winter's needs. In the sense that overcoming this belief will promote the purchase of the tardily moving domestic sizes, the advertising campaign, one for which there is great need and which offers great opportunities for the advancement of the coal industry as a whole, is warranted and advisable.

The scope of the prejudice to be overcome must be fully appreciated by the coal operators, or they would not have abandoned their traditional policy of silence. The lack of spontaneity in the copy so far released testifies to the seriousness of the effort. It is evident also that operators are assuming only to explain mine prices. They obviously are steering clear of the freight-rate question and the matters of retail-dealer margins and profits. The part of the jobber in the distribution of anthracite and his share of the margin apparently are to be ignored.

This form of advertising can be defended on the ground of economy, at least economy in the long run, according to L.D.H. Weld in a discussion of the packing industry in the *American Economic Review* of last March. He says "Willful misrepresentation of an industry, with the resulting prejudice that is built up in the minds of many people, results in an ill will (instead of good will). Such an ill will makes it harder to sell products, makes it easy for federal and state governments to pass harmful and uneconomic laws, and threatens the very stability of the business. If advertising designed to overcome such ill will should fail of its purpose, then it would have been wasted; if it succeeds, the benefits to the corporation and to the public cannot be measured in dollars and cents."

Just so the possibility for good to the coal industry as a whole that lies in this co-operative effort of the anthracite operators can never be measured in money value. Appearance of the third piece of copy has done much to allay the criticism provoked by the first two pieces. Neither of the first two was calculated to answer the suspicion of the consumer that profits are unreasonable, for in neither did the operators frankly tell their complete story in figures. Happily the third is more definite.

Should the operators succeed, as we trust and hope that they will, in satisfying the consumer of the squareness of their position there yet remains the necessity of explaining the delivered price. What we pay for coal at the curb is the important figure. If the producer is not gouging, then who is? will be the next question. The railroads have but to say that the government, through the Interstate Commerce Commission, has fixed their rates. The retail dealers are alive to the situation thrust upon them and, as stated elsewhere in this issue, have launched an advertising campaign of their own.

We have one suggestion to make. The number of cities in which the producers are publishing their advertisements is limited to perhaps seventy-five or eighty. There is, therefore, no great bar to using at least one advertisement in each city to give the cost of coal f.o.b. cars, taking care to show the cost of coal plus freight and war tax in the kind of tons in which it is sold at retail in that city.

After all is said, may it not develop that the consumer will rise up and say "granted that costs, from mine to curb, are what you say, that profits are reasonable, nevertheless the price is too high? Reduce costs, for I will not pay such prices for coal. If mine labor is getting the profit, then let mine labor take less wages, but in any event give us our coal cheaper."

Selling—an Infant Art in Coal

IT IS decidedly unusual in our experience to have selling and salesmanship discussed so clearly and intelligently by a coal man as was done by D. F. Williams, vice president and general sales manager of the Hudson Coal Co., in his address before the recent convention of the retail dealers of New York State, which we publish in full in this issue. Selling is not a lost art in coal; it is an art that has never been developed.

Although coal is distributed in a highly competitive market, it has not been necessary until recent years for the vendor to spend time and effort in a study of the art of salesmanship. It is true that a few, a very few, have followed this course, and for them it has proven profitable. But there has been no general recognition by the coal trade of the basic theory of modern trade practice that in dealing with the vast multitude of the public the vendor, particularly of necessary commodities, must build trade on confidence and good-will. It is not fair to indict the coal trade alone in this respect, but rather to note that other industries have progressed far in meeting this requirement, whereas the coal industry has only begun.

Before commenting on Mr. Williams' address we would point out that advancement in selling and merchandising any product that reaches a multitude of consumers has in every instance been the result of the efforts of large-scale producers and distributors. The retailer, except in few individual cases and those only of outstanding size and influence, has never been a source of inspiration to trade; he has not translated thought into action in meeting the problems of dealing with a consuming public, problems that he faces at their inception because of his front-line position.

With this thought in mind it is refreshing to turn to the words of one who oversees the distribution of several million tons of domestic coal through dealers to householders and find that "the time is here when we must carefully question our salesmanship abilities, must inquire into our local reputations for integrity and fairness and must give some thought to our temperament." And again, "Since the beginning of the war there has been practically no coal selling in this country. There has been a great deal of order taking; by order takers, not salesmen. . . . During the past few years in the coal trade we have told the buyer what he could have and at what price."

That times have changed is recognized, for the dealer is advised to acquaint himself with "actual conditions as they exist today" and to put into his business "that courage, optimism and resourcefulness that are so necessary for present-day selling." A coal merchant, one of six in a town, who said he was disappointed with the possibilities for expansion, was pointed out as one who had laid down on the job, and who, if he could not wake up sufficiently to use modern methods of encouraging trade, had best consider that he was a failure of his own making.

Mr. Williams did not confine himself to generalities; he talked in terms of constructive details and his arguments for, and examples of, good practice have a far wider application than in the realm of the retail coal merchant. For instance, he says: "How many really appreciate the value of the figures that are prepared and placed before you?" Statistics are of value only as they are used, and he asks how many have made such elementary use of their own figures as to reduce their annual tonnage to a daily basis and use that as a constant mark at which to shoot.

Beyond a high sense of integrity, a knowledge of the goods sold, a knowledge of existing conditions and of a desire to serve, backed up by an energetic application of common sense, there is no secret to salesmanship, we are told. Confidence is declared to be the keystone of success; to gain the confidence of the public requires a one-price short-credit and an open advertising policy.

The dealer is told that he can never succeed until he knows his product—coal. He must know grades and quality, how coal is mined and prepared. He should visit the mines and otherwise familiarize himself with all phases of the business.

Stress is properly laid on the environment of the dealer—the appearance of his place of doing business. How true it is that if your "environment is such that it breeds carelessness and inattention to detail; if it is such that it creates in you, a dealer, a feeling of smallness, of inferiority, you are working under a handicap that no amount of personal energy may overcome." It is urged that a good setting is a part of good selling.

Mr. Williams' address is shot through with sound ideas and homely sense. Every one who reads it—and every man in the coal game should read it—will be impressed with the thought that in talking "Salesmanship" to a convention of coal dealers Mr. Williams was doing a first-rate job of selling. He "sold" the idea that his company believes the things he said and that such a company is one to tie to. He must have created an added feeling of confidence in himself and his concern by such a frank survey of the coal business.

This cataloging of the ways to do business better, each of us knows, is really a statement of the essential items in which the retail coal trade has fallen short of meeting modern requirements. And if these things should be observed by the coal merchant how can the producer help supply the incentive to the one man—the retailer—who represents his contact with that all-important public?

The sales managers of every coal company in the country can talk until doomsday and they will never convert 50,000 retail dealers to the proper ideas of selling and service. There is just one way for the coal industry to reach that high estate of public confidence and that is to tell the public what it should expect from the merchant from whom it buys its coal. The average retailer will reform his methods and practices in those essential particulars outlined by Mr. Williams only when his customers, the household consumers—that great body of American people whose good opinion is so valued—demand better treatment.

The coal industry could well afford to spend a million dollars a year for as many years as are necessary to educate the public into an appreciation not of the intricacies of the industry in which it has but a curiosity but rather of what is good coal, how to burn it and the kind of retailer service to which the buyer is entitled.

National standards of service can be set up and in the respective areas of hard- and soft-coal burning separate standards of quality and methods of use can be established. The retail trade can never be expected to do this; it is the duty and responsibility of the producer.

Indianola Pumps Water from Allegheny River Wells And Treats Its Sewage by Bacteria and Chlorination

Water Is Raised Against Static Head of 355 Ft.—Sewage Fed to Imhoff Tank by Pumps, Which Start Automatically as Required—Liquid Goes to Dosing Tank, Sprinkling Filter and Settling Tanks

By Alphonse F. Brosky
Pittsburgh, Pa.

UNFORTUNATELY coal-mining plants, and therefore the towns housing their employees, must be brought to the coal. They are not like factories, to which the material for manipulation is brought. In the early days the problem was simple. Ramshackle houses were thrown together to protect the people from the elements, and a group of such houses was called a town. The evolution of the present-day mining community has been gradual, possibly more progress having been made within the last ten years than in all those prior to that time. The model mining town of today, in order to be complete in its appointments, must have an adequate water supply and sewerage system.

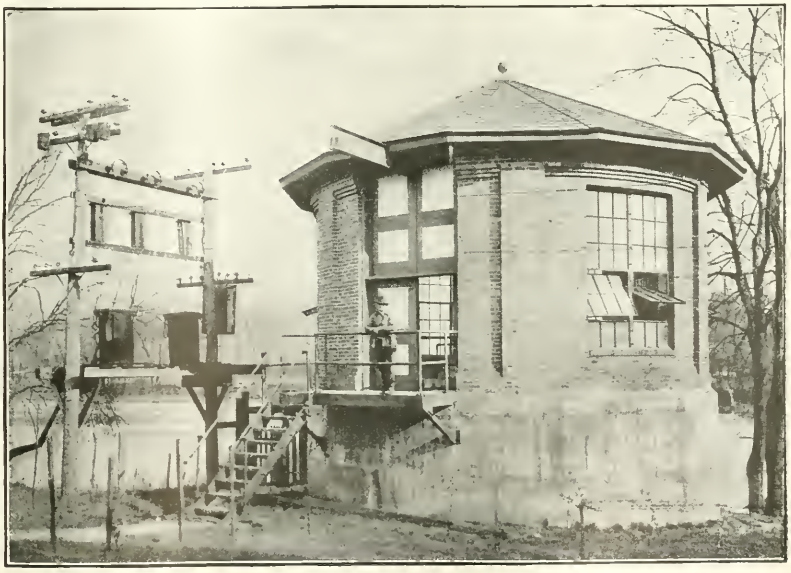
The Inland Collieries Co. found difficulty in obtaining sufficient potable water at its Indianola mine, which is located about twelve miles northeast of Pittsburgh, Pa. An exhaustive study of the geology of the region precluded all possibility of obtaining locally a supply that would be both ample and inexpensive. The decision was then made to drill wells on the bank of the Allegheny River just above Harmarville, at a point nearly three miles distant. Here a pumping station was located to force the water to Indianola.

Three wells were drilled extending 44 ft. below the level of the river when the "pool" is full. These were connected to two 350-gallon Deane motor-driven triplex pumps, one machine serving as a spare. These pumps are installed in a dry concrete pit of circular form, housed within a brick superstructure of plain, but not unpleasing, design.

From the pumping station the water passes to the town through an 8-in. cast-iron pipe. Here it is distributed to the consumers through 12,000 ft. of 4- to 6-in. cast-iron water-mains, connected to the houses by means of smaller service lines. Fire hydrants are installed throughout the town. A steel tank having a capacity of approximately 420,000 gallons is located at a sufficient height to give the necessary head to the fire system; it also serves as an overflow outlet for the distribution system and a storage for fire protection.

The entire water system as built is complete in detail and represents the highest type of construction, embodying quantity, quality and safety, in both potability and fire protection. A pump operator, who resides on the property adjoining the pumping station, takes care of the pumping during the day. It has not been found necessary as yet to pump throughout the whole twenty-four hours.

The water as taken from the well is sparkling, cool and abundant. Frequent analyses are made to safeguard its purity. Only two of the three wells are now used, the third being kept in reserve to augment the present supply, should this become necessary. The Inland company constructed the pump station, force main



Pumping Station

This Harmarville pumping station is located at such a level that the water table in the walls is always at no great distance above the stream. Water travels through the ground adjacent to the river and is usually found but little below the level of the stream itself. In this station two 350-gal. motor-driven triplex pumps, one of which is a spare, are placed in a dry concrete circular pit. The wells extend below the pool level of the stream.

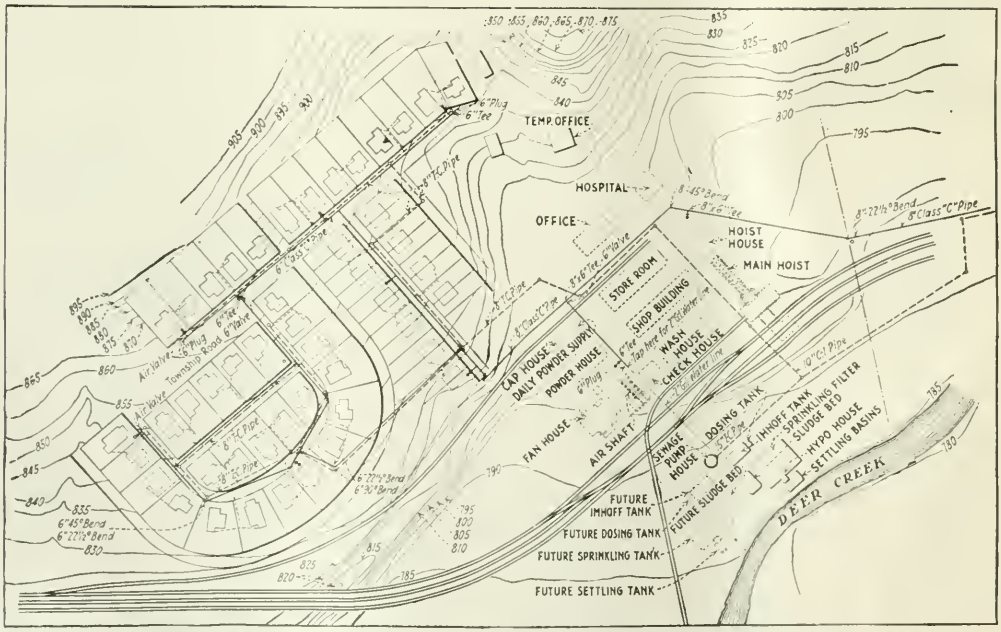
Sprinkling Filter

The effluent from the Imhoff tank after dosing is sprayed over the surface of a gravel bed and thus aerated. Underdraining removes the liquid to the final settling tank. Back of the filter can be seen the pump station and the Imhoff tank. The building to the left is a temporary boiler plant.

and reservoir tank with its own labor. By this means an appreciable saving in cost was effected.

Deer Creek, which becomes quite low during the summer months, flows through the company's property. Because of water shortage during the hot season the raw sewage from the town could not be discharged into this stream without jeopardizing the health of the community. It became necessary therefore to furnish some other means of sewage disposal, and a solution of the problem was found in the present plant, which is located on the bank of Deer Creek, the effluent being discharged into that stream.

The works were designed to handle the sewage from 1,250 people, the quantity to be treated being estimated at 100 gallons per day per person. The plant is in operation continuously and is automatic in action, but the flow of sewage usually is confined to about sixteen hours out of each day. The installation itself consists of a pump station, roughing screen, Imhoff tank, sprinkling filter, chlorination plant, sludge bed and resettling tank.



VILLAGE OF INDIANOLA SHOWING WATER AND SEWER LINES AND THE SEWAGE DISPOSAL PLANT

The pipes shown by heavy lines are those used for water-supply purposes, while those dotted are sewer lines. The illustration shows in dotted lines the extensions of the sewage disposal plant which will be made when the village of Indianola so develops as to need them.

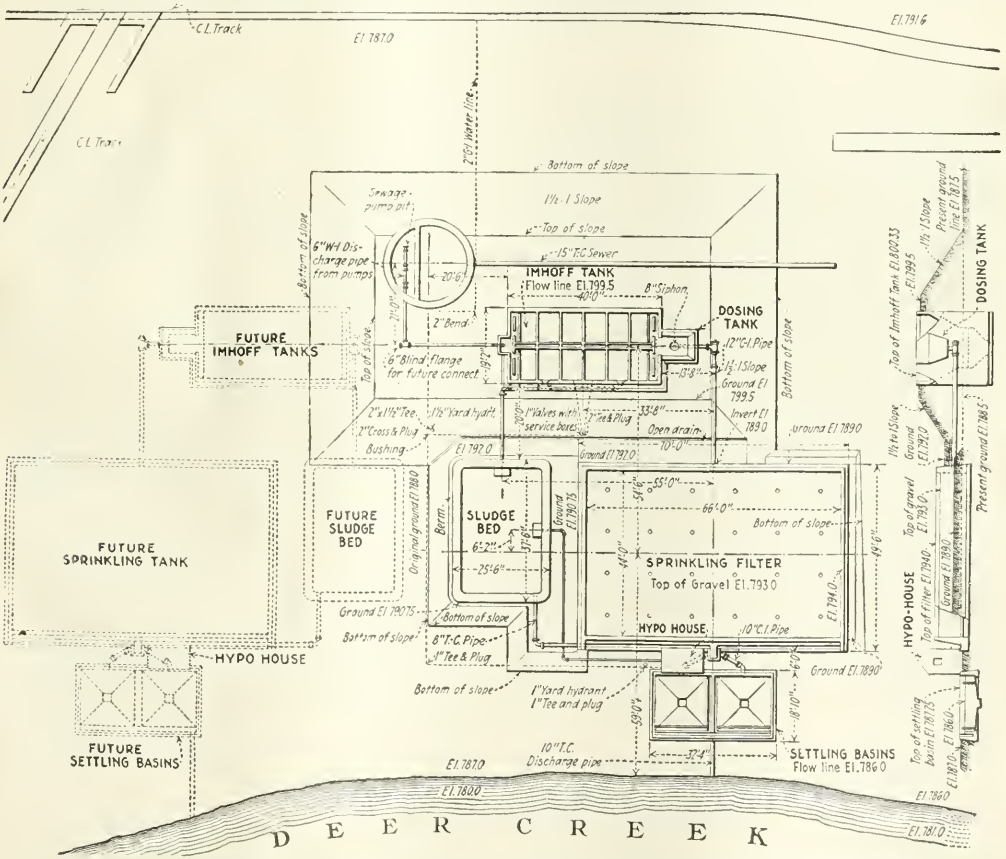
Owing to the surface conditions it became necessary to install a pump to lift the incoming sewage to the treatment plant.

Two Yeomans Bros. centrifugal pumps manufactured by the Davidson Gas Burner Co. and having a capacity of 300 gallons per minute are installed in this station and operate automatically by means of floats. When the sewage rises in the well, one float at a predetermined level throws a switch, thus putting one of the pumps in operation. Should the flow continue to gain on the first pump, a second float 15 in. higher than the first starts the second machine to work, consequently there is little danger of sewage flooding the pump station.

A third pump has been installed. This is a centrifugal unit driven by a small Novo gasoline engine. It is used as an emergency pump in case something happens to the electrically-driven units. The roughing screens are located in the well, within the pump station, and serve to catch any sticks, rags, paper or other indestructible material which might happen to accompany the sewage. These screenings are removed periodically by means of a bucket which is lifted from the well by the aid of a hoist. To avoid infection the screenings are buried.

The sewage is discharged by the pumps into an Imhoff tank—a two-story concrete settling and digesting container. The clarified liquid passes on from the upper compartment for further treatment. The solids—or sludge—reach the lower chamber through a slot in the inclined bottom of the upper one, and are retained for reduction in volume through anaerobic bacterial action which liquefies and gasifies some of the organic matter and leaves a residue of humus and other harmless solids.

The clarified sewage or Imhoff tank effluent passes to a dosing tank where it receives hypochlorite of lime for disinfection and then is siphoned automatically and at frequent intervals to the sprinkling filter. This consists of a filter bed of broken slag over which the sewage is sprinkled by spray nozzles attached to vertical risers connected with horizontal pipes laid in or beneath the bed. The spraying and filtration lead to aerobic bacterial action, or oxidation, which reduces the organic matter remaining in the Imhoff-tank effluent to a non-putrefactive condition. The sprinkler-filter effluent is collected by underdrains from which it is conveyed to the secondary or final settling tanks for the removal of any remaining settleable solids. The final tank effluent,



PLAN OF SEWAGE DISPOSAL WORKS AT INDIANOLA

The sewage comes to the plant by a 15-in. terra-cotta sewer and passes direct to the Imhoff tank. The clarified liquid then goes to the dosing tank and is siphoned automatically to the sprinkling filter which impregnates the liquid with oxygen, oxidizing its impurities by the action of aerobic bacteria. The effluent is collected by underdrains, where a dose of hypochlorite of lime is added. The fluid is now harmless and is discharged into Deer Creek. The sludge tank receives the solids from the Imhoff tank periodically, the liquid accompanying them being passed to the final settling tanks and thence to the creek.

after receiving another dose of hypochlorite, is discharged into the creek as a relatively clear colorless liquid.

The digested sludge is removed from the Imhoff tanks several times each year, being forced out automatically by the weight of the water above, the discharge being effected through a gate-controlled sludge pipe. It is deposited on a sludge bed 8 to 12 in. in depth, and there allowed to drain and dry out. It is then removed for use either as filling or as fertilizer.

The sewage plant is unusually thorough in its treatment and was designed to yield a truly non-putrescible effluent, as is desirable where sewage must be discharged into a stream having as low a flow as Deer Creek. No offensive odors can be detected at the disposal works.

This plant requires little attention, as it is entirely automatic. The company plumber spends but a short time each day removing the screenings and refilling the chlorination tanks. Lubrication and periodical adjustments, of course, are necessary in any plant. These, however, in this case require but little time. The attendant spends most of the day in performing duties elsewhere.

The sewer system consists of approximately 21,000 ft. of 4-in. to 15-in. terra-cotta pipe, together with house connections and other appurtenances necessary for housing development and mine buildings. The designers of the sewage-disposal system were the J. N. Chester Engineers of Pittsburgh, Pa. The general contractor was Thomas Starrett Co., also of Pittsburgh.

Seven Methods of Utilizing Anthracite Slush and What Success Has Been Attained with Each Method*

Manufacture of Briquets—Anthracoal—Hand-Firing to Furnaces—Stoker Firing—Firing with Admixture of Bird's-eye or Bituminous Coal—Pulverization

By John Griffen

IT IS OUR opinion that all anthracite shipped should, and eventually will be, converted into a form that can be used as a domestic fuel. The gradual exhaustion of the anthracite reserve tonnage and the increased cost of extraction will gradually force the conversion of the buckwheat sizes and the coal now lost in the slush into some form of fuel satisfactory for domestic use. The time will come when practically the only anthracite tonnage used for the generation of power will be that required for mine fuel. During the past few years considerable work has been done toward the utilization of the finer sizes of anthracite. It is the purpose of this paper simply to summarize the accomplishments to date.

Considerable progress has been made in the briquetting of anthracite; in 1920 nine plants were in operation and produced 330,125 short tons. This production was 50 per cent higher than the output of any previous year. According to reports to the government, the average price received during 1920 for all briquets, whether of anthracite or other coals, was $7.50 per short ton.

Operating costs during 1918 for one plant of 50,000 to 75,000 tons annual capacity, using the Dutch oil process were, per gross ton, as in Table I.

TABLE I. OPERATING COST OF BRIQUET PLANT PER TON

Binder	$1 25
Slush	1 00
Superintendence and labor	40
Power, light, heat and water	15
Supplies	05
Maintenance	05
Interest on investment	10
Depreciation	20
Insurance, compensation, and taxes	05
Royalty	10
Total	$3 35

This amounts to $3 per short ton.

As 4,000,000 gross tons of fine coal carrying under 15 per cent ash can be recovered from slush at an average cost of 30c. per ton and delivered to the briquetting plant and dried for a total of 75c. per ton, the above costs indicate an attractive margin of profit, provided a market for the tonnage can be obtained at prices approaching those of stove and chestnut. So far, trouble had been experienced in producing an anthracite briquet that in all respects can be substituted for anthracite. The main difficulty has been to produce a briquet that could be fired like anthracite without producing smoke, soot and odor. Conversion of the 4,000,000 tons of recoverable low-ash coal in the slush into briquets would add approximately 9 per cent to present shipment of domestic anthracite.

Anthracoal—During the last few years a new fuel has† been developed by heating in a coking oven a mixture of fine anthracite and coal-tar pitch, or similar bituminous materials. This fuel has much the appearance of coke, but greater hardness, density and strength. Its volatile matter averages from 2.5 to 3 per cent and it exhibits all the burning qualities of anthracite. Several carloads have been manufactured, shipped and burned as a domestic fuel with most satisfactory results. Tests made on a semi-commercial scale of operation show that the cost of manufacture will not exceed that of furnace coke.

As the fine anthracite used as raw material can be cleaned so as to show an ash content less than 15 per cent, anthracoal can easily be produced carrying less ash than average domestic anthracite. As the domestic user is required to make no changes from his method of burning anthracite, one of the most serious marketing obstacles will not arise and prices should be received for anthracoal at least equal to those paid for domestic sizes of anthracite.

A number of the larger anthracite companies have done much experimental work to develop the most economic method of burning anthracite smaller than barley size. These experiments have been conducted along the

*Closing half of article presented before the American Institute of Mining and Metallurgical Engineers, Sept. 12, at its meeting at Wilkes-Barre, Pa., and entitled "Slush Problem in Anthracite Preparation." The early half of the same article appeared in last week's *Coal Age* and was entitled "How to Recover Four Million Tons of Usable Coal from the Slush Made at Anthracite Breakers."

†See *Coal Age*, Aug. 25, 1921—"Anthracoal: A New Domestic and Metallurgical Fuel Made by Coking Anthracite Fines with Coal-Tar Pitch," by Donald Markle.

following lines: (1) Hand firing, (2) firing on Coxe stokers, (3) hand and stoker firing with mixtures of bituminous coal, (4) pulverizing and burning in suspension.

Hand Firing—One of the large companies in the Wyoming field has experimented extensively with hand firing of coal from slush but has abandoned the idea in favor of stoker firing because of the labor problem involved. Stationary grates of the pinhole type and about 4 per cent space were used.

Mixing the coal from slush with barley size reduces the labor problem somewhat and increases the capacity and economy of the boiler. The tests recorded in Table II were run on a mixture of one-third barley and two-thirds coal of $\frac{3}{4}$-in. mesh.

TABLE II. SIZE OF FUEL HAND-FIRED AND RESULTS

Size	Per Cent
On $\frac{3}{4}$ in. round mesh	2
On $\frac{1}{2}$ in. round mesh	17
On $\frac{1}{4}$ in. round mesh	25
On $\frac{1}{8}$ in. round mesh	33
Through $\frac{1}{8}$ in. round mesh	67

	Boiler No. 7	Boiler No. 8
Horsepower developed	310 7	313 9
Per cent. rating developed	115 0	116 3
Actual evaporation per pound dry coal fired, lb.	3 95	4 09
Equivalent evaporation per pound dry coal fired, lb.	4 20	4 35
Heating value per lb. dry coal, B.t.u.	12,133 0	12,133 0

The results are about 60 per cent of the performance usual on similar boilers burning barley size hand-fired.

Stoker Firing—A fairly large tonnage of coal finer than barley is used as fuel for Coxe stoker-fired boilers in the Wyoming field. One of the large companies in the field uses coal recovered from slush to the extent of nearly 50 per cent of its boiler-plant fuel. The character of this slush, which it terms No. 2 barley, is shown in Table III.

TABLE III. SIZES AND ANALYSIS OF COAL FIRED BY COXE STOKERS

Size	Per Cent	Analysis as Fired	Per Cent
On 10-mesh ($\frac{1}{2}$-in. round)	18 30	Moisture	10 0
On 20-mesh ($\frac{1}{4}$-in. round)	69 50	Volatile combustible	5 5
On 30-mesh	85 20	Fixed carbon	67 2
On 60-mesh	94 95	Ash	17 3
On 100-mesh	98 00		100 0
Through 100-mesh	2 00		
		Heating value	11,010 B.t.u.

During the year 1920 394,000 tons of No. 2 barley were used by this company for mine fuel. Two of this company's plants use No. 2 barley exclusively and their average performance for the year 1920 was as in Table IV.

TABLE IV. EVAPORATION SECURED FROM NO. 2 BARLEY

	Plant A, Pounds	Plant B, Pounds
Actual evaporation per pound coal, as fired	4 74	4 32
Equivalent evaporation per pound coal, as fired	5 36	....
Equivalent evaporation per pound dry coal	5 95	....

These boiler plants are operated with ease at 150 per cent rating for the day period of eight hours. This company used but 8.35 per cent of its total production in 1920 for mine fuel. Coal recovered from slush, No. 2 barley, amounted to 4.10 per cent, leaving a net consumption of commercial sizes for mine fuel of only 4.25 per cent of total production.

Recently tests were made on Coxe stoker-fired two-drum Stirling boilers using fuel recovered from the slush of a breaker situated in the Wyoming field. The fuel was recovered from the slush by Dorr equipment and ran in size from $\frac{3}{4}$-in. round to 100 mesh, or considerably finer in size than No. 2 barley. The results of tests were as in Table V.

Tests with coal of the same size that had been cleaned on a Diester-Overstrom concentrating table to 17.4 per cent ash failed, as the moisture content was too high for proper combustion. The high moisture can be eliminated when the concentrated coal should show better performance than the high-ash coal. The tests on Dorr coal were only preliminary. Tests run during 1918 on a 463-hp. four-drum Stirling boiler equipped with Coxe stoker using bird's-eye and a mixture of half bird's-eye and half Dorr coal gave the results shown in Table VI.

TABLE V. RESULTS OF TESTS WITH SLUSH

Builders' rating developed, per cent	152 6
Equivalent evaporation per pound of dry coal, lb.	4 74
Moisture in fuel as fired, per cent	12 2
Ash in dry fuel, average, per cent	28 80
Heating value of dry fuel, average, B.t.u.	10,224
Over-all efficiency, per cent	44 8

TABLE VI. RESULTS OF TESTS WITH BIRD'S-EYE AND SLUSH

	Half Bird's-Eye and Dorr Coal	Bird's-Eye Coal
Builders' rating developed, per cent	139 4	180 1
Equivalent evaporation per pound dry coal, lb.	6 19	7 61
Over-all efficiency, per cent	52 16	61 83
Efficiency of boiler and furnace, per cent	62 74	67 37
Efficiency of grate, per cent	83 14	91 87
Combustible in ashes and refuse, per cent	17 51	21 47
Coal size test, on $\frac{3}{4}$ in. round screen, per cent	2 8	6 6
On $\frac{1}{4}$ in. round screen, per cent	51 1	92 8
Through $\frac{1}{8}$ in. round screen, per cent	48 9	7 2
Moisture in coal as fired, per cent	9 60	9 12
Ash in dry coal, per cent	21 12	18 26

The quality of the Dorr coal used in the mixture was as in Table VII.

TABLE VII. CHARACTER OF SLUSH

	Per Cent
On $\frac{3}{4}$ in. round mesh	2 6
On $\frac{1}{4}$ in. round mesh	9 4
On 60-mesh	69 2
On 200-mesh	94 8
Through 200-mesh	5 2
Ash in dry coal	25 0

Slush Coal Mixed with Bituminous Coal—During the war period large tonnages of anthracite culm and slush were shipped to industrial plants for mixing with soft coal. As the anthracite usually contained considerable refuse and mud and the mixing often was not well done, the best results were not obtained. However, a number of plants operated fairly satisfactorily with this mixture. The results of tests on hand-fired four-drum Stirling boilers of 400-hp. rating using various mixtures of slush and soft coal were as in Table VIII.

TABLE VIII. PERCENTAGES OF SOFT COAL, SIZE OF SLUSH AND RESULTS

Proportion of soft coal, per cent	10 7	18 9	26 2
Size of slush, on $\frac{3}{4}$ in. round mesh, per cent	4 8	9 0	7 3
On $\frac{1}{4}$ in. round mesh, per cent	41 8	47 4	48 4
Through $\frac{1}{8}$ in. round mesh, per cent	58 2	52 6	51 6
Builders' rating developed, per cent	117 8	118 6	127 5
Equivalent evaporation per pound dry coal, lb.	6 95	7 57	7 95
Ash in dry coal, per cent	23 45	16 99	18 65
Fuel cost per 1,000 lb. equivalent steam, cents	13 94	13 51	13 48

Pulverized Slush—Burning of slush in a pulverized state has engaged the attention of a number of investigators and at least two of the important anthracite companies have made extended tests on a commercial scale. The most successful work has been done by the Susquehanna Collieries Co., which has been operating two plants—one at Lykens and the other near Minersville—for some time. The installation at Lykens has been quite successful, as shown by the results reported by J. R. Wyllie, Jr.,* Table IX

TABLE IX. ANALYSIS OF PULVERIZED SLUSH AND RESULTS

	Average	Maximum
Moisture, per cent	0 53	0 78
Volatile matter, per cent	8 61	9 34
Fixed carbon, per cent	78 70	79 85
Ash, per cent	12 16	13 47
Heating value per pound, dry, B.t.u.	13,270 0	13,509.0
Pulverized through 100-mesh, per cent	95 27	97.00
Pulverized through 200-mesh, per cent	82 78	86.73
Builders' rating developed, per cent	143 8	228.6
Equivalent evaporation per pound of dry fuel, lb.	9 12	10 50
Over-all efficiency, per cent	66.7	77 7

Mr. Wyllie points out that improvements made while the tests were being run added greatly to the efficiency

*Journal Engineers Club of Philadelphia (Feb., 1921)

and capacity obtained, so that the maximum results shown are more nearly representative of the results they are now regularly getting.

Lykens slush is peculiarly adapted to burning pulverized because of its high volatile content, low ash and friable nature. Most anthracite slush, however, carries one-half the volatile matter, is much harder, and, unless purified by concentration, carries over double the ash content. The slush at the Susquehanna's Lytle colliery, near Minersville, is a good example of the average anthracite slush, and here difficulty was at first experienced. After some experimentation all combustion and boiler-operating difficulties were overcome, but the pulverizing problem proved less easy of solution.

Recent operation with a Hardinge mill indicates that the pulverization of anthracite slush has been put on a practical and economical basis. Good capacity has been obtained and power, supplies and maintenance costs are well within the margin allowable. As an additional improvement in the preparation of the slush for pulverized use Deister-Overstrom concentrating tables have been installed at Lytle colliery to remove the refuse and so reduce pulverizing costs.

It is estimated that about 12 per cent of total anthracite production, or approximately 9,500,000 tons, is used yearly for mine fuel. It is probable that the average efficiency of the boilers in use is 50 per cent. With the use of pulverized coal this efficiency can be raised to 70 per cent, and thus reduce the tonnage of steam coal required to 6,800,000 tons annually. Nearly two-thirds of this tonnage, or 4,000,000 tons, can be recovered from slush, so that a total annual saving of 6,700,000 tons is possible. The coal saved would be mostly barley and rice sizes and would have an average value of about $1.75 per ton, making the money saving more than $10,000,000 annually. With the return of normal industrial conditions and because of the better demand for rice and barley sizes that have been concentrated to a uniformly low-ash content, little difficulty should be experienced in selling this extra tonnage of steam sizes.

Conclusions—(1) Anthracite breaker slush aggregates annually about 9,500,000 tons of total solids of which 4,000,000 tons are recoverable with an ash content of 15 per cent. (2) Cost of recovering the usable coal in slush will average 15c. to 20c. per ton of the dry product. (3) If the recoverable coal in slush is converted into domestic fuel it will add 9 per cent to present domestic shipments of anthracite. (4) If the recoverable coal in slush is used pulverized in mine boiler plants it will produce 59 per cent of the power required to operate the mines and make available for other purposes about 5,600,000 tons annually of barley and rice coal now so used. (5) Complete prevention of pollution can be accomplished at a cost, except under usual conditions, of from 1c. to 2c. per ton of breaker shipments, provided no value is placed on the recovered coal. (6) If the recoverable coal in slush is valued at not more than 35c. per ton, such value will pay the cost of recovery and also the cost of preventing stream pollution by the remaining slush solids that at present have no commercial value.

Heavy Cover and Need for Quick Tonnage Determine Underground Methods at Lynch Mine*

Half the Rooms Will Be Driven Advancing, Half Retreating — Cover in Places Already Over 1,500 Ft.— Mine Car, 22 In. High, Clear of Rail and Yet Holds Three Tons

By Howard N. Eavenson†
Pittsburgh, Pa.

TO DEVELOP the mines quickly and to permit of the production of coal while the permanent plant was under construction, headings (Fig. 1) were started from the outcrop and temporary tramroads were built along the hillsides connecting them, allowing the shipment of coal from three temporary dumping platforms. As the capacity grew a large wooden tipple was built across the hollow just below the site where the permanent tipple now stands, and gradually the shipment of coal, with the exception of that from two of the headings, was concentrated at that point. Before the permanent tipple was completed, shipments over this temporary structure exceeded 100,000 tons per month.

The permanent mine mouths were the last openings that were started, and in each case a slide was encountered, which necessitated some heavy steam-shovel excavation Coal from both drifts, however, was shipped over the large temporary tipple, and before the permanent structure was completed the haulage roads had been made ready for operation, so that coal from all parts of the mine could reach the two main mine mouths.

The mines are laid out on a compromise between the advancing robbing system and operation on the retreat. Principal headings are driven so far apart that between them there is room for four rooms end to end. These headings have an empty and a loaded track and two airways and they will be driven up to the boundary without turning a room. They will be flanked by barrier pillars so wide that a full-length room may be driven in the distance across them, but the heading pillars will be left unworked till the boundary is reached, when rooms will be driven into them and the pillars brought back on the retreat. In the drawing these pillars are noted as the barrier section.

Between two principal headings are, of course, two barrier sections, leaving two other sections each as wide as a room is long. These are used to maintain tonnage till the barrier is reached. Two room headings are driven and each removes what is marked as a room

*Second part of article on "Lynch Plant of the United States Coal & Coke Co.," read before the American Institute of Mining and Metallurgical Engineers at its Wilkes-Barre meeting, Sept 12-15. The first part of the article appeared last week under the title "An 8,000-Ton Tipple with a 5,000-Ton Storage Bin for Coking Coal Erected at Lynch, Ky."

†Consulting engineer.

section. The coal from these sections is won entirely on the advance.

Some of the principal headings will be three miles long. By the system described a uniform output can be maintained from any section till it is about to be abandoned. Each section will give at least 1,000 tons per day, and five of them are intended to be under development in each mine at the same time, to maintain the desired output and to be ready for a reasonable increase.

Headings are driven about 12 ft. wide, with ample clearance on each side of the car for safety, and on 60 ft. centers. Airways usually are 18 to 20 ft. wide. Rooms usually are 36 ft. from rib to rib, and their distance, center to center, varies from 80 ft. under light cover to 120 ft. under the main mountain. It will be noted in Fig. 1 that mining is now being done under 1,500 ft. of cover.

Shortwall machines cut the coal on the bottom. Gathering is done partly by ponies and, where the coal is too low for this, by storage-battery locomotives. In the early workings many local dips were encountered and a large number of electric room hoists are used to pull the cars from such places.

Within the mines four inside substations, each of 200-kw. capacity, have been installed. On account of the heavy cover and the expense of boreholes from the surface to the mines and of the difficult and expensive pole-line construction it was found cheaper to transmit the current in the mine by cables. The size of wires depends, of course, on the load and distance, and they are installed as three-conductor cables with heavy rubber and braid insulation, designed for a working pressure of 13,000 volts.

These cables are placed in 3- or 4-in. fiber conduits which are laid along the side of the heading and are surrounded by concrete with a minimum thickness of 3 in. The telephone lines are laid in a smaller conduit placed near the power line and embedded in the same block of concrete. The substation rooms are of fireproof construction—of reinforced concrete and steel—and are placed at the side of a main heading and with a connection to an air course, so that a circulation of air can be maintained through them. They are all equipped with automatic reclosing circuit breakers. The direct current is transmitted from the rotary converters by 500,000-circ.mil. bare feeders and 0000 trolley wires, the feed cables being of such length that the voltage will not drop more than 50 volts when the locomotives operating in that section are taking a full load.

All haulage headings have at least 5 ft. clearance from the top of the rail. Main headings are laid with 60-lb. rails, room headings with 40-lb.; 20-lb. rails are used in the rooms. On all haulage tracks both rails are electrically welded at the joint to make a good conducting path for the return current. No separate manways are provided, as the haulage roads have at least 3 ft. clearance between the side of the heading and the side of the cars, have ample headroom, and are lighted by 40-watt lamps at intervals not exceeding 125 ft.

The track gage in all the company's mines in the Pocahontas field is 48 in., and as this has given satisfaction there was no reason to change it in the Lynch mine, especially as some of the mine cars from the Gary mines were to be used there until permanent equipment was installed. Much thought was given to the mine car to be used, as it was desired that this should have a capacity of at least three net tons and should be as low as possible. Experience has shown that a solid-end car is much more serviceable and has much less cost of upkeep than an end-gate car, for which reason rotary dumps were installed. Some years previous, in some mines in which several of the officials had been interested, a steel car having the bottom of the car under the axles had been fairly satisfactory. The weaknesses in this design were studied and the style of the car changed to adapt it for roller bearings, which were placed in self-aligning cast-steel boxes. The car shown in Fig. 2 is the result. It stands about 22 in. above the top of the rail and the motion required to throw the coal into the car is sufficient to raise it over the side, so that no actual lifting of the coal beyond this is necessary. The wheel base was made 48 in. in order to prevent the long overhang usual in mine cars and to insure a steadier running car, and the change has afforded that result.

As is usual with steel cars when first put on the

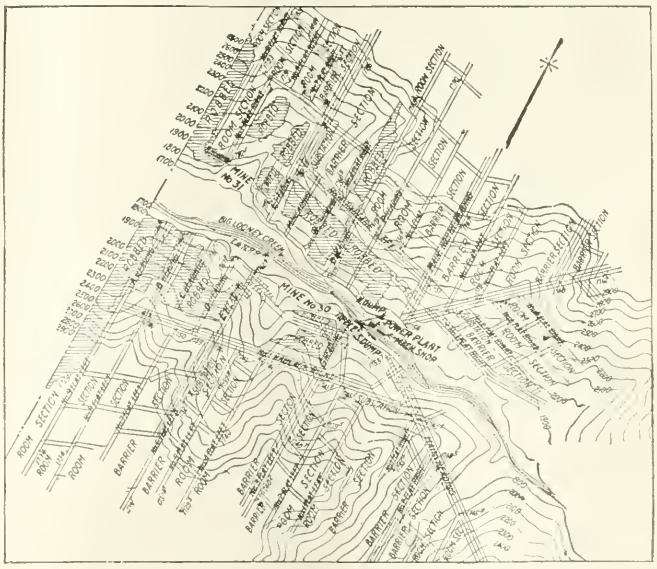


FIG. 1. LYNCH MINE MAP SHOWING MINING METHODS AND SURFACE CONTOURS

In order to make speedy progress a great number of headings were driven into the hill and connected in conformity with the general plan of development. The mines are laid out with principal entries more than four room-lengths apart. Two entries are driven in between and rooms driven on both, the pillars being robbed as the rooms are completed. These interior entries are so disposed that the principal entries have an undeveloped pillar on either side as wide as a room is long. On the boundary being reached these pillars can be worked by driving rooms in them, starting at the far end and drawing the pillars on the retreat.

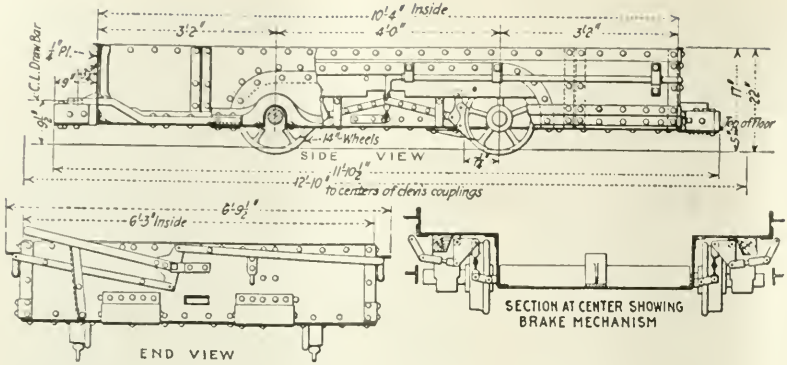


FIG. 2.

Steel Mine Car

A car without an end gate, with every cubic inch of space utilized, 22 in. high yet holding three tons.

track, they were quite stiff and gave much trouble, as they were apt to jump the track, but after the first week's run this trouble disappeared and the cars have been very satisfactory. The first axles were made of nickel steel with a hardness of 250 Brinnell, but the later ones were made of open-hearth steel forgings, heat-treated to give the same hardness. The wheels are pressed on the axle; cast-iron rolled-steel and cast-steel wheels have been used, depending on the material available at various times during the war, and both have given satisfaction.

The boxes are greased every six months, a slow semi-fluid grease being used for this purpose. Greasing is best accomplished by connecting a compressed-air hose to the end of the grease gun. When the end of the gun has been inserted in the bearing, the air pressure is turned on, the old grease is forced out and the new put in place instantly. The bodies for the first 500 cars were purchased, the trucks being assembled at the works, but the remaining 1,200 cars were built complete at the shop at Lynch.

On account of the isolated location of the plant, ample repair facilities for all types of machinery used were absolutely imperative. The repair shop was the first building designed and built. It is of steel and glass construction, with structolite roof slabs covered by asbestos sheet roofing. It has a 5-ton traveling crane, four forges, a large bulldozer, steam hammer, cutoff saw, punch and shear, wheel press, boring mill, drill press, two lathes and the necessary grinding machines, air hammers, tools, etc. Almost any repair can be made to any of the machinery used and armatures for any of the motors can be rewound. Brass castings and any small brass parts for mining machines and locomotives are also made.

The two fans are duplicates, each being primarily blowing but set to be reversible, and having a capacity of 300,000 cu.ft. per minute against a mine resistance of 3-in. water gage. They are set at right angles to the mine mouth. The ducts leading to the mines are parts of headings which open to the surface and these are closed at their mouths by explosion doors.

The fans are driven by slip-ring 440-volt alternating-current motors through spur-gear speed reducers. These reducers are large enough to develop the full capacity of the fan, but the motors are smaller and of lower speed than will ultimately be required. When the mine requires larger motors the present ones will be used as spares for the tipple. As the ratio of the speed reducer is fixed the fan will be driven faster. The fan settings and buildings are, of course, entirely fireproof, of concrete and steel.

No Evidence to Connect Death with Mines

FINDING the connection between the death of Onofrey and his employment in the mines too tenuous for a grant of compensation, the State Compensation Board of Pennsylvania has disallowed compensation to Eva Onofrey, of Glen Lyon, Pa., in her case against the Susquehanna Collieries Co., of Wilkes-Barre, Pa.

Commissioner Benjamin Jarrett in writing the opinion stated that the board had awarded compensation in this case, but that the Court of Common Pleas of Luzerne County had returned the record to the board for further hearing and determination, declaring that the board had erred in awarding compensation upon hearsay evidence. A hearing was held and the testimony established but one additional fact and that was that the wound on the back of the decedent's head was inflicted before death and not after death, as had been testified to at the original hearing.

Following the law as laid down by President Judge Fuller in his opinion in this case, the commissioner holds that this fact does not strengthen the position of the claimant for the reason that it is not convincing that the wound was inflicted while the decedent was in the course of his employment.

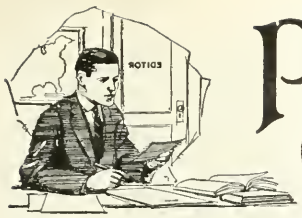
The board in its opinion states that if no other logical conclusion could be drawn than that the wound was suffered as a result of an accident while in the course of Onofrey's employment, the board would then be in a position to allow compensation, but here, it is pointed out, the decedent could have been attacked with the meningitis of which he died, at his work, yet sustained the fall which caused the wound while off the premises of the defendant.

The claimant in the case is the widow for herself and her three children, and the deceased employee was engaged as a pump runner by the defendant company in Colliery No. 6 of the company at Nanticoke.

WITH CONFERENCES IN PROGRESS between the Secretary of War and the engineers in the employ of Henry Ford in regard to the acquisition of the Muscle Shoals water power and the government's nitrate plants, it is believed that a definite pronouncement of the administration's policy in this particular may be expected in the near future. Since the disposal of Muscle Shoals would involve legislation no final solution of the matter can be expected for some time to come.

IRA C. COCHRAN, THE NEW TRAFFIC MANAGER of the American Wholesale Coal Association, assumed his duties Sept. 15. His headquarters will be at the association's offices in the Woodward Building, Washington, D. C.

BUSINESS WILL PUT AWAY encouraging profits when it puts away discouraging prophets—*Asheville Citizen.*



Problems of Operating Men

Edited by James T. Beard

Ventilating Engineer vs. Mine Foreman

Efficient Ventilation Chief Among Three Essentials in Successful Mine Operation—Mine Foreman Should Have Full Charge and Direction of All Matters Pertaining to the Ventilation of a Mine

AFTER reading with care the interesting letters of Henry Bock, *Coal Age*, Apr. 28, p. 755, and that of a Pennsylvania mine foreman, in the issue July 7, p. 18, both of whom urge efficient ventilation of mines, I am forced to take exception to their suggestion of the need of a ventilating engineer.

We all agree that the ventilation of a mine is a most important factor in its successful operation. In my opinion, there are three essential factors in this regard, namely, ventilation, drainage and haulage; but ventilation I regard as the most important of the three.

My experience as a mine foreman convinces me that the foreman should have the full control of everything pertaining to the ventilation of the mine. I can see no need of a ventilating engineer; but consider that he would be an obstruction rather than a help, in making the mine healthful and safe.

The mine foreman who is not capable of arranging the ventilating system and directing the air current throughout the mine, in a manner to give the best results, is not a capable man and is practically unfit for the position he holds.

Let me assume that a foreman is in charge of a Class-A mine, here in Tennessee. Such a mine is generating marsh gas, which forms firedamp when it has mixed with the air current. We will say that the company has employed a ventilating engineer charged with the duty of arranging the ventilating system and distributing the air at the working faces throughout the mine.

Where Does Responsibility Rest When an Accident Occurs

Suppose, now, an explosion occurs in that mine and several men are killed and others are burned. Who is the responsible party and the one to be blamed for the occurrence? Is it the mine foreman, who was in the mine at the time and in charge of the work? Or, is the ventilating engineer, who was at work on plans in his office, the one to be held responsible for the disaster?

Few will deny that there is every chance for argument, in such an event. The ventilating engineer will contend that the mine foreman, perhaps, failed to follow his instructions, which would be hard to prove. On the other hand, the foreman will dispute the claims of the engineer and say that proper provision was not made for conditions over which he had no personal control.

Had the mine foreman, in the case just mentioned, not been handicapped by the authority of the ventilating engineer, he could probably have taken measures to improve the ventilation to meet the conditions that arose suddenly in one section of the mine. Although the foreman took every precaution and, perhaps, notified the engineer of approaching danger, the remedy came too late.

It must be admitted that the man who is constantly on the ground is in a better position to combat danger and provide against possible disaster, than the man who makes only occasional visits to the mine. If the foreman must ask the permission of an engineer, before he can make any necessary changes to improve a condition that has developed in a certain section, the delay caused may be fatal. At the time, he may not be able to locate the engineer or the desired permission may not be granted at once.

Another Handicap to a Practical Foreman

In the letter last named, page 18, reference was made to the handicap of a foreman who is obliged to work under the instructions of a superintendent who has no practical experience underground. This reminds me of such an instance that occurred not long ago in a mine in this locality.

In that mine the foreman was a practical man who understood mining in all its branches, while the superintendent had no mining experience. The day for measuring up yardage in the mine came and the foreman went to the superintendent's office and asked for a tape for that purpose. This was refused and he was told to get a yardstick from the store. The foreman went out remarking that he would get a grapevine from the woods and make his measurements with that.

No practical miner will deny that a man having charge of underground work must understand what it means to clean up airways, rebuild stoppings, repair doors and overcasts and timber airways and travelingways, besides many other things requiring attention in the mine.

Speaking of superintendents and mine foremen, it is my opinion that any certified foreman who accepts a position under an inexperienced superintendent makes his first great mistake. My conviction is that all mine superintendents should be experienced mining men and hold first-class mine-foreman certificates. Their knowledge of underground work should be even greater than that of the foreman with whom they must co-operate, in making the mine healthful and safe.

Crawford, Tenn. OSCAR H. JONES.

Miner in Twenty-Seven Days

Skillful mining of coal requires experience—Must work as laborer before one can mine coal—Strength, muscle and skill required—Good miners physically fit.

SOME time ago I remember reading [*Coal Age*, vol. 18, p. 856] a letter in which the writer stated that on visiting a certain mine he entered a miner's place that was better kept and better timbered than he had seen for a long time and yet the man had only been a miner for twenty-seven days.

It is no wonder the writer was surprsied, as he might well be on learning this fact. In Canada, a man is not permitted to have charge of a place or work as a miner, until he has been employed as a mine laborer underground for at least a year.

No man coming from the farm or the shop can go into a mine and dig coal safely or well. Before he can mine or shoot coal he must learn how to handle a pick, set a boring machine, drill and charge a hole, set timbers and do other work required of the miner.

On this side of the Atlantic, it would seem that a man can become a premier, president or other high official in little or no time. But, let me say, the foreman who would give a man charge of a place and allow him to dig coal when he has had but twenty-seven days' experience in mines is not a fit foreman. The honorable calling of a miner is brought pretty low when a miner of twenty-seven days' experience is said to have the best kept place in the mine.

It is a mistake to regard the work of mining coal as a mean occupation when, in truth, it requires intelligence and skill. Seldom do we hear a miner praised for his work. As a class, miners are more generous in their opinions of their bosses than the bosses are of them. It is not often that a good miner speaks ill of his boss.

In my estimation, miners are as good as their bosses and the bosses, likewise,

as good as the miners who work under them. It is true that some miners have a lot to learn, while it is also true that some bosses do not know as much as they think they know. We used to say of a boss whom I worked under some time ago, "Archie was a poor miner, but he makes no a bad boss."

On another occasion some time since, I was continually plagued by a boss who blamed me, saying my road was not straight. The fact of the matter was, none of the roads in that mine were straight, as no sights were given and each miner was obliged to trail the next adjoining place to keep the right pillar.

If a man starts work in a mine where the coal is cut by machine and shotfirers are employed to blast it down, he has little difficulty in making a good record at loading, even though he has had no previous experience in mining coal. It does not follow, however, that the man is a miner; he may never have been in a mine before in his life.

At the present time, many men are entering our mines direct from the farm. If they chance to get a good place where the roof is good and the coal mines easily everything may go well for a time. But, put such a green hand in a place where skill is required and is more important even than brute strength, and his limited knowledge of mining is at once apparent.

As a class, miners are the most physically-fit men in any industry. Being a miner from my youth, I would say it is not much of a trade, but the work requires skill and experience. After mining coal in Pennsylvania, Missouri, Iowa, Kansas and other places, my conviction is that the man who has not learned the trade does not know the right way to dull a pick. That knowledge comes only from experience.

River Herbert West, "MAC."
N. S. Canada.

College Men as Mine Superintendents

College men must have practical experience to make capable mine superintendents—Should pass examination and hold certificate, before they are fitted to judge the qualifications of mine foremen.

ATTENTION is drawn by one writer, in a discussion regarding the certification of mine officials, *Coal Age*, Aug. 4, p. 181, to the capability of college men to take charge of mines. Reference is made to college men as having spent years in acquiring a knowledge of coal mining that renders them capable of handling the larger problems that confront mine superintendents.

In this discussion, writers have referred to that change in the Pennsylvania law that permits the superintendent or operator of a mine to employ uncertified mine foremen and assistant foremen. In my opinion, if that law is to remain, another law should be passed requiring the examination and certification of the men who are thus authorized to pass on the qualifications of those they employ.

Before an operator or a superintendent can properly judge of the fitness of a man whom it is desired to place in charge of a mine as foreman, he must himself possess the practical knowledge that would enable him to plan and lay out a mine under the many varied conditions of hard top and soft bottom, steep pitches, slips and faults and the presence of gas and water, which often make the mining of coal a difficult and dangerous problem.

GRADUATE MINING ENGINEER AS MINE SUPERINTENDENT

It is not my intention to belittle the college man, or to underestimate the value of a theoretical knowledge of coal mining. But, the fact that one is a college man does not signify that he is qualified for the position of mine superintendent. He may have a thorough knowledge of the principles of mining and yet know nothing of the practical side. That he must learn by actual experience underground.

To illustrate the meaning of my remarks, let me cite an instance of my own observation that occurred some ten years ago. At that time, a gentleman visiting the mine of which I had charge narrated to me his own experience on assuming a position as mine superintendent after leaving college.

He stated frankly that he was a graduate mining engineer, having spent seven years of his life and more than $7,000 in acquiring his education. At the time he took charge as superintendent of the mine, he had been employed as mine engineer, for six months previous to being promoted to the higher position.

FIRST ACT AS SUPERINTENDENT

He stated that his first act as superintendent was to issue orders to the mine foreman and master mechanic that they were to do nothing except on orders from himself, adding that he wished to assume complete control and be responsible for all that was done in and around the mine. From that time, the orders of the new superintendent were carried out to the letter and nothing was done except by his direction.

In telling his story, the gentleman stated that the mine had always had a splendid output, but this decreased, month by month, after he had taken charge. At the end of the third month, the falling off in tonnage had become so great that he became alarmed and, calling to his office the mine foreman and master mechanic, he told them that, hereafter, they were to go ahead and run the mine as they had done before he took charge.

It was not long after this that he, realizing his own unfitness for the position he held, resigned his office and accepted another position in which he traveled about, visiting coal mines in many districts. He said, shortly after he left the company, operations at the mine became normal and the place resumed its former tonnage record.

The man blamed nobody but himself. He stated his present work was bringing him into close contact with practical men and he was learning much that he never knew before. Since then I have lost track of the man; but I believe he was of that type that would eventually make good.

In closing, let me say again that a knowledge of the theory and principles of mining is important; but practical experience, gained through good old hard knocks in the mine, is necessary for the making of a mine superintendent. The man chosen for that position should be required to prove his knowledge and fitness by going before an examining board. There is no better man than the college man, after he has gained this practical knowledge, and he should not think himself too big to submit to examination and certification by a board.

GRIFF GRIFFITH.
Stoyestown, Pa.

Self-Examinaton in Foremen

Mine foremen not behind bosses in other industries—Qualities that make men leaders—Handicap of early training—Questions for self-examination.

DISCUSSION in *Coal Age* of the personality of the ideal mine foreman has shown that everything depends on the intelligence and untiring efforts of the man in charge. Although I believe there are as many good mine bosses as there are bosses in other industries, it would seem hard at times to pick ten, from a hundred of these men, who are thoroughly competent in their line.

This remark should make mine foremen feel that they are not the only ones holding official positions who lack the qualities and training that fit them for obtaining the highest results. Neither does it excuse any mine foreman from making every possible effort to increase his capability and efficiency.

One can readily understand why some writers are inclined to say that too much is expected of the man in charge. To my mind, however, there is hardly any limit to what can be accomplished by a mine foreman, or any other boss, who is enthusiastic concerning his work. It is remarkable to observe the quantity and quality of work that can be produced by the proper training of one's self for increased efficiency.

QUALITIES THAT MAKE LEADERS

Numerous qualities mark the man who is capable of leadership; but probably the greatest of these qualities are the ability to not worry over what cannot be helped and the ease with which one receives criticisms of his doings. Another important quality is a calm, deliberate judgment that enables one to reach right conclusions.

A man's early training often proves a handicap in later life. At home, he was made to believe there never was or ever could be anything quite so perfect as "mother's boy." When one has once put from him that false idea and stepped out into the great unknown fu-

ture, he has taken the first step toward knowing himself and is ready for doing something worth while.

By way of illustration, let me refer to a certain really big man in the coal business, who employs 300 foremen and assistants. It was only the other day I heard him remark that, from a hundred foremen, he could never pick more than ten men whom he could not replace without difficulty; and not more than five of the ten would be capable of making mine superintendents.

Something to Think About

While this is but one man's opinion, it gives us something to think about. We realize that until we can make the man who is to judge our capabilities believe that we have qualities not to be found in other men, we had better get busy and do something that will develop in us the qualities that are sought after and desired in every mine official and which make for the building up of a strong organization.

Does any foreman doubt for a moment that a little self-inspection of his own stock-in-trade; in other words an honest self-examination of one's own qualities will be of greater assistance in enabling him to classify himself properly in the list of mine foremen who are eligible for promotion.

Let every foreman ask himself such questions as the following and see if he can give an affirmative answer to each:

Self-Examination

Can I get a satisfactory air measurement at every last breakthrough in the mine? Are the working places properly posted and inspected regularly, while the men are at work? Is my daily examination of the workings such as to discover unsafe practices of miners? Am I doing everything possible to bring the men to a better understanding of their duties and responsibilities in the loading of clean coal and upkeep of their places?

Do I assume my own share of the blame for accidents or mistakes made in the mine, or has it been my habit to pass the buck over onto other shoulders? Do I make promises that I know cannot be kept? Is my treatment of the men and my assistants such as to secure their respect and confidence? What is my record as a tonnage producer, as compared with providing better working conditions?

What is the condition of the mine, in respect to the upkeep of haulage roads, travelingways and airways? Has this work been put off for the purpose of reducing the daily cost-sheet, without due regard to future developments and the safety of employees? Does the safety of each mine worker appeal to me as strongly as that of my own son?

Finally, do I look forward with expectancy to the coming of my weekly mining journal? Do I desire to educate and keep myself up-to-date in mining methods and equipment? Am I doing all in that line I can for the education of the men? The foreman that can answer such questions as these with an honest "Yes" is ready for promotion.

Pikeville, Ky. George Edwards.

Inquiries Of General Interest

Measuring Gas at Face of Heading

Common Practice of Estimating Amount of Gas in Feet or Inches Below the Roof Gives Wrong Idea of Actual Conditions.—Volume of Gas Accumulated in a Place Not to Be Measured in That Way

WE HAVE been having an argument in regard to the correct answer to be given to a question asking for the volume of gas found in a heading 12 ft. wide and rising on a grade of 6 per cent. A test with the lamp showed gas at a depth of 3 ft. below the roof, a few feet from the face. Not being able to agree in this matter, we have decided to submit the question to *Coal Age* and ask for its solution.

Zeigler, Ill. Fireboss.

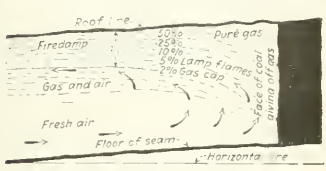
The common practice among firebosses of estimating the volume of gas present at the face of a heading or room, by measuring the depth below the roof at which the first appearance of a cap is observed is very misleading and far from giving any reliable result as to the actual volume of gas in the place.

First, the approach of a fireboss to the face of a heading or other working place, however cautiously made, cannot fail to disturb the gas accumulated there and streaming out along the roof in a thin layer. A test may then show a gas cap anywhere from a few inches to two or three feet below the roof-line, according to the distance from the face where the test is made, the quantity of gas generated and the extent to which it has been disturbed.

In order to make the situation more clear, we have prepared the accompanying figure, which shows the face of a heading rising on a slight grade and in which gas is being given off from the exposed surface of the coal. As indicated by the light dotted lines, the gas issuing from the pores of the coal rises and flows along the roof in more or less definite stream lines, while fresh air indicated by the arrows flows in along the floor.

As diffusion takes place and the air mixes with the gas, there are formed layers of gas-charged air, the percentage of gas increasing as it approaches the roof, while a body of more or less pure gas may exist in the far upper corner close to the roof and the face of coal.

It is evident that the custom of estimating the volume of gas present by the distance a flame cap is observed below the roof must give very uncertain



GAS AT FACE OF HEADING

results, for the reasons previously stated and because different firebosses do not have the same ability to detect a flame cap in their lamp. Moreover, the observed depth of the gas below the roof will decrease rapidly as one recedes from the face, owing chiefly to its diffusion into the air current.

The question asked in this inquiry is one that is frequently given in a firebosses, examination. It is of little practical value, its answer giving only a suggestion of the relative amount of gas in the place. For instance, if a fireboss reports 3 ft. of gas, as in this case, it is known there is a larger volume present than if he reported but a few inches.

Regarding the correct answer to be given to the question asked, the probable intention is to calculate the volume of a wedge, 12 ft. wide and 3 ft. thick at its base, and having a length estimated from the six per cent grade of the seam, assuming for that purpose that the lower surface of the gas, or the gas line is level and the gas tails out in the shape of a wedge.

On this basis, the volume of gas present, calculated as being the volume of a wedge whose base is 3 x 12 ft. and its length $3 \times 100 \div 6 = 50$ ft., is $\frac{1}{2}(3 \times 12 \times 50) = 900$ cu.ft.

Physical Defect in Mine Official

Failure to detect odors in mines a hindrance to a mine official. Attention to such defect in a candidate should be given by all examining boards.

FOR some time past, I have been wondering whether a man is fit to serve in an official capacity in a mine if, through a physical defect, he is unable to detect odors. For instance, I once knew a man who could not tell a perfume bottle from a rotten egg placed under his nose when he was blindfolded.

The question in my mind is, Would such a defect debar a man from obtaining a certificate of competency to act as fireboss in a mine; or, for that matter, would such a person be fit to serve as a mine foreman or assistant foreman? I have never heard of an examining board applying such a test to candidates, however.

INQUIRER.

Thompson, Pa.

There is great need of a man who acts in an official capacity underground being able to detect an odor. A man who cannot smell would be unable to detect the peculiar odor given off by a gob fire. Neither would he be warned of a more active combustion taking place in some portion of the mine from which the odor is borne to him on the air current.

There is every need for a foreman or an assistant foreman and, more particularly, a fireboss having the faculty of smelling unimpaired. In our opinion, attention should be given to this matter in the examination of men who are to have charge of work underground. A man who does not possess the ability to smell faint odors is hardly fit to act in an official capacity in the mine, and this would be sufficient reason for withholding a certificate from him.

Examination Questions Answered

Illinois Mine Managers' Examination, Springfield, May 2, 3, 1921

(Selected Questions)

QUESTION—*A mine car is 9 ft. long, 4½ ft. wide and 2 ft. high. If 6 in. of topping is allowed, how many cubic feet of coal will it carry?*

ANSWER—Allowing for 6 in. of topping makes the depth of the coal in the car 2½ ft. Then, assuming the given length and width are inside measurements, the cubic contents of this car when fully loaded is $9 \times 4\frac{1}{2} \times 2\frac{1}{2} = 101\frac{1}{4}$ cu.ft.

QUESTION—*The pump column, in a shaft, is 400 ft. long; the pipe is 12 in in diameter and full of water. What is the total weight of water, in tons of 2,000 lb.; also, find the pressure of the water, in pounds per square inch, at the base of the pipe?*

ANSWER—Since the diameter of the pipe is 12 in., or 1 ft., its sectional area is $0.7854 \times 1^2 = 0.7854$ sq.ft. Its cubic contents is then $400 \times 0.7854 = 314.16$ cu.ft. Taking the weight of water as 62.5 lb. per cu.ft., the total weight of water in the pipe when full is $(314.16 \times 62.5) \div 2{,}000 = 9.8175$ tons.

Assuming a static condition, or that the pump is not working, the pressure at the bottom of the pipe is $400 \times 0.434 = 173.6$ lb. per sq.in.

QUESTION—*In case of accident in which a miner has received a wound severing an artery, what would you do to prevent hemorrhage before a physician arrives?*

ANSWER—Apply a bandage or tourniquet over the severed artery between the wound and the heart. A smooth round stone should be placed over the artery under the bandage so that when the latter is tightened the stone will compress the artery and stop the bleeding. Having done this and having sent for a physician, keep the patient in a reclining posture with the head low. See that he is kept warm and quiet and that he has good air. Give no stimulant unless a very weak condition makes this necessary. A half-teaspoonful of aromatic spirits of ammonia, in a tablespoonful of water, may then be given if the bleeding has been checked.

QUESTION—*If 20,000 cu.ft. of air and gas, at its most explosive point, is passing through the mine, what is the quantity of gas given off and what quantity of air should be added to render the mixture non-explosive?*

ANSWER—An air current charged with gas to its most explosive point contains 9.46 per cent of gas. The quantity of gas present is, therefore, in this case, $0.0946 \times 20{,}000 = 1{,}892$ cu.ft. per min.

The lower explosive point of pure methane and air is reached when the mixture contains 7.14 per cent of gas. Therefore, if 1,892 cu.ft. of gas is 7.14 per cent of the total mixture, the volume of air and gas when explosion ceases, in this case, is $1{,}892 \div 0.0714 =$ say 26,500 cu.ft. per min. The quantity of air required to be added to produce this condition is therefore $26{,}500 - 20{,}000 = 6{,}500$ cu.ft. per min.

QUESTION—*In a certain mine there are two sections ventilated by separate air currents. The combined length of the intake and return airways, in one of these sections, is 6,000 ft.; the number of men employed is 100 and the number of mules is 10. In the other division the length of the airway is 3,000 ft.; the number of men employed is 110 and the number of mules 7. What will be a proper distribution of the air surging through the mine, and what steps must be taken to secure such a distribution?*

ANSWER—The Illinois mining law requires at least 100 cu.ft. of air, per man, per min., and 500 cu.ft., per mule, per min. On this basis, there would be required, in the first section of the mine, 15,000 cu.ft. of air per min., and in the second section 14,500 cu.ft. per min. But, since the longer airway requires the most air, a regulator must be placed in the second section and adjusted to give the desired proportion of air. The law also requires that not more than 100 men shall be employed on a single air split. Therefore, it will be necessary to split the air in the second section where 110 men are employed.

QUESTION—*To find the percentage of mine gases given off in a mine, the air at the inlet was measured and found to be 137,500 cu.ft. per min., at a temperature of 51 deg. F. The air at the outlet measured 150,200 cu ft. per min, at a temperature of 76 deg. F. What is the percentage of mine gases present in the air leaving the mine?*

ANSWER—Disregarding the increase of volume on the return airway, by reason of the decrease of pressure due to mine resistance and estimating the increase of volume on the return as only due to the increase in temperature, the increase in volume will be in the ratio of the absolute temperatures. In other words, the volume ratio is equal to the absolute-temperature ratio:

$$\frac{Q}{137{,}500} = \frac{460 + 76}{460 + 51} = \frac{536}{511}$$

$$Q = (137{,}500 \times 536) \div 511 = 144{,}227 \text{ cu ft. per min}$$

Since the volume of air measured on the return is 150,200 cu.ft. per min., the gas given off in this mine is $150{,}200 - 144{,}227 = 5{,}973$ cu.ft. per min. The percentage of gas in the return current is, therefore, $(5{,}973 \times 100) \div 150{,}200 = 3.97$, say 4 per cent.

QUESTION—*When do you consider the quantity of air entering the downcast shaft sufficient for the ventilation of the workings?*

ANSWER — When the quantity of air passing into a mine is sufficient to comply with the mining law and, assuming that this quantity is properly distributed and conducted throughout the mine, it is sufficient to prevent any accumulations of gas and render the workings healthful and safe.

QUESTION—*(a) What is the proportion of marsh gas and air in a firedamp mixture that will develop the maximum explosive force? (b) What are the limiting proportions that determine an explosive mixture of these gases?*

ANSWER— (a) The proportion of pure marsh gas and air under normal conditions that will develop the maximum force, in explosion, occurs when one volume of gas is mixed with 9.57 volumes of air. The mixture then contains 9.46 per cent of gas.

(b) The lower explosive limit of pure marsh gas and air is reached when the proportion of gas to air is 1:13. The mixture then contains 7.14 per cent of gas. The higher explosive limit of this gas and air is reached when the proportion of gas to air is about 1 : 5, or when the mixture contains 16.67 per cent of the gas.

Success or Failure of the Retail Coal Merchant Now Dependent Upon Salesmanship*

Coal Salesman, to Be Competent, Should Be Conversant with Origin, Preparation, Transportation and Character of His Merchandise—Ability to Sell When Consumer Is Reluctant to Buy Is Test of Efficiency

By D. F. Williams†

COAL is the basis of all energy and power, the prime mover of the wheels of industry. With coal we have light, strength, power, wealth and civilization. Without coal we have darkness, weakness, poverty and barbarism. The most civilized nations of the world are those consuming the most coal; at the head of these stands the United States.

A study of the history of coal brings home to us the fact that in the early stages the coal man was confronted by the same problems of development, operation and salesmanship as today.

In 1306 we find record of the smoke ordinance promulgated by King Edward I, at the request of Parliament, prohibiting the use of coal in the City of London; and during the thirteenth and fourteenth centuries we find record of the development of the wheelbarrow and the barrow track, the precursor of the present day railroad; of leases requiring that pillars be left in the mines to prevent subsidence of roof; of the transportation of coal from Scotland to London and of its exportation to France; of deeds containing royalty provisions similar to those in the coal deed of today; of governmental investigation of price and restriction of product, and in the sixteenth century, under Queen Elizabeth, a record indicating the awakening of the government to the value of coal for taxation purposes.

Charles I a Coal Monopolist

We find the record of the first monopoly when Charles I, not being satisfied with the returns of taxation, exercising the right of pre-emption in the year 1638, took over the sale of all coal, paying to the producer for his product at the rate of 11s. per chaldron.

What apparently is the first record of government-fixed price and of summer discounts is given in this same transaction when the price of coal in London was set at 17s. per chaldron during the summer and 19s. during the winter.

The first coal salesman of whom I can find record is King Henry VIII, who arranged for the sale of 3,000 chaldrons of coal to be forwarded to Boulogne, in France. The period from the time of King Henry VIII to the present day is characterized by increased population, by the concentration of people in cities and towns, by the depletion of the wood supply and by the displacing of man-power by machinery.

Throughout these centuries history indicates that coal has maintained the position which it then established for itself. It still is a necessity, is taxed to its limit, is the subject of governmental inquiry. It still requires the services of the salesman to arrange its transport from the point of origin to the point of consumption, and it is to the retail dealers of today, the successors of King Henry VIII, that I desire to address the following remarks.

The entire production of anthracite being required to meet the demand, regular movement to point of consumption is the mark of efficiency for the sales organization, and when production is stopped through lack of orders, when it is necessary for the producing companies to store large quantities of coal at the mines, when it is necessary for the retailer to store in such quantity and such manner as to involve additional expense, breakage and wastage, there is need for study of the sales organization.

Belief that salesmen are born, not made, declared to be an error. Success in the retail coal field attainable only through constant study and effort. Careful perusal of trade magazines, including advertising, and application of information thus gained with business experience materially promote progress.

The time is here when we all must carefully question our salesmanship abilities, must inquire into our local reputations for integrity and fairness and must give some thought to our temperament. The industry, itself, does not want, and cannot afford, to produce business failures, nor can it afford to encourage a business success that is attained through methods derogatory to others engaged in the industry. The anthracite industry does not want, nor can it afford, to rear and encourage weaklings. Weaklings and failures do not contribute to progress.

There is general error in the belief that the salesman is born, not made. Let me bring home to you the thought that all salesmen started in like position as men babies. It is true that some, because of temperament, of home surroundings, of advantages obtained through wealth or education and refinement of people with whom they were thrown earlier into contact, would seem, when they chose selling as their field in life, to have been born salesmen, and early in their careers their advance was rapid.

Hard Work vs. Natural Advantages

Others from lowly surroundings, with no advantages of wealth, home surroundings or education, must, of necessity, work hard to absorb the details of salesmanship. The contrast between these two is marked at the start, but the usual result is that the man of natural advantages who has early made great progress soon becomes lazy and slows up, while the man who has struggled to attain the position which he has selected for himself in life, continues to struggle, and sooner or later passes the man of natural ability.

The successful salesman is not born—he becomes what he is through constant study and effort. He reads carefully the trade magazines, even to the advertising, he purchases and studies every book or magazine article that can be found relating to his chosen field, and he applies to his own business the knowledge thus gained, year by year reporting progress.

During the past three or four years our people seem to have forgotten that the object of salesmanship is to sell, and that it is the natural thing for the consumer not to want to buy—not to want to part with his money.

Era of Order Taking Began with War

Since the beginning of the war there has been practically no coal selling in this country. There has been a great deal of order taking—but by order-takers, not salesmen. The order-taker performs his work like a machine. He sells only those sizes of coal asked for by his patrons and his chief thought is to get rid of his customer as quickly as possible. He has no suggestions to make and no advice to give. He knows little about the origin, preparation, transportation or character of the coal he has to sell; in fact, he knows nothing about coal other than price.

During the last few years in the coal trade we have told the buyer what he could have and at what price. Many coal salesmen passed out during the period because the firm could not see

*Address delivered at the convention of the New York State Retail Coal Merchants Association, Richfield Springs, N. Y., Sept. 9, 1921.

†Vice president and general sales agent, Hudson Coal Co.

the need of paying salaries at a time when the books reflected more orders than tonnage. Others were retained, but, because of their failure to realize unusual conditions, did not keep informed as to the changes in the industry and became soft.

The new men taken on since the period of depression came have never known hard selling, so that now, when it is hard to sell, when selling is on a normal basis, when there is need for a display of true salesmanship, the old men do not know how to adjust themselves and the inexperienced man is content to say "There is no business."

Must Organize Selling Force

Every retailer is supposedly a salesman—each has the opportunity to control a selling organization. Every clerk, every yardman, every driver in your employ and, I hope, every customer, is a potential salesman—he can aid in pushing up or pulling down your business, and your success is dependent upon your ability to organize this force. It is time for you to acquaint yourself with actual conditions as they exist today and to put into your selling organization that courage, optimism and resourcefulness that are so necessary for present day selling.

We hear people say "I don't know where I am going, but I am on my way." It's high time we found out our destination—found out where we are going. No matter what your direction all people are ready to add momentum to your movement. If you are going up, you will find the populace ready to push—they won't put oil on the upward track. But if you are standing still or if you are going backward, you will find that everyone is willing to give you a push—everything will be greased for the occasion. Human beings are akin to bees in that they have no place, no patience with drones or failures.

How many of you having a business of 5,000 tons or more per annum personally view your orders each and every day and have knowledge of or acquaintanceship with the people doing business through your office? You probably receive a statement showing the number of orders received, the number of deliveries made yesterday, but more than likely do not enter into the personal side of the business in which you are connected.

Retailer Overlooked Opportunities

Recently I had a retail dealer say to me he had made a mistake in purchasing a business in what he regarded to be a small community. He felt that his activities had been restricted through this mistake. Inquiry developed the fact that in his community were five other retail dealers, all doing a fair business, and that the possibilities of the community were five times his tonnage.

It is beyond conception to realize the make-up of the man who will "lay-down" under such circumstances. It is a safe bet that this man does not know the names of his patrons of 1920 who are not patrons of 1921 and that he does not know the names or the tonnages of patrons of 1921 who never before were on his books. He has never made a systematic study of the prospective customers who never had purchased from him, nor has he outlined nor does he follow any definite policy to obtain their business. That man does not recognize his opportunities and usually when you hear such a statement made you can mark it down that the dealer has arrived at his proper place—that Providence has placed him where he belongs with due regard to his ability, energy and finance. Before reaching out for larger fields, he must first get out of his present opportunity all there is in it.

At your former conventions great stress has been laid upon the need of the knowledge of the cost of doing business. The knowledge of the cost of doing business involves statistics. How many really appreciate the value of the figures that are prepared and put before you? This information is only of value to you, as it is placed before you in comparative form—compared with last month, last year—the average of the last five years—and then its value is entirely dependent upon your application.

The Purpose of Trade Statistics

Figures of themselves will grant to you no benefit, but if, as you look over these cost sheets, you find some feature of your business has increased in its cost and you make the necessary adjustment resultant from increased mine, freight and wage cost, you get down to individual performance and are then in a position where you can apply the power of the executive. But has it occurred to you that similar statistics can easily well be prepared that will give to you the full story of the presence or absence of salesmanship in your organization?

In a small business these statistics must be in detail, in a larger business your comparison can be in total, but the result is identically the same. Day by day it is possible for the executive to have before him information which tells whether or not his organization is "standing up" or "falling down."

How many of you, knowing your annual tonnages, have reduced them to a daily basis?

How many days in the year do you know whether or not your inbound orders and outbound deliveries are up to or in excess of the schedule?

How many really know why when your daily schedule is not reached? Is it not easier and is it not a fact that instead of knowing you cuss the weather, damn the administration and lay the blame on industrial conditions, while, in point of fact, the industrial situation in your town may perhaps be more healthy than ever?

This brings home to me a peculiar fact developed a few years ago while visiting a retail friend. On our way to the office in the morning he asked me to stop with him while he solicited the coal order of a large department store. We saw the proprietor and my friend was told that while they would like, very much, to give him the order, it was their practice to place the business with patrons of the store.

My friend insisted that his family were good buyers in that store, but when we were shown the books his name was not there. That evening upon questioning his wife, he obtained from her receipts showing cash purchases for a year which totaled more than any of the credit accounts that had been shown us, and through them he secured this business.

Kept No Data on Cash Customers

At that time my one thought was that the man who pays cash loses his credit. Just a few weeks ago I saw in a retail coal office another and more striking instance of the scant consideration accorded to the cash customer. Wonderful records had been developed and numerous clerks were engaged on the telephone in the solicitation of orders. I looked over the records and noticed that they covered only charge accounts.

I asked the president of the firm if they did not solicit their cash trade with equal energy, and his reply was, "No, we do not have record of our cash customers."

Think it over!

And yet almost every day some retailer says collections are not as good as they should be. Certainly not; your cash trade is getting away from you for the reason that you do not give it the same attention, the same careful thought that is given to accounts bearing risks of collection. Just put that cash customer in the same class as "the bird in hand."

We have just completed a study in one of our wholesale territories. We have not found that the people have moved away because of industrial depression; they are still there and those families must have coal. Strange as it may seem, the towns suffering least from depression were those doing the decreased retail business, while in other cities where all factories were on short time or wholly closed, a normal tonnage was being moved.

The answer is SALESMANSHIP.

Requisites for Good Salesmanship

In the short time at our disposal it would be impossible to cover all that might be said on Salesmanship. A review of the many books that have been written on the subject leads one into a maze of approach, prospect, introduction, selling talk and psychology, but all of these publications bring home to you the thought that selling is really made up of a high sense of integrity, a knowledge of your goods, a knowledge of existing conditions and of a desire to serve, backed up by an energetic application of common sense. Beyond this there is no secret to salesmanship.

The high sense of integrity you must have, as only through it can the confidence of your buyers be acquired, and

the confidence which others have in you is your keystone to success. To instill confidence you must place your business on a sound foundation through strict adherence to a fixed policy founded upon a square deal for everybody. The moment you deviate from that method your credit at your bank is impaired. You may not think so, but if you are not thinking so you are thinking wrong.

When you find out the cost to you of your commodity and add to that base cost your legitimate expense for handling, and to that total cost a just and fair margin of profit to arrive at a reasonable selling price—stick to it! To deviate from it indicates that you were either wrong in arriving at that selling price or that you are a merchant who is playing favorites—and playing favorites is a dangerous practice, either on the race track or in business.

If you are a believer in a square deal for everyone—stand by that belief and "fight it out on those lines if it takes all summer." The "square deal"—the gaining of confidence of the buying public—really involves a "one-price," short-credit and open-advertising policy.

Why Prices Should Be Consistent

The mine price of the prepared sizes of coal views impersonally all dealers and all markets. The published tariff and the war tax charge are equally inconsiderate of the large dealer and the small; of the dealer with antiquated equipment and the one that is modern and up-to-date. When, therefore, the retail dealer makes an arbitrary distinction in favor of the consumer who buys ten tons as against the consumer who buys in smaller quantities, he does not impress either customer that he is receiving impartial treatment.

When the retail dealer makes the same price for egg, stove and chestnut to his customers, he is not giving a convincing demonstration to the mines that co-operation in distribution of sizes is being encouraged or developed; neither does it impress the customer favorably when he learns from the public press that egg, stove and chestnut do not take the same mine price.

Credit Causes Unnecessary Losses

When for any other reason or lack of reason any two customers appear in the dealer's office to inquire the price of coal and the dealer is forced, because of "local custom" or "peculiar conditions," to give different prices for a similar service, the reputation of the dealer suffers with both customers.

One of the most fruitful causes of unnecessary expense in business, of unnecessary losses and of disputes over accounts is the matter of credit. Not a little depends upon the clearness of the understanding established between the dealer and the customer as to the part that each is to perform and *when*.

When the one-price policy has been adopted, it should reflect every charge upward or downward of mine price, or freight rate, or local labor schedule. The public should be advised of the nature of the change, of the amount and the new prices that are established as a result. If the dealer does or does not expect to fill the orders on file with him at the lower price, it should be so stated.

The second requisite to your success is a knowledge of coal. The successful men in our business today are those who have, at the cost of time and expense to themselves frequently visited the mines and who keep acquainted with the processes of coal production and their development. Because of their knowledge these men do not ask questions similar to those put to us at the convention last year, when, you will recall, we were asked: "Do not the anthracite producing companies deliberately inject rock and slate into the coal in order to increase tonnage?"

For some unexplained reason, many coal companies in compiling voluminous records for use in obtaining future orders, ignore cash customers entirely, despite constant complaints about difficulties in making collections from charge accounts. An attractive business place does much to create a favorable impression in the contest for business.

And, again, "Do not the anthracite companies store prepared coal at the mines in order to bring about an increased price?"

The company with which I am connected, and I am quite sure all other anthracite producing companies as well, will very gladly extend to each of you an invitation to visit us at the mines. We will see that opportunities are afforded for you to visit the various breakers and witness the process of manufacture and that you are made acquainted with the details of inspection. We will gladly exchange what we know about coal for your time. After such a visit you should be able to go home with a new enthusiasm based upon the knowledge that the coal which you are selling is the BEST which you can possibly obtain for your people.

Dealers who visit the mines usually go home with an understanding of the difficulties confronting the producing company. They see the raw product as it comes from the mines—they gain some idea of the magnitude of the enterprise. They see the expensive machinery required for its manufacture; they are impressed by the spirit of co-operation that exists in the producing personnel; they observe the care exercised by the companies to see that their product is right for the market; they note the pride of individual employees in being connected with companies of long life and high standing and note how each of those employees tries so to do his job as to continue through time that reputation.

An observing man cannot avoid acquiring through such a visit a new enthusiasm, a new idea, a new incentive, which will produce results upon his return home. Such a visit gives to him faith in the article he sells, confidence in the organization from which he obtains it, a knowledge that will make possible for him replies to practically all questions that may come from his customers.

Environment's Bearing on Success

Environment is an important contributor to success. If your environment is such that it breeds carelessness and inattention to detail, if it is such that it creates in you, a dealer, a feeling of smallness, of inferiority, you are working under a handicap that no amount of personal energy may overcome. There are many dealers in coal who are keeping offices or places of business not consistent with the times—not in keeping with the dignity of the business nor the community in which they sell.

Successful selling is largely a state of mind, and if you are surrounded with conditions which do not bring out the best that is in you, how can you hope to compete with others who are running the race without such drawbacks? What I wish to recommend to each and every one of you is to make your place of business as attractive as your conditions will permit.

You are influenced by appearance and surroundings. When you came into this hotel, there was registered in your brain, involuntarily, a criticism or an approval. You either said to yourself, this looks like ready money, or the opposite, and so with one of your customers coming into your place. He does not go into detail in his analysis, but there is at once photographed on his brain a picture of your surroundings, and that picture measures your capacity in his estimation. No matter how much you endeavor to explain to him why you continue to sell coal from a poorly kept office, no amount of argument will efface this mental picture.

Cultivate Powers of Observation

One of the old rules of the opera was: "Get a good stage setting and the part will play itself." One of my rules for successful coal selling is "Get a good stage setting"—that in itself will help you to play the part. You may come back at me and say: "My business won't warrant it," and my answer to you is: "If your statement is correct you haven't got a business; the business has got you."

Cultivation of the power of observation is another great asset in business. The successful surgeon or lawyer maintains his position of prominence only through constant study. To advance, even to preserve his present position, the coal man must constantly keep alive to ever changing conditions. He should

study his trade journals for word of any new law, regulation, discovery or practice that affects his article at its source of production, in transit or at its point of destination.

A close watch of your daily press will open to you many avenues for tonnage. Some of you, reading the local morning paper might not attach any particular importance to the fact, announced therein, that John Smith was going to move from a neighboring town to the Jones' house in your town, but an observing coal dealer would immediately say: "There is an opportunity for a sale." The glove factory may be advertising for twenty-five additional hands. The employment for twenty-five additional hands would mean more wages, more cooking, more coal. You read that the Chamber of Commerce takes credit for bringing a new industry to town, and that fact should, to the active dealer, stimulate thinking about the fuel supply of its employees, and so on down the list.

A fundamental principle in all good salesmanship is that the idea of service to the customer should be kept foremost. Permanent success can come no other way, for thus are customers gained and kept—a dealer's best advertisement is a satisfied customer. We benefit ourselves only as we benefit others, and it is recognition of this fact that has placed the successful dealer where he is today.

It, of course, goes without saying that a large part of the salesman's equipment is the firm behind him. Courtesy in all personal contact, care in delivery and consideration and appreciation of the customer's interests back up all his arguments in a most effective way. The up-to-date dealer sells not only coal but heat satisfaction, and his services should always be at the command of his clients when they fail to get such satisfaction.

Energetic application and common sense close my chapter. The meaning of these four words is so potent that they require no explanation. There are none of you but who look with interest upon the man of energy, the man who applies himself to his task, who presents himself to the community in a straightforward businesslike manner, without frills or the use of superlatives.

Courtesy and kindness produce goodly dividends. Some are naturally courteous and have a peculiar faculty of making friends. They continually cultivate that faculty to make it more valuable. Others are indifferent and give little heed to the individual, once the sale is made.

A few years ago, R. S. Rodie and a friend were traveling from Bluff Point to Albany. The traffic at that time was particularly heavy and when the train pulled in Mr. Rodie asked the porter for two chairs. The colored gentleman replied, "Sorry, Boss; dey all done gone." Mr. Rodie stepped a little closer to him and said very distinctly, "Porter, kindness makes friends—I want two chairs." "Yas, suh," replied the porter, "but dey ain't no chairs lef'." Mr. Rodie took hold of his sleeve and repeated, "Porter, you don't seem to understand me; kindness makes friends." "Yas, suh; I gets you, boss; you jes' stick aroun' when the train starts, an' I may fin' jes' two chairs." He did. And kindness in business may find "jes' two chairs" also.

During the year a dealer has scores of opportunities to make friends through some little act of kindness or some courtesy that brings him into greater favor than pages of advertising.

In conclusion let me give you this thought to take home with you: The man who knows exactly what he is driving at and has a definite plan for getting there can be interrupted and bothered, but he always sticks to the main line and comes out of every difficulty with his face toward the straight course. HE WINS.

Washington State Works Renouncing Union

COMMERCIAL coal mines in the State of Washington which have been closed since last March, when the miners refused to accept a reduction in wages, were reopened Aug. 22 with labor independent of the United Mine Workers of America. Coal is now being shipped from several of the mines and work is under way in most of the large producing mines.

A ready response met the call of the mine operators for men who would work in the mines under the wage scale recommended by the State Coal Commission, which recently completed an exhaustive investigation into the coal-mining industry. The new scale, known as the Allport scale, was submitted by the neutral member of the commission, James H. Allport, of Barnesboro, Pa., and was at once accepted by the operators, while the local and national officials of the miners' union refused to permit the men even to vote upon its acceptance. It was this act which precipitated the breaking off of all relations between the Washington Coal Producers' Association and the United Mine Workers of America.

Wages paid under the Allport scale provide a contract rate for coal miners which makes possible earnings from $7 to $14 per eight-hour day, while $6 per day is paid day-scale men both above and underground, $5.25 per day for common labor underground and $4.50 per day for common labor above ground.

Washington mine operators did not sign a contract with the unions requiring them to pay the scale in effect in Eastern mines, though in September, 1920, upon threat of a strike the demands of the miners were met, at which time the operators issued this statement: "We have met your demand for this large increase even though it will cost us many times more than any other mines in the country and though it very probably means the beginning of the end of many of the mines."

In February of this year the operators announced that a return to the wage scale of Oct. 31, 1919, would be put into effect, inasmuch as the mines were being operated at a loss and as no contract had been signed binding them to pay the scale then in effect until March, 1922. As a result the mines were closed on March 15, when the men refused to accept the reduction.

The investigations of the State Coal Commission showed that from October, 1920, to the end of February, 1921, there had been an average loss to the operators of 26c. on each ton of coal produced, while as far back as May, 1920, the loss had averaged 15c. per ton. It was this situation which brought about the necessity of a wage reduction.

Acting independently of the unions, the operators have reopened the mines with the announcement that a plan of organization embodying the principle of collective bargaining will be worked out between the operators and the men in which they will be given a voice in the discussion of their mutual problems.

Under normal conditions the direct payroll of the coal industry in Washington is $11,000,000 per annum, while approximately 30,000 people are dependent upon the mines for their living.

The Pacific Coast Coal Co. has been denied a permanent injunction by Judge A. E. Griffiths in the Superior Court of King County, restraining strikers from picketing the mines. Counsel for the coal company has appealed the case to the Supreme Court of the state, stating that it has more than once been decided that picketing was unlawful.

Indict Men of Army That Marched on Mingo

A LOGAN COUNTY (West Virginia) Special Grand Jury on Sept. 17 returned a blanket indictment against 325 persons, charging them with murder. This indictment follows an investigation of the recent disturbances on the Logan-Boone County border.

Among the names are those of C. F. Keeney and Fred Mooney, president and secretary, respectively, of District 17, United Mine Workers of America, and H. W. Blizzard, also a United Mine Workers' official. In addition, 200 indictments charging insurrection and "pistol toting" were returned.

Keeney and Mooney were arrested Sunday, Sept. 18, in Charleston, Kanawha County, W. Va., and on Tuesday, Sept. 20, were incarcerated in the jail at Williamson.

Engineers Present Interesting Papers and Discussions At Meeting in Wilkes-Barre*

By R. Dawson Hall†

At the Tuesday evening (Sept. 13) meeting of the American Institute of Mining and Metallurgical Engineers, R. A. Quin presiding, C. M. Means read his paper on "The Installation at the Coverdale Mine." In the absence of the author, J. R. Bruce's paper on the "Octagonal Ventilation Shaft of the Davis-Daly Copper Co." was passed over. H. A. Reichenback then made the illustrated address on the "Application of Pulverized Coal to Boilers," which was to have been presented by J. M. Fuller, of the Fuller Engineering Co.

On being questioned the author said that 19 to 20 kw.-hr. per ton were used in pulverizing anthracite and 16 to 18 kw.-hr. per ton for pulverizing soft coal. Robert Klotz later declared that 20 kw.-hr. were sufficient to pulverize some anthracite but that the average would be nearer 40 to 50 kw.-hr. per ton.

H. M. Chance gave some interesting facts relative to the strength of anthracite. When the Antracite Mine Cave Commission endeavored to determine the strength of anthracite pillars they found that cubes of anthracite would withstand a compressive force of from 2,000 to 3,000 lb. per square inch and that some would reach 5,000 or even 6,000 lb. per square in. As these pieces all failed along cleavage planes he thought that it would be instructive to find out what the strength would be if pieces were taken so small as to be traversed by no cleavage planes or by planes less well marked than those in the larger cubes.

He therefore made ¼-in. cubes and got a strength of 12,000 to 15,000 lb. per square inch and ⅜-in. cubes, which would withstand 19,000 to 20,000 lb. per square inch, and he supposed that had he obtained small enough cubes he could have proved them capable of withstanding 30,000 lb. per square inch. That would suggest that the inherent strength of the material, where not checked by cleavage planes, would be found equal to that of granite.

Mr. Klotz said that the practice of burning anthracite by projecting it in a vertical downward stream from the top of the furnace chamber so that, being deflected upward, it would follow a V course, lengthened the path that the flame had to traverse before it impinged on cooling boiler tubes. This method of burning made the combustion the more complete.

Favors Cylindrical Drums for Deep Hoists

Graham Bright then gave a brief of his paper on "The Determination of Electrical Equipment for a Mine Hoist." In discussing it Mr. Stone said that there were objections to using anything but cylindrical drums for deep hoists, the difficulty arising from the structural needs of the drum. Freak drums were necessarily heavy. The inertia of a heavy cylindro-conical drum on a deep hoist would largely overbalance the reduction in the peak loads which changes in diameter would otherwise afford. Three hundred feet of a lift was well suited to the cylindro-conical drum.

L. F. Mitten said that the paper had taken no account of the fact that with self-dumping cages balance was not provided at the beginning of the hoist, and Mr. Bright replied that the time during which this additional strain acted was so short that it would not heat the motor excessively and that in consequence it was not necessary to take it into account in designing the electrical equipment.

In the morning of Wednesday the economic geologists held a technical session and another session was held to consider mine accounting and finish the discussion of those papers the presentation of which had been delayed. Accordingly, the first paper at this second session, which was presided over by R. V. Norris, was "Capitalization and Valuation of Mine Development," by J. B. Dilworth.

Mr. Dilworth stated that some believed that capital account should be charged with all items until normal production was reached, others until the production was 50 per cent of normal and others again until the cost of extraction and preparation equalled the selling price—that is, in accounting parlance, until the operation broke even. He said that the capital charges for development should be divided into two parts—A and B—of which A would be permanent development, which should include those items which were to be permanently used until the mine was abandoned, and B temporary development, those items which were to be continually replaced during the life of the plant. The first should be written off year by year but the amortization should be delayed on the second until there was to be no more development and work was to be commenced on the mineral adjacent to old galleries and headings. Reductions should, of course, be made for mineral obtained during the development period.

Mr. Clark, for Mr. Johnson, of the Lehigh & Wilkes-Barre Coal Co., read a discussion on the peculiar accounting needs of the anthracite region. H. B. Fernald, chairman of the committee of the institute on accounting, spoke on the importance of making a distinction between cost and valuation. He said that two sets of books might well be kept when good judgment would suggest it—one in accordance with the rulings of the Internal Revenue Department and one for what seemed better in accordance with the demands of practical accounting.

Variety of Systems Used by Revenue Department

James H. Allport said that his experience at Washington was that no two valuation accounts were kept according to the same system. R. D. Hall stated that some provision should be made to take care of the overdevelopment practiced in certain seasons and to write off this cost at times of underdevelopment during other seasons when output was the main consideration. R. V. Norris said this overdevelopment should not be put into capital account.

Edwin Ludlow propounded the following question: A slope has been driven so far that the hoist which has hitherto handled the cars can no longer do so. A new hoist must be purchased and installed. Are the costs of the change that cannot be met by transferring or selling the old hoist chargeable to capital account or to operation? Mr. Allport said that the costs should be distributed over the period during which the new hoist would serve the purposes of installation with due regard to the value of the hoist after its work in that place is done.

D. C. Ashmead, having at last received the reprint of his paper, read a brief abstract of it, outlining its principal features. In discussing it, Sidney J. Jennings, referring to E. W. Parker's reference to his Monday's paper to anthracite as a "luxury fuel," declared that after seeing the methods of preparation he thought the coal consumer ought to find some way of being less luxurious. Why prepare coal so meticulously? The operation interest and depreciation costs of the Marvine breaker must add $1.20 or more per ton to the cost of the coal. Could not some of that cost be saved by working the breakers, as the metal men worked their mills, twenty-four hours instead of eight hours a day, reducing the expense to about 60c per ton? Mr. Jennings said that if the mines were to be worked for eight hours only and the breaker for three shifts, or even two, why not provide a storage bin that would hold enough for continuous or nearly continuous running of the breaker?

C. E. Lesher said that metallurgical men were agreed that for proper separation of impurities close sizing was absolutely necessary. Therefore, the sizing must be done carefully even though the public might be willing to accept a product in which the sizes are mixed. Surely Mr. Jennings did not mean that the public should invite the oper-

*Final installment. The initial portion appeared in *Coal Age* last week, page 463.

†Editor, *Coal Age*.

ators to be less careful as to their cleaning of the coal.

C. H. Strange said that he believed that a better economy would be attained by introducing the time clock, so that the men would not be leaving the mine at all hours.

C. W. Starr wanted to know in what way Mr. Jennings would limit preparation; surely not so as to reduce the freedom of the product from slate and bone? H. L. Davis declared that in the mine each man had a place of his own. If there were two or three shifts, each man would have to perform a specified stint and receive a specified part of the pay given for the product of the place. With tonnage workers it would be difficult to divide the output except, perhaps, by arranging the labor so that the work of the least industrious in the place would be the measure of the return to output of every man working in it.

Arthur Thacher urged that men should be paid by the day and not by contract or by tonnage or yardage. It might not be possible to adopt the day-rate plan at once but it was a good plan to aim at looking to ultimate adoption. It was fairer to the men. R. V. Norris also laid stress on the difficulty of providing for a division of labor when men were working in three shifts or in two.

W. A. Thomas, consulting engineer, of Scranton, Pa., then presented a synopsis of his paper "Electric Power, a Factor in the Anthracite Field." Mr. Thomas mentioned a plant where through the expenditure of $12,000 for electrification a saving of $11,000 a year will be made. He pointed out how by the grouping of collieries and the combining of their power production and use great economies might be effected.

B. H. Stockett said that while the Beaver Brook colliery had only three years or so to run it had been decided to electrify the plant. The steam costs were about 50c. a ton and the electricity costs about 30c. The saving would more than return the capital in three years. C. H. Strange complained that a number of companies had been induced to enter into contracts on the understanding that they would be able to get the "off-peak rating," but they found to their regret that their peak was at 11 a.m. Consequently they were "on peak" and would have to pay the full rate.

Installation Expense Saved in Nine Months

James H. Allport quoted a case where at an expense of $80,000 a mining plant switched from steam to electricity and from a cost of 80c. a ton for power to 24c. In nine months the savings had paid for the plant installation. W. A. Thomas said that R. E. Hobart had shown that the Rahn colliery, of the Lehigh Coal & Navigation Co., used 12.818 kw.-hr. per ton though the pumping and ventilating charges falling on the plant were comparatively light.

R. L. Wensley then gave a brief review of his paper on "The Automatic Substation for Coal Mines." Someone remarked that there were more failures of the substation than under mechanical supervision. The equipment was to be preferred to the college-trained substation operator. Graham Bright said that automaticity would soon be extended to embrace far more than the substation. For instance, fans were being run with automatic regulation.

Edwin Ludlow said that at the plant of the Bessemer Limestone Co., at Johnstown, Pa., one man in a tower regulated the movement of the cars in the quarry from a single point. He was stationed in this tower overlooking the whole operation and from that point he directed all transportation to the dump of the 1,400 tons per day that the quarry produced.

The institute members were guests of the Wyoming Shovel Works at Wyoming, Pa., for lunch, whither they went by automobiles. Caterers had been brought from Philadelphia and the lunch served was quite elaborate. For souvenirs trenching shovels, made for army use, were distributed.

After a rapid return to Wilkes-Barre, the institute members went either to the plant of the Vulcan Iron Works, to that of the Hazard Wire Rope Co., to the General Technical Session or to the Economic Geology Session. The last, which was conducted under the chairmanship of H. M. Chance, was interesting to coal-mining engineers by reason of James F. Kemp's account of the "Stratigraphy of the Anthracite Region." Three of the anthracite companies had presented cross-sections of their most disturbed coal properties, showing that the old concentric sections of early geologists represented but indifferently the true state of affairs in the anthracite region where the local weakness of the stronger measures had crumpled them irregularly, pushing the strata of shale, coal and clay into many highly erratic forms having no similarity to the folds of the beds above and below them.

H. M. Chance remarked that at the time of the secondary geological survey of Pennsylvania, the companies had not so completely developed and explored the areas in which they were operating. Particularly was this true of those places where rolls like those shown by Professor Kemp existed. The irregular pitch and thickness and the weakness of the roof made it extremely expensive to extract the coal and it was accordingly left entirely uncharted.

H. H. Ashley remarked that the similar, but minor, actions of the clays in western Pennsylvania had gone without chronicler. All the clay beds in that region had been buckled unmercifully, as might be believed by those who noted the slickensides which it repeatedly and almost universally exhibited. The smokeless coals had also been buckled and broken. Houtzdale coal has hundreds of small faults. There was no give in the sandstone. It made the clay and coal give way to its movement. On the Juniata, Mr. Ashley said he had photographed erratic folds that were more peculiar even than those shown by Professor Kemp.

David White wanted to know which, at the time of the great Appalachian movement was the most plastic, the clays or the coals. He said that these two elements in the geological structure had to compensate for much of the mechanical movement of the measures. The Pottsville Conglomerate was quite thick and resistant and it often squeezed out the more fluid beds with its nut-cracker action, the coal being perhaps more plastic than the underclay.

William Griffith called attention to the frequency with which slickensided lenticular coal made its appearance in the anthracite region, showing the intense shearing actions to which it had been subjected when superior and inferior measures pushed it from place to place to permit of their movements.

David White said that he believed that the time had come when anthracite coal-company engineers and geologists could estimate the shortening of the arc that had taken place by reason of the bucklings caused by the pushing action of the uplifted Appalachians.

Edwin Ludlow Honored by British Mining Society

At the banquet in the evening the speakers were: R. V. Norris, chairman; Professor James F. Kemp, toastmaster; Doctor Henry S. Drinker, one of the founders of the society; Edwin Ludlow, president of the Institute; Arthur S. Dwight, who reported on the visit of the representatives of the founder societies to Great Britain and France, where they were greeted, toasted and honored by the engineers of those countries. Mr. Dwight presented an honorary membership in Great Britain's national mining society to Mr. Ludlow, as instructed in a letter from the secretary of that organization. Lieutenant-Colonel J. A. Ritson, who has been sent over to investigate our first-aid methods, to find out why we mine so much coal per man and compete so strenuously for the coal trade of Europe, made an interesting speech.

On Thursday a long automobile trip was taken. The weather was perfect until on the return home, when at Hazleton, almost a cloudburst occurred, a storm which was quite local and left much of the roads between Hazleton and Wilkes-Barre as dust-laden as ever.

On the way out the Hauto plant was inspected. It is being doubled in capacity. The original plant delivered 25-cycle current. The new plant will generate at 60 cycles and later the old plant will be remodelled to accord with it. An excellent lunch was furnished by the Lehigh Coal & Navigation Co. at Greenwood Park. Turned disks of "Navigation Coal" were presented as souvenirs of the visit. The party lined up for a photograph and the teams which won the first three prizes in the company's annual first-aid contest gave an exhibition of their skill.

On the way home the visitors left the automobiles to visit the Tamaqua water shaft and the electric and steam hoists by which it is operated; the Lattimer stripping and the old Milnesville and Hollywood strippings.

West Virginia-Kentucky Mine, Mechanical and Electrical Engineers Meet Conjointly with Coal Exhibit—I

Condemnation of Use of Separate Circuits—Inquiry by Electrician as to Wasteful Use of Power Advocated—Dispute as to Bond Testers—Predicament of Companies with Large Units and Light Loads

By R. Dawson Hall*

A LARGE attendance greeted the efforts of the equipment men and the Huntington Chamber of Commerce in establishing a Coal and Industrial Exposition in Huntington, W. Va., Sept. 19 to 25. A goodly number of engineers also attended the sessions of the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers in its first annual meeting, which began Sept. 20 and ended Sept. 24.

Among the exhibitions were a two-ton monolith of coal from the mines of the Main Island Creek Coal Co., at Omar, W. Va.; an arch of solid coal blocks built by the Solvay Products Co., an industrial moving picture of the Ottumwa Box-Car Loader Co., a new equalizing device just patented by the Goodman Mfg. Co., and a new cable-reel splice recently put on the market by the Huntington Cable-Splicing Co. The strength of this splice was demonstrated by attaching one end of the cable to a block anchored to one of the steel posts of the building, the other end of the cable being held by another post. On the block being operated the cable was pulled apart, but not at the splice, which, simple as it was, still held firm.

Low Car Has 120 Cu.Ft. Capacity Untopped

Another exhibit was a new mine car built for Carl Scholz, general manager of the Raleigh-Wyoming Coal Co., by the American Car & Foundry Co., of Huntington. This car is 37 in. in the clear above the rail. Its capacity is 120 cu.ft. without topping. Its inside length is 10 ft.; its inside width, 6 ft.; its inside depth, 2 ft., and its weight, 4,280 lb. It resembles a gondola rather than a mine car and is intended for mechanical loading and handling. The wheels project into housings in the bottom of the car box, which has absolutely no flares. It is made with solid ends and will be discharged in a rotary dump. The Bermico fiber pipe is another exhibit of merit and interest. It occupied the stall of the Fiber Pipe Co., of Indianapolis.

A large model of a steel tipple with Morrow cleaning, sizing and loading devices, exhibited by the Morrow Mfg. Co., was one of the most striking features in the show. There were many other interesting exhibits but these particularly caught the eye and the attention. In all there were eighty-eight stalls and an even greater number of exhibitors.

Passing over the mining show somewhat cursorily, attention will now be given to the meeting of the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers. This convention held its meeting solely in the mornings, giving the attendants at the mining show an opportunity to view the exhibits in a leisurely manner in the afternoon and evening, and to visit with one another. The meeting being called to order by the President, J. H. Edwards, mechanical engineer of the Elkhorn-Piney Coal Mining Co., Roscoe Woltz read a long and carefully detailed "Report of the Committee on Practical Methods of Reducing Kilowatt Hours Per Ton of Coal Mined." Mr. Woltz said that most of the engineers accepted what had been customary without due consideration, just as, for instance, they had accepted copper as a conductor without any inquiry as to whether it was the metal best suited to their needs. The report's primary consideration was given to power supply, Mr. Woltz saying that 50 per cent of the electrical trouble in the mine was due to low voltage.

Realizing the inadequacy of direct-current distribution, with the limitations caused by the high cost of conducting materials, he said that the only cure was to provide alternating current for that purpose. He urged that the allowable loss of voltage in the mine be determined by the management. It should run between 10 and 15 per cent, depending on conditions. Then efforts should be made to provide such a distribution that not less than 85 or 90 per cent of the voltage of the generators should be available at the working face.

He spoke unfavorably of the practice of using three separate circuits, one for haulage, one for coal cutting and a third for pumping. Less copper would suffice when all three were on one circuit, for the peaks of one form of power use would be unlikely to come at the same time as the peaks of the others. Mr. Woltz's report declared that the electrically-welded bond if not made expertly, was not as good as a compressed terminal bond where the latter was properly installed.

Electrician Should Suggest Power Savings

Speaking of haulage and cutting losses, he began to trespass on the domain of the mine foreman, who contended, and indeed still contends, that it is the electrician's duty to supply the "juice" and the foreman's duty to use it, or misuse it, at his pleasure. He said that motormen wasted power by failing to provide themselves with sand and using the brake excessively, by turning the controller handle so rapidly as to cause the wheels to slip, and by running on resistance. The motorman by care can greatly reduce the number of kilowatt-hours necessary for the operation of his motor. In view of the fact that 25 per cent of car repairs are due to wrecks it seems futile to try to interest the powers that be in the savings in energy which good roads without excessive curves will invariably afford. A straight, substantial roadbed will reduce materially the running and repair costs of electric locomotives. Another saving is in proper car lubrication.

Two cars, one properly lubricated and the other unlubricated, were made subjects of a comparative test. The resistance of the latter was 44 per cent higher than that of the former. It is easy to see that economy in power could not be obtained with unlubricated or ill-lubricated equipment. As for roller bearings they did much to reduce friction, provided only, however, that they were not used on soft axles, into which they soon wore bad spots.

Losses in Cables and in Ill-Shaped Bits

Again in cutting coal, if chisel bits were not used in beds with sulphur balls the machines would consume an excessive quantity of power. It was not impossible to find a potential drop of 100 volts on a feed cable, this arising from the cable being too small, inefficiently and excessively heated and improperly spliced, especially if the coal is hard to cut. The cable resistance also will be increased by heat. A cable reel once well heated will remain hot all day, as it gets more heat constantly and is so surrounded by insulation that it cannot cool. This heat eventually will ruin any insulation.

Again in the matter of the use of power for drainage, a little forethought may save power, and that thought should be given by the electrician if the foreman fail to supply it. Most electricians will put the pump just where the foreman wants to place it, and will let it pump water just where the foreman would have it. It may pump the water into old workings, which will lead it back to where it came from,

*Editor, *Coal Age*.

with the result that it may have to be pumped over and over again. If possible water should be pumped but once. Pumping water from sump to sump is rarely good practice. Once started over a summit in a pipe line it quite frequently will go by gravity over lesser summits to the surface.

The ventilation load often is 25 per cent of the total power consumption. It must be remembered that big savings in power can be made if excessive ventilation be not provided. If the quantity of air delivered at the fan be doubled, the power used will be multiplied by eight. Excessive fan speed is greatly to be condemned. If this machine can be run at half speed at night and on idle days large economies can be effected.

Again a fan built for either one of the two forms of ventilation should be operated accordingly. A pressure fan should not be run exhausting or vice versa. By so doing the power used may be increased as much as 15 per cent.

The last advice contained in the report related to such a use of power as will make the load as even as possible. Cutting—that is, where possible—and pumping at night and using storage-battery locomotives were described as methods of reducing power consumption. Where the town lighting is separately metered, it will be noted that the demand is low in the summer. By figuring this use of this power separately, it will be possible to note with assurance whether power is really being economized.

Should Each Bond Be Separately Tested?

N. A. Johnson questioned Mr. Woltz's inclusion of the bond tester in the equipment needed to determine the efficiency of the return circuit. He said that with a thousand bonds, more or less, to test, how could the bond tester be effectively used? He believed with Mr. Woltz that the best method of testing bonds was by short-circuiting near the face of the workings, determining the whole drop in voltage, subtracting from it the proper drop for the trolley and feeder lines and so getting a figure that would closely approximate the current drop in the return circuit.

Mr. Edwards, the president, agreed with Mr. Johnson, saying the bond tester was all very well for a bond or two. Having proved that a few were defective, one could go to the superintendent and declare there must be many more. He then might believe the electrician's analysis of the conditions or he might and probably would, declare the bonds in question exceptional. He believed the voltage drop test to be the better method, though it failed to inform the superintendent just where the defect lay.

Another remarked that the main work before the engineer is to test not the bonds in all the roads, gathering and main alike, but those in the main roads where the current is larger and the losses most significant. Following that consideration to its conclusion the work of bond testing might be greatly reduced. C. E. Rogers was in favor of a most rigid examination of bonding. He would have all the rails numbered so that a report could be made as to poor bonds once or twice a year after a careful proving of them with a bond tester. The advantage of numbering bonds is that when any get into such poor condition that their failure as conductors is revealed by arcing, the number of the bad bond can be readily recorded and the condition remedied. This is less conveniently possible when there is no system of accurate identification.

Using a Car for Testing of Rail Bonds

One of the members suggested that a good bond be made and the drop across it recorded, this serving as a guide as to what can be expected and furnishing a standard for all the other bonding. The presiding officer remarked that it was his practice to establish a standard of perfection. As conditions ran, he found in his mines bonds running from 30 to 95 per cent of that standard.

R. J. Wensley remarked that in railroad work he had used a car for testing rail bonds, the current entering by the front wheels and leaving by the back. A millivolt meter recorded the drop in voltage on both sides of the rail joint. The bad bonds were marked before the car proceeded to the next bond. To this the president of the association interposed the objection that few road-repair men could use a millivolt meter half a day without burning it out.

The recommendation that storage-battery locomotives be used for gathering, despite the fact that their performance was somewhat lower than that of the reel types, occasioned animated discussion. What, asked one, is the relative output of the two types?

Mr. Woltz declared that in one instance, where both types were operated successively in the same place, it was found that the storage-battery locomotive hauled seventy-six coal cars and the rock cars that naturally went with them, while the reel locomotive handled 106 coal cars and their normal quota of rock cars. The partings were later advanced so as to make the number of cars gathered by the storage-battery locomotives about equal to the number gathered by the reel type. Comparisons such as these, without details as to the equipment and conditions, are, however, hardly conclusive.

It is true that locomotives of equal weight gave equal pull regardless of the power source, but, unfortunately, the batteries of the storage-battery locomotive ran down prematurely or were injured permanently if they were required to pull all that the weight of the locomotive would in itself permit.

Mr. Wensley said that the depreciation of the battery should not be overlooked as a count against the accumulator locomotive, but a member called attention to the fact that the breakage of cables was an even greater source of operating loss.

Mr. Edwards remarked that the use of over-large motors was a prolific cause of waste of power. He knew of a mine repair shop, designed by an architect rather than an electrician, which had a 24-hp. motor. In this shop 4 to 6 hp. was all that was used. A large loss in power was incurred in running so large a motor for so small a demand. Some time later a fan motor was needed and the shop motor was pressed into service, the 24-hp. motor being replaced by one giving only 10 hp.

Wasteful to Crack Nut With Sledge Hammer

Following up this idea, E. D. Knight, of the Cabin Creek Consolidated Coal Co., called attention to the losses sustained in times like these from the use of large generating machinery. When the load is small and generators are large it is difficult to keep down the kilowatt-hours. He had seen cases when the load on the generator took less power than the exciter. With such relatively large units it was difficult to bring the power generated down to accord with the tonnage produced. Mr. Edwards said that at three mines with no production the power consumption had been reduced to 20, 23 and 35 per cent of normal, respectively.

Mr. Rogers urged that the return circuit be bonded to available pipe lines and said that he had been using such water lines for the return current and had found no signs of injury to the pipes.

R. J. Wensley then made an extemporaneous address with the "Automatic Substation for Coal Mines" as his theme. He said that the railroads had been supplied with such equipment for years and that some time ago the electric companies prepared to sell like equipment to coal companies, but as the companies' engineers were misled by railroad practice, which differed materially from mine practice, they designed controlling devices that cost four times as much as the machinery to be controlled, and hardly any attempt was made to sell it.

Railroads had at times, and frequently, sections with absolutely no load. Consequently it was arranged that the substation close down automatically when there was no load on the line, but this condition did not exist in mines, and accordingly no self-acting devices were needed to shut down the substation during no-load periods. The substation is closed down only by manually-operated equipment which may or may not be remotely controlled. At the Mt. Olive mine of the Consolidated Coal Co., in Illinois, ten stations are handled by a single electrician, and this man does not even start the main station, that being done at the power house at a distance.

Mr. Wensley said that there was always a danger of an open phase. An induction relay is provided in the automatic substation that will not let the machine start unless it is provided with polyphase current. The relay coils are built

so as to conduct the single-phase current without burning out.

The "Report of the Committee on Depreciation of Mine Equipment" was not made. As explained by E. D. Knight, one of the committeemen, J. J. Fluck, who had collected most of the data and was chairman, was being operated on for appendicitis and was unable to assemble his material or be present. Consequently nothing could be done but report progress.

At the meeting of Sept. 21 the "Report of the Committee on Power Plants" was read by R. R. Webster, the chairman. Mr. Webster said that direct current at 250 volts, the most desirable voltage for safety, was well suited to a plant where the transmission distance did not exceed 1½ miles. A lighting circuit could be carried two miles. With a limit to distance such as that mentioned the direct-current plant was really preferable, for it saved in transformer costs and in cost of maintenance.

The location of the power house should be determined by the following considerations, which in but few cases could all be satisfied concurrently: The power house should be close to the mine; it should be supplied with coal direct from the mine cars; it should have a good water supply; where no condensers are used it should be placed where the exhaust steam can be used for heating the commissary, the office and adjacent buildings; it should be located near the center of the load. However, as the report stated, it is quite easy to bring in the coal by railroad cars with satisfactory cost, and the station could do well, even where remote from the center of the load, if alternating current were used.

Over-Large Estimates Hamper Operation

The power needs should be carefully estimated, but when estimates are being made it should be remembered that too high an estimate is as fatal as one that is too low. Except in a small plant, power should not all be concentrated in one unit, for at times the load will be so light that only part of the equipment should be running, and if there is but one unit it will be running too light. The night load is in general quite low. A 500-kw. plant may use 300 kw. during the day and only 100 kw. at night. In an actual case while the power use dropped, as stated, from 300 kw. to 100 kw. the coal used dropped only to 87 per cent of the normal consumption.

Reciprocating engines have the advantage that the parts are relatively visible and are therefore understood by the average engine runner better than are the parts of the steam turbine. The reciprocating engine uses a large quantity of oil, and the oil that goes into the steam gives the boilers much trouble. These engines are ill-adapted to the higher steam pressures. On the other hand, the turbine gives less trouble, saves space in the power house and though most mysterious in its operation is essentially more economical. The jet type of condenser is to be preferred, as it uses less water than other types and gives greater economy.

Fire arches may be either sprung or suspended. If the former they will last long if well built, but if the ordinary brick mason found around the mines erects them they will soon sag or fall. The suspended arch is more expensive but it will last longer and does not require the services of a really competent man for its erection.

The report declared that a feed-water meter and a curve-drawing watt-meter are the two instruments that should be purchased in preference to any others, if only two are to be bought. The first shows what water is really delivered. The number of feed-pump strokes can be counted, but there may be a heavy leakage in the valves.

It is a good practice to compare the water according to the water meter with the product of the pumping time in minutes, the number of strokes the pump makes per minute and the net capacity of the pump barrel. The difference will be leakage. Some interesting facts may be learned from the difference, which may set the engineer to grinding his valves or ordering new ones.

In discussing the paper the president said that if 200,000 kw.-hr. are used per month, it is well to consider the possibility of an isolated station being more economical than purchased power. If 500,000 kw.-hr. are consumed per month, then it is fairly safe to put in a central station of your own, for it will be large enough to justify the employment of good engineering talent to run it, and the best equipment, instruments and devices to make it really efficient. Asked what the cost of power was with the elaborate plant described in the report, the chairman of the committee said it was 2 to 3c. per kw.-hr., but that it would be lower if the plant were run to capacity.

Discussing this statement someone asked: "Why pay 2 or 3c. for your own power when you could buy it of a power plant for 1¾c.?" Mr. Woltz said his company purchased a million and more kilowatt hours per month. It used 3,500 kw. normally and up to 5,000 kw. at peak loads. So far the company had not seen fit to put in its own plant, though failure to sell "bug dust" and "rash" might change the company's policy.

M. A. Maxwell said he had been salesman for purchased power but was now a consumer, but his leaving the power-plant business had not changed his ideas. He still believed in purchased power. Most companies, he said, grow from year to year. Their first mine is operated by a direct-current plant. Some time later they will open another plant some six miles or thereabouts further up the creek. To put in a direct-current plant at that point would be an undesirable expense, as one alternating-current plant would serve both places.

They could have erected this in the first instance, but it would have been running at half capacity and would have been wasteful. A lot of money would have been tied up without commensurate result. Purchased power would be a flexible arrangement that would run the first and both plants with a maximum efficiency and minimum cost.

Mr. Maxwell further said that a coal company usually finds it quite difficult to finance a really good central-station plant, and when it has been financed, unless it is assured of a near-capacity load from the first, the costs of power production are loaded with an immense overhead. Most coal companies omit depreciation and interest in calculating power costs. They can produce power under those circumstances almost as low as they can buy it, but what of it? The depreciation and interest charges have inevitably to be met.

E. D. Knight said that the converting ratio at the purchased-power plant was closer than in the private plant. Josiah Keeley, general manager of the Cabin Creek Consolidated Coal Co., said that his company paid normally $4,000 to $5,000 a month for purchased power. Yet the cost was barely $1,000 a month less when the mines stood idle. It looked like a poor contract to him. C. E. Rogers, however, showed that conditions were little better in the private plant and put the accompanying table on the blackboard.

RELATION OF POWER PER TON AND POWER COST TO COAL OUTPUT AND POWER GENERATED

Month, 1921	Tons Produced	Kw.-Hr. Produced	Kw.-Hr. per Ton	Cost per Ton, Cents
January	18,488	104,940	5.11	9.80
February	14,104	109,290	7.75	12.70
March	23,465	121,660	5.18	9.20
April	38,665	140,610	3.64	6.40
May	59,709	183,770	2.64	4.30
June	69,456	181,560	2.60	4.60
July	59,807	189,145	3.16	5.00
August	66,762	184,630	2.77	4.93

One of the members declared that when the coal produced was cut one-half, the power bill dropped to nine-tenths of that which was normally for full tonnage.

Thirty-Three Men Indicted for Willis Branch Shooting.—Five officials of District No. 29 of the United Mine Workers of America and twenty-eight others were indicted Sept. 22 for "attempt to commit murder and conspiracy" in connection with the "shooting up" of the Willis Branch plant several months ago. This has nothing to do with the Mingo troubles except that its success in driving everyone away from the mine emboldened the Mingo strikers to try the same tactics along the Tug River. The men indicted are John Sprouse, president of District 29; James Gilmore, board member and former president; Frank Williams, George Barrett and Tony Stafford.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

GAINS thus far made in industrial activity are real, and there is steady progress toward better business, according to a bulletin reviewing current market conditions issued Sept. 21 by the National Bank of Commerce in New York. "With the exception of cotton," the bulletin continues, "the crops are reasonably good, and their movement is being reflected in an improved banking position as farmers' obligations are liquidated. Cotton mills, the wool manufacture, and the boot and shoe industry are all holding their improvement of recent months. Although the steel industry is operating at about one-third of capacity, production of both pig iron and steel made fair gains in August. Orders are small, but they have come from widely diversified sources, both geographically and as to consuming industries. Many other industries report slight betterment, and building activity is being remarkably well maintained throughout the country.

"Because of uncertainty as to what the consumer can and will buy, retailers generally are ordering with great caution, while many wholesalers in turn are refraining from placing advance orders. The adoption, at any stage from manufacturer to consumer, of a policy directed toward generally higher prices to the consumer will not only curtail buying but will result in slowing down the gratifying progress already made.

"Large classes of labor have taken their losses by severe wage cuts. Among those which have accepted them have been many skilled crafts which have seen that in the long run wages on the new basis will have a purchasing power equivalent to that when wages were higher.

"Certain classes of labor contrast unfavorably, however, with labor as a whole. The time is not far distant when not only that uncertain group known as the 'general public' but those sections of it consisting of other classes of workers and farmers will have come to a realization that labor pays its own wages, which are ultimately measured not in money but in goods."

Clothiers Predict Trade Revival

In his address at the opening of the eighth annual convention of the National Association of Retail Clothiers, Sept. 20, at Rochester, N. Y., Andreas Burkhardt, of Cincinnati, president of the association, expressed the belief that American business had turned the corner to the upward grade. The press was charged with fostering the so-called buyers' strike and the protective tariff was said to favor the large manufacturer at the expense of the consumer.

Car Loadings Fall, Due to Holiday

Observance of Labor Day throughout the country resulted in a reduction in the number of cars loaded with revenue freight during the week which ended on Sept. 10, compared with the previous week, according to reports received from the American Railway Association. The total for the week of Sept. 10 was 748,118 cars, or 82,483 less than the preceding week and 135,297 cars under that for the corresponding week last year. It also was 198,852 cars less than were loaded during the corresponding week in 1919.

Trade Slump Ended, Credit Men Say

Directors of the National Association of Credit Men, meeting at Atlantic City, Sept. 20, expressed the belief that the bottom of business depression has been reached, but declared that everyone must put his shoulder to the wheel before the nation begins to see a rising tendency in business. A resolution laid down principles for business credit, and the association will be asked to adopt them. These declare that idleness accentuates the business trouble and that everyone must work, live substantially and thriftily and get back to prosperity.

70 Steel Mills Start in Ohio

Several thousand men were back at work during one of the most active weeks in six months in the steel mills in the vicinity of Warren, Ohio, beginning Monday, Sept. 19. By the end of the week seventy mills were in operation. Six sheet mills were started by the Trumbull Steel Co. Monday morning and the remaining six Tuesday. Sixteen tin mills also were operated at this plant, six starting Sept. 19 and ten on the following day. At the Western Reserve Plant six of the eight hot mills were started Tuesday. At Newton Falls the Newton Steel Co. ran in full, operating ten hot mills. In Niles twenty-six mills were in operation, while sixteen remained idle. The Falcon Steel Co. started five of its eight sheet mills Monday morning. All of the Thomas twelve steel mills were in operation for the first time this year, and nine of the ten hot mills at the Republic Iron & Steel Co. plant were running.

New York Industrial Outlook Poor

Reports made public by Henry D. Sayer, State Industrial Commissioner of New York, indicate no promise of a revival in manufacturing this fall. No consistent improvement in industrial activity for August was noted, while employment conditions in 1,600 factories, carrying a total of 400,000 workers on the payroll, were said to be at a standstill. Increased activity in August occurred chiefly in the preparation of food products, in textiles, paper manufacturing and in the shoe and leather goods industries. Employment conditions were better in paper manufacturing, textile, shoe and leather, sugar refining, confectionery and food products industries. Reductions in employment were made in the clothing industries and in the manufacturing of beverages, metal goods, cement, chemicals and drugs.

Cotton Mills Ready to Resume

After a suspension of nine months, the Pocahontas and the Matoaca cotton mills, Petersburg, Va., two of the largest textile plants in that section of the state, were prepared Sept. 12 to resume operations as soon as there was sufficient water in the Appomattox River to supply power. Orders are being received in increasing numbers, it was said, and full-time operations are contemplated.

Ford Plant Cuts Off a Work Day

Effective immediately, the Highland Park (Detroit) plant of the Ford Motor Co., will operate on a five-day basis, according to a statement issued Sept. 17. No announcement was forthcoming as to reasons for the curtailment.

Anthracite Operators' Advertising Campaign to Show That Producers' Profits Are Modest

UNDER the caption "Advertising a Necessity" the September issue of the *Coal Merchant*, the organ of the National Retail Coal Merchants' Association, Philadelphia, states:

"By the time this issue of the *Coal Merchant* reaches you, you will have probably noticed in the press the advertisements of the anthracite operators.

"The General Policies Committee of the Anthracite Operators has started a campaign which will run in the press for twelve weeks. It is their intention to inform the public that the profit of the anthracite operators on the sale of a ton of coal is very small. This will mean that the retailer will have to explain to the public the increase in the cost to the consumer. It will be necessary for the retail coal dealers to follow up the campaign of the anthracite operators, or the public will think that the retailers are getting huge profits, when, as a matter of fact, today 75 per cent of them are operating in red figures.

"The Board of Directors of our association has authorized the appointment of a committee, known as the Committee on Public Information, of which R. J. Wulff, of Brooklyn, N. Y., has been made chairman. That committee has made a report and it is printed herewith.

"As soon as the suggestions, in forms of advertisements, which the committee recommends for use in various localities, are received, all the members of our association will receive a copy of each of them. These advertisements should be printed in the local papers by either the local association or individual dealers.

"It is necessary that the retail coal merchant do some advertising, even though it be small, so as to explain to his customer exactly what his profit is. He should get in touch with the editors of the various local papers, and show exactly what the retail profit is on a ton of coal. In most every case, you will find the local editor is fair and will print your side of the story."

It's Your Right to Know if Coal Prices are Wrong

IS the price of anthracite coal unfair? The public is entitled to all the facts. Here are some of them as they relate to the price of anthracite at the mine. Others will follow.

Trace the course of a dollar spent today for anthracite. The price situation unfolds as you go forward. For example, the mine owner takes the dollar and puts it to work.

The first call upon it—and therefore mentioned first—comes from mine workers. They take approximately 65 cents of it for wages. Wages are fixed by the 1920 award of the U. S. Anthracite Coal Commission, decreeing that the scale remain in force until March 31, 1922.

Thirty five cents of the dollar is now available. To be spent how? Fifteen cents goes for various supplies necessary in maintaining the mine, its breakers and pumping plants. Not a penny of profit clings to the mine owner in these purchases.

The dollar now is down to twenty cents. These go for insurance, taxes, selling expense, depletion, depreciation of plant and equipment—and such uninsurable risks as strikes, mine fires and floods. What remains is the "margin" out of which the profit must come.

The U. S. Federal Trade Commission says:

"Margin must not be confused with what is often called profit. Selling expense, interest, income and excess profit taxes, as well as other items, must be deducted from it before the net profit available for dividends or surplus from the operation can be determined."

What Is the Anthracite Producers' Profit PER TON?

The facts as established by the U. S. Federal Trade Commission are published broadcast. They are known to all men. Anthracite owners' "margins," according to that authority were less than 39 cents per gross ton in 1918. This represented operations producing 95 per cent of the total tonnage of fresh-mined anthracite.

From 1913 to 1918 inclusive (covering the war period) the margin on which mine owners depended for profit was 42.8 cents per ton. From this had to be paid interest, selling expenses, Federal taxes, etc., before anything was available for dividends

In other words, whatever the price you paid for coal—say $7 to $14—the mine owner on the average never retained more than 43 cents per ton on your total coal bill. *This shows that there were no inflated war-time profits.*

Today the average "margin" in the anthracite region does not exceed 60 cents a ton. The operator is fortunate whose margin approximates that figure. Only a few exceed it, most of them make less, and many are operating at a loss.

FIRST AD. OF ANTHRACITE OPERATORS' SERIES
The photograph of a breaker which appeared at the top has been omitted

Report of Committee on Public Information

The report of the Committee on Public Information of the National Retail Coal Merchants' Association is as follows:

"The Board of Directors of the National Retail Coal Merchants' Association has authorized the appointment of a committee known as the 'Committee on Public Information.'

"The anthracite operators' association is projecting an advertising campaign which will cover a period of twelve weeks. We understand that it is their purpose to give the public information as to the cost of producing coal, which, of course, will tell the public what coal costs the retail distributor at the mines.

"It will be necessary for the retail distributor to place information before the public showing the necessity for the margin existing between the price of coal at the mines and the price charged the consumer delivered at his house door or in his bins.

"Different conditions prevail in every locality. Different costs of distribution are effective so that no set plan can be suggested by the 'Committee on Public Information' generally throughout the anthracite-burning territory.

"It is the purpose of the committee, however, to have distributed to every individual member of the organizations affiliated with the National Retail Coal Merchants' Association suggestions and forms of advertisements, which, with modifications, we hope will enable the individual dealer to work out this problem according to the necessities of the section in which he is doing business.

"State associations cannot outline a fixed plan which would be suitable at the same time for New York, Albany, Syracuse, Buffalo, etc., nor can the national association outline a plan which would be suitable at the same time for Chicago, Detroit, St. Louis, New York, Philadelphia, etc.

"Local organizations can perhaps work out some plan which will cover their own particular territories, but in the final analysis the individual dealer must be able to so an-

65%
IS TAKEN BY LABOR FOR WAGES
15%
FOR MINE MAINTENANCE
20%
Out of this are Paid Taxes, Insurance, Depreciation, Royalties, Selling Expense, etc., before Operators can get any Profit

Why It Costs So Much To Mine Anthracite

WHAT natural resource so essential to public welfare and health demands such expense and effort to reclaim as anthracite coal? Obstacles must be overcome at every step of its progress from rock-ribbed fastnesses underground to our homes and factories. The miner's pick—the waiting railroad car—your local dealer's delivery cart—these are only a few of the links in the anthracite chain. Throughout its length, outlays of money and labor are required.

Explosives, air for ventilation, and timber in vast quantities are called for every day in the operation of an anthracite mine.

Fully as important as the unceasing use of these materials is the removal from the mine of tons of rock. Also thousands of gallons of water are pumped daily.

Mines use 50,000,000 pounds of explosives to blast out the 195 miles of tunnels and gang ways driven annually.

This tunneling, equal to the building of a double-track subway between New York and Philadelphia, is necessary in order to get at new supplies of coal.

For every ton of coal mined, 6,700 cubic feet of air must be forced into the workings by elaborate fan and blower systems.

Supporting props must be changed constantly. More than 800 feet of lumber is used for every carload of coal.

Water which gathers constantly in the mines must be kept down. This means costly pumping every hour in the 24.

On the average 18 tons of water are raised to the surface for each ton of coal produced—1,620,000,000 tons of water annually.

Even the ton of material coming up in the mine car often contains 33 per cent of slate and other refuse.

Of the remainder one-third of the coal is too small to use in homes, and is always sold at a loss.

As a result there is often less than ½ ton of coal-bin anthracite out of each ton of material mined and handled.

The cost of supplies and of the waste removed is additional to the cost of labor and the expense of converting in the breakers the crude coal into domestic anthracite.

THIS IS THE SECOND OPERATORS' ADVERTISEMENT

alyze the gross margin which he adds to the cost alongside his plant as to leave no question in the minds of the consumers buying from him that the margin that he is charging is justified."

In a circular to members dated Sept. 22, J. E. O'Toole, executive secretary, sent out suggestions for copy to be used by the dealers in local papers as follow-up on the national campaign of the anthracite operators. In his letter Mr. O'Toole says:

"Advertising by the retailer is essential, and our Committee on Public Information, of which R. J. Wulff of Brooklyn, N. Y., is chairman, has suggested that the specimens enclosed be used. We would also suggest that where possible the retail coal dealer get in touch with the editor of his home paper, and show him that the retailer's margin is not his profit. We find that in the various investigations

Here's the Mine Part Of Your Anthracite Bill

IT IS HARD for the anthracite user to believe that somebody is not making a big profit on coal at say $14 a ton. (It costs more in some parts of the country). But show him an itemized bill of mining costs and he is able to judge for himself concerning mine owners' profits. Here are the facts:

THE AVERAGE RECEIVED BY THE PRODUCER AT THE MINE FOR HIS TOTAL TONNAGE IS $6.15

Only about 60 per cent of all anthracite (the domestic sizes, grate, stove, egg and nut) is sold at the mine at prices ranging from $7.60 to $6.60. Ten per cent is pea sold at at $6.00. The remaining 30 per cent is composed of the very small "steam" sizes, buckwheat, rice and barley, and sells at an average of about $2.25 a ton much BELOW the average cost of production.

The average cost of producing a gross ton of run-of-mine anthracite preparing it in 8 marketable sizes and loading on cars, at the present time is $5.55. This cost is divided as follows:

Labor per ton	$3.92
Materials	1.05
Insurance, taxes, selling expense, etc.	.58
	$5.55

This cost applies alike to coal selling at the mine for $7.50 a ton or more and to the small by-product sizes of coal selling as low as $1.50 a ton.

Subtracting the average cost of production ($5.55) from the average price at the mines ($6.15), leaves a margin of 60 cents to the mine owner. Federal Taxes and interest on investment must be paid out of this 60 cents before any profit can be made.

The U. S. Fuel Administration found that anthracite mines have an investment of about $8 per ton of annual production.

In an industry involving so much of hazard as the mining of coal, a return of 10% on the investment could not be considered excessive. This alone would permit 80 cents per ton profit—if anybody could make that much.

The figures show a cost of production making it absolutely impossible (after Federal taxes and interest on borrowed money are provided for) for the anthracite mine owner to make more than 50 cents a ton profit. Few exceed it, many make less and some are operating at a loss.

The difference between *the mine price* and *the retail price* is accounted for by freight charges and the cost of retail distribution, in the profits of which the anthracite producer does not share.

ANTHRACITE
General Policies Committee
617 Chestnut Street, Philadelphia

THE THIRD IN THE OPERATORS' SERIES, RELEASED THIS WEEK

being conducted the press gets the impression that the retailer's margin of two or three dollars, as the case may be, is his profit."

The copy suggestions, three in number, stress the inability of the dealers to lower prices because of labor and transportation costs and urge early purchase as a household economy. Waiting on lower prices for anthracite is termed speculation with household funds. The buyer is told that neither producers nor coal dealers are making any more money than they made when prices were lower. Other suggestions are to follow and it is intended to stir the local dealers to keep pace with the advertising of the producers.

Much Vaunted Dunbar Wage-Cut Plan Fails

THE so-called "Dunbar plan" of meeting the industrial situation by community action had its first setback last week, when 180 coal miners employed by the American Manganese Co. in the Connellsville region walked out after a demand for the Frick wage scale had been refused. The mines are idle but it is stated that they will not be closed definitely until the attitude of the men becomes more clearly developed. In the meantime it is understood that fuel needs are being covered by open-market purchases.

The present wage scale at the manganese plants is approximately 30 per cent below that paid by other operators. The scale was put into effect last July 1 after conferences with plant officials, representatives of the men and merchants at Dunbar. At that time the men accepted the present scale and merchants reduced retail prices proportionately and company-house rents were reduced. Other departments of the manganese plant are operating.

Indiana to Settle Its Disputes According To Joint Wage Agreement

DIFFERENCES between miners and mine operators of the Glendora, Peerless and Star City mines in the Sullivan County coal fields of Indiana "are of such a nature as to permit of their consideration and adjustment according to the usual and proper procedures set forth in the joint wage agreement between mine workers and operators," according to a report submitted to Governor McCray by John Hessler, president of district No. 11, United Mine Workers of America, and P. H. Penna, secretary and treasurer of the Indiana Bituminous Coal Operators' Association, members of the Governor's arbitration committee. Mr. Hessler and Mr. Penna constitute an arbitration committee to make a "full and final settlement" of the disputes.

Despite the foregoing report, the Glendora coal mine, near Sullivan, Ind., which had been working about one week, is idle again, following the visitation to the mine of a vigilance committee, which ordered the night force to quit work. The force complied with the request, and although the mine whistle sounded for work in the morning, not a man appeared.

Southeastern Retail Coal Merchants Form Organization in Atlanta

HAVING as its purpose "the promotion of a closer relationship between operators, distributors and consumers," the Southeastern Coal Merchants' Association was organized Sept. 22 at a meeting held at Atlanta, Ga., and attended by retail coal merchants from six Southern states.

J. A. Yarbrough, of Charlotte, N. C., was elected president of the newly-formed association and R. R. Johnson and Thomas F. Stocks, of Atlanta, were elected members of the board of directors. Other officers elected were C. M. Farrar, Augusta, Ga.; W. T. C. Berlin, of Memphis, Tenn.; J. E. Mallory, of Anniston, Ala.; B. Elias, of Asheville, N. C., and H. R. Turner, of Greenville, S. C., vice-presidents, and J. G. Hancock, of Marietta, Ga., treasurer. Members of the board of directors elected were R. R. Johnson, of Atlanta; W. W. Comer, of Knoxville, Tenn.; B. R. Bobbs, of Athens, Ga.; Thomas F. Stocks, of Atlanta, Ga.; H. C. Duckett, of Greenwood, S. C.; S. R. Moore, of Charlotte, N. C., and W. J. Bramer, of Savannah, Ga.

Under the constitution the board of directors is empowered to elect a secretary of the association to devote his entire time to the work of the organization, at a salary of $7,500 a year. A man thoroughly familiar with the coal trade in the Southern states will be chosen for the position, it is said. James S. McCarthy, of Philadelphia; Fred Gore, of Atlanta, and Grover Meinert, of Atlanta, were appointed by President Yarbrough to engage a suitable secretary.

A drive to increase the membership of the association to 1,500 merchants, headed by the secretary and other officers and directors of the association, is to be started soon. The initial membership of the organization comprises fifty-nine companies.

A prediction that within the next thirty days a convention of 1,500 coal men, representing all branches of the coal industry, will meet in Atlanta was made by Grover Meinert, a coal merchant. A resolution authorizing affiliation with the National Retail Merchants' Association was adopted by the association.

WEST VIRGINIA'S miner troubles appear to be major ones. —*Norfolk Virginian-Pilot.*

Miners' Convention Spends Time in Strife: May Delay Scale Demand Till February

WHEN the International Convention of the United Mine Workers of America met on Tuesday, Sept. 20, at Indianapolis 1,500 delegates were present and all the district presidents except Ben Farrimond, of Washington, the state which as far as coal mining is concerned has just gone open shop. In his report President John L. Lewis attacked conditions in West Virginia and the indictment of 325 miners on murder charges, saying that the conditions in that state made it "obvious that justice cannot prevail."

He declared that no reduction in wage could be permitted, but recommended that the definite wage demands be formulated by a scale committee and be presented for adoption next February, to receive which the convention will assemble at that time. Mr. Lewis asked that Robert H. Harlin, of Seattle, Wash., and Frank Farrington, president of the Illinois district, who had, as Lewis alleged, issued false statements about the union, be rebuked by the convention.

He also asked the convention to endorse the International Board's action in requiring Alexander Howat to tell the Kansas strikers to return to work. Mr. Lewis requested the convention to reaffirm its declaration of two years ago in favor of nationalization of coal mines, and desired it to declare that a full test should be made as to the constitutionality of the Kansas Industrial Court.

The report of Secretary-Treasurer Green showed that the membership had reached 515,243—the greatest number ever reached by the United Mine Workers. He declared that the union had in cash $486,820, or $0.94 per member, or $0.65 per mine worker, figuring the number of mine-workers at 750,000.

Philip Murray, international vice-president, and Lee Hall, of Columbus, chairman of the Scale Committee, both declared that wage reductions were unthinkable, but the constant reiteration seemed to spell out the fateful word "inevitable."

International President Lewis won his victory over District President Farrington when the convention ordered, Sept. 23, that an account be made of the $27,000 expended in an unauthorized strike two years ago.

On Sept. 24 the convention was stirred into fury by the action of the Borderland Coal Co., which filed suit against the mine workers and operators. It was readily understood that the Clayton Act defended the mine workers against conspiracy when acting alone, but how when conspiring with operators? Was the check-off such a conspiracy and was it a conspiracy to say: We cannot pay such a wage so long as you accept a lower wage elsewhere? Samuel Gompers, president of the American Federation of Labor, who was present, said to Mr. Lewis: "John, in defence of that principle I would like to visit you in jail," which prospect for Brother John seemed to please the delegates, who shouted in approval.

John L. Lewis is using the declaration of the Borderland Coal Co. in its suit, that the mine workers' union will not keep its promises, as a means of compelling the delegates to line up behind the international officers in ordering the Kansas workmen back to work in fulfillment of their contract.

The meeting of Monday, Sept. 26, discussed the Howat issue, the Howat men being desirous of a vote, and Vice-President Murray, presiding officer, refused to permit the meeting to be stampeded with a final decision.

J. B. Neale, Coal Operator, Among Ten More Named to Unemployment Conference

SECRETARY HOOVER announced Sept. 22 the addition of ten names to the list of conferees chosen to meet in Washington, Monday, Sept. 26, to discuss means of relieving unemployment. Among this latest group of delegates invited to take part in the conference is James B. Neale, president of the Buck Run Coal Co., Minersville, Pa., and vice-president of Thorne, Neale & Co., New York and Philadelphia.

Mr. Neale is the fifth representative of the coal industry to be asked to the unemployment conference, John T. Connery, of Chicago; W. K. Field, of Pittsburgh, and E. M. Posten, of Columbus, Ohio, operators, and John T. Lewis, president of the United Mine Workers of America, having previously been named.

Unemployment Conference On; Committee On Emergency Measures in Mining Named

THE initial efforts of the unemployment conference at Washington are being directed to meeting the emergency needs of the unemployment situation. Simultaneously with this an exhaustive study will be made in order to bring out the exact facts concerning unemployment. Estimates of the number of unemployed vary from three million to five and one-half million and it is felt that reliable data as to the extent, geographical distribution and industrial distribution are imperative before relief measures can be put into effect.

Harry S. Robinson, of Los Angeles, who was chairman of the Bituminous Coal Commission of 1920, was appointed chairman of the important Committee on Organization of the unemployment conference. One of the principal committees appointed in the organization of the conference was one on "emergency measures in mining." At the time of this writing the chairman had not been selected, but the membership of the committee is as follows: John T. Connery, W. K. Field, John L. Lewis, J. Moore, James B. Neale, E. M. Posten, John D. Ryan, Miss Mary Van Kleeck, John P. White, Samuel A. Lewisohn and David L. Wing, the last named being appointed executive secretary.

After the emergency measures and the collection of statistics are completed the conference will be regrouped into committees whose function will be to recommend permanent measures whereby unemployment can be held at a minimum. Public hearings will be held every day this week at the same time that the work of the small specialized committees is progressing. These hearings are expected to result in a clear sizing up of the unemployment situation as it exists. It may throw an interesting light on the accuracy of previously accepted estimates.

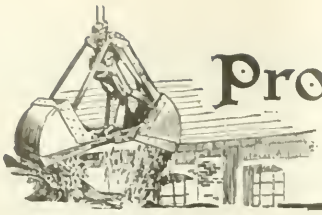
The first public hearing was held Tuesday morning on the statistics of unemployment. F. I. Jones, of the employment service; Ethelbert Steuart, of the Bureau of Labor Statistics, and other witnesses were examined.

Developments in Colorado Coal Mines Unfavorable to Miners' Union

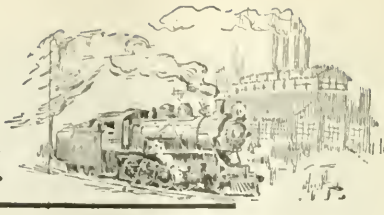
DEVELOPMENTS in connection with the idleness of union miners for twelve days in the mines of the Colorado Fuel & Iron Co. and their subsequent return pending a complete investigation show a tendency unfavorable to the union. The 1,000 miners refused to accept a 30 per cent reduction in wages, and failed to return to work. Since then the Victor-American Fuel Co., one of the largest in Colorado and the largest company having a union contract, has declared its intention to seek a reduction in wages if the present case is settled in a manner favorable to the Colorado Fuel & Iron Co.

Two coal companies of Colorado Springs have filed notices of wage reductions, and the State Industrial Commission is considering the feasibility of a "blanket hearing" to cover all of the wage-reduction petitions.

Statements purporting to come from John McLennan, president of the district miners' union, that the men would not be governed by the findings of the State Industrial Commission, and that a walk-out would be ordered in every mine where reduced wages were posted may give the union an avenue of escape. The announcement coming at this time is to impress upon the public an accepted version of the law that the commission's decision cannot be binding unless both sides agree to it beforehand. This would narrow the investigation of the commission. Wages would be eliminated. The only question remaining is whether the thirty-day notice clause was violated by the company, and whether the miners, in refusing to work, likewise disobeyed the law by failing to give the required notice.



Production and the Market



Weekly Review

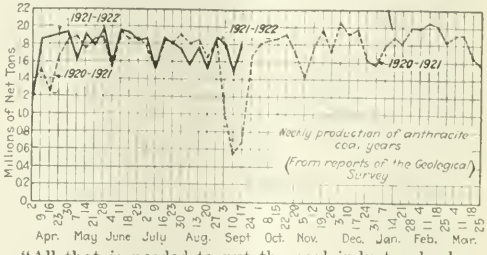
AN INCREASE in the production of bituminous coal from 7,606,000 tons the first week of September to 8,139,000 tons the week of Sept. 17 marks the first sign of improvement in the trade since early summer. The gain in output had no corresponding effect on prices, *Coal Age* index of spot prices recording a decline of one point to 90 on Sept. 26, from 91 for the three previous weeks. A gain of a half million tons a week ordinarily would be a matter for special comment, but it has caused no stir either among sellers or buyers. Careful analysis of the situation on every side shows that one particular and one general condition have contributed to this gain in output.

Throughout the large Eastern industrial region thousands of consumers, using one, two and three cars for a winter's supply, mainly for plant heating, are now buying because this is the time of year they normally buy. In other words, this type of buyer, individually and even in the aggregate of no great moment, represents the seasonal buying that has now begun.

Iron and Steel Industry Consumes More Coal

As against this general, to-be-expected autumn buying of coal in the East and the September rush for domestic sizes of soft coal in the West is the gaining strength of the iron and steel industry. Data published by the U. S. Geological Survey this week covering coal consumed in the manufacturing of coke, both beehive and byproduct, through August, confirm the figures of the *Iron Age* as to the gain in pig-iron production in August. It is strikingly brought out that the present idleness of the iron industry means in round numbers a million tons of coal a week not required and therefore not produced.

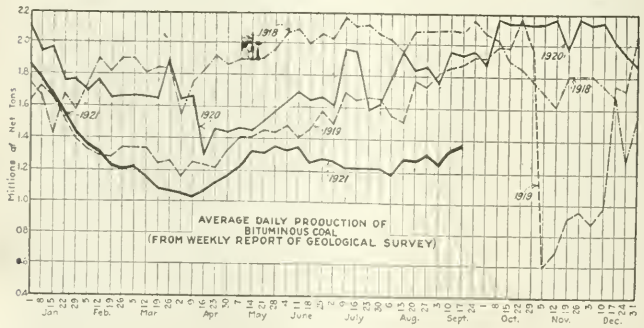
For some time producers of high-grade byproduct coking coal have been watching the dwindling piles of coke at the byproduct ovens, accentuated during the period last winter and this spring when oven operators were reluctantly facing a shut-down. These stock piles are not yet gone, but are believed to be very much lower than they were two months ago. With the revival in the pig-iron industry the byproduct oven represents an opening market for good coal. The oven operators are not generally covered by contracts.



"All that is needed to put the coal industry back on a normal basis is the resumption of average production by the steel industry." This is the opinion of one of the best posted coal traffic men in the country. His analysis of coal loadings during the week ended Sept. 24 shows with all the exactness of carefully checked figures that coal movement would be in excess of 10,000,000 tons if the steel industry were taking its normal requirements. Plans being made for greatly increased production of iron ore, and the increased orders for steel being received, are regarded as propitious indications that the steel industry shortly will come into the market for increased coal supplies.

BITUMINOUS

With a 500,000-ton increase in production during the week ended Sept. 17 over the last preceding full-time week and a further increase noted in preliminary reports of the present week (Sept. 19-24) it is to be hoped that the coal industry has passed the bottom of the long decline in production.



Estimates of Production

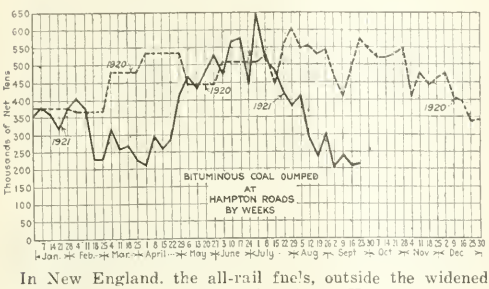
(NET TONS)

BITUMINOUS COAL

Week Ended	1921	1920
Sept. 3 (*a*)	7,606,000	11,167,000
Sept. 10 (*b*)	7,069,000	10,685,000
Sept. 17 (*b*)	8,139,000	11,654,000
Daily average	1,356,000	1,945,000
Calendar year	279,881,000	376,735,000
Daily av., calendar year	1,275,000	1,713,000
ANTHRACITE		
Sept. 3 (*b*)	1,800,000	1,114,000
Sept. 10 (*b*)	1,508,000	562,000
Sept. 17 (*a*)	1,837,000	718,000
Calendar year (*a*)	63,945,000	62,337,000
BEEHIVE COKE		
Sept. 10 (*b*)	60,000	438,000
Sept. 17 (*a*)	63,000	403,000
Calendar year	3,962,000	15,293,000

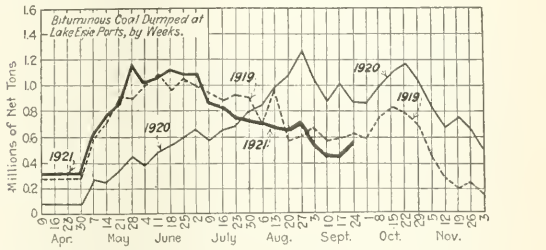
(*a*) Subject to revision. (*b*) Revised from last report

Steam demand is unable to absorb the heavy offerings in the Middle West, where the production of resultant sizes has been greatly increased by the making of domestic coal for trade. High-grade southern Illinois screeninge have been going at 90c., with the end not yet in sight.


Thousands of Net Tons
BITUMINOUS COAL DUMPED AT HAMPTON ROADS BY WEEKS
1920
1921
Jan. Feb. Mar. April May June July Aug. Sept. Oct. Nov. Dec.

In New England. the all-rail fuels, outside the widened territory now served coastwise from Hampton Roads, are being quoted at slightly higher figures, while the smokeless varieties have ceased their downward trend. However, the improvement cannot be permanent with the present condition of New England industry, and the outlook for October is not particularly encouraging. Movement all-rail-shows no appreciable change—2,530 cars during the week ended Sept. 17—from the second week in September, when 2,470 cars went forward.

The export market remains at a standstill, following the onslaught of British shippers to regain ground lost during the strike. Total exports during the week ended Sept. 17 were only 35,932 net tons, while bunkers ran 38,057 tons. Total dumpings for all accounts at Hampton Roads during the week ended Sept. 22 were 197,197 gross tons, a slight increase when compared with the preceding week.



A decided improvement is noted in the movement of dock coal from the Head-of-the-Lakes. With shipments to the interior on a larger scale more dock space has been made available to receive Lake cargoes. A late spurt has taken place in this trade and dumpings for the week ended Sept.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

	Market Quoted	Aug. 23, 1921	Sept. 13, 1921	Sept. 20 1921	Sept. 27, 1921†
Low-Volatile, Eastern					
Pocahontas lump	Columbus	$5.25	$5.20	$4 90	$4.75@$5.00
Pocahontas mine run	Columbus	3.10	3.15	2.75	*2.50@ 2.75*
Pocahontas screenings	Columbus	2.45	2.45	2.20	*1.95@ 2.25*
Pocahontas lump	Chicago	5 00	4.95	4.75	4 50@ 5.00
Pocahontas mine run	Chicago	2 75	3.10	2.95	*2.40@ 3 25*
*Smokeless mine run	Boston	5.45	5.00	5 05	*4.75@ 5.00*
Clearfield mine run	Boston	1.75	1 95	1 95	1 65@ 2.15
Cambria mine run	Boston	2.45	2.35	2.35	2.00@ 2.70
Somerset mine run	Boston	1.60	1.75	1 75	1 45@ 2.10
Pool 1 (Navy Standard)	New York	3.20	3.40	3.25	3 00@ 3.50
Pool 1 (Navy Standard)	Philadelphia	2.95	2.95	3.10	2 90@ 3.25
Pool 1 (Navy Standard)	Baltimore	2.50	2.90	2 75	**2 75@ 2 85**
Pool 9 (Super. Low Vol.)	New York	2.55	2.60	2 40	**2 35@ 2.75**
Pool 9 (Super. Low Vol.)	Philadelphia	2.35	2.35	2.40	2 25@ 2 50
Pool 9 (Super. Low Vol.)	Baltimore	2 30	2.50	2 40	**2 60**
Pool 10 (H. Gr. Low Vol.)	New York	2.35	2.30	2 20	**2 15@ 2.45**
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2.05	2 05	2.05	1.90@ 2.15
Pool 10 (H. Gr. Low Vol.)	Baltimore	2.15	2.20	2 15	**2.25@ 2.35**
Pool 11 (Low Vol.)	New York	2 05	2.15	1.90	1.75@ 2.00
Pool 11 (Low Vol.)	Philadelphia	1.80	1.80	1 80	1.75@ 1.90
Pool 11 (Low Vol.)	Baltimore	1.85	2.00	2 00	**2 10**
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.95	1.90	1.85	**1 75@ 2 00**
Pool 54-64 (Gas and St.)	Philadelphia	1.70	1.70	1 70	**1 65@ 1.80**
Pool 54-64 (Gas and St.)	Baltimore	1.65	1.70	1.70	1.50@ 1.90
Pittsburgh se'd gas	Pittsburgh	2.70	2.65	2.65	2.50@ 2.75
Pittsburgh mine run (St.)	Pittsburgh	2 10	2 25	2 20	2 20@ 2 25
Pittsburgh slack (Gas)	Pittsburgh	1.70	1.70	2.15	2 00@ 2.25
Kanawha lump	Columbus	3.45	3.45	3.45	*3.00@ 3.65*
Kanawha mine run	Columbus	2.15	2.15	2.15	*1.75@ 2.25*
Kanawha screenings	Columbus	1.55	1.30	1.20	**1 25@ 1 30**
Hocking lump	Columbus	3.15	3.20	3.25	3.00@ 3.50
Hocking mine run	Columbus	2.15	2.15	2.15	2 00@ 2.25
Hocking screenings	Columbus	1.60	1.25	1.20	*1.10@ 1.25*
Pitts. No. 8 lump	Cleveland	3.25	3.25	3.25	3.00@ 3.50
Pitts. No. 8 mine run	Cleveland	$2.30	$2 25	$2.15	*$2.00@$2.15*
Pitts. No. 8 screenings	Cleveland	1.85	1.60	1.55	*1.50@ 1.55*
Midwest					
Franklin, Ill. lump	Chicago	3.55	3 65	3.65	**3 50@ 4 05**
Franklin, Ill. mine run	Chicago	2.80	2.95	2.90	**2.40@ 3.50**
Franklin, Ill. screenings	Chicago	1.90	1.95	1.90	*0.80@ 2.65*
Central, Ill. lump	Chicago	2 50	2.70	2 70	2.40@ 3.00
Central, Ill. mine run	Chicago	2.40	2 40	2 40	2.00@ 2.75
Central, Ill. screenings	Chicago	1.65	1.65	1.60	0 90@ 2 25
Ind. 4th Vein lump	Chicago	2.95	2 95	2.95	2.35@ 3.50
Ind. 4th Vein mine run	Chicago	2.50	2.55	2.40	2.00@ 2 75
Ind. 4th Vein screenings	Chicago	1.60	1.70	1 65	*1.00@ 2.15*
Ind. 5th Vein lump	Chicago	2.75	2.90	2 90	2.50@ 3.25
Ind. 5th Vein mine run	Chicago	2.40	2 50	2 40	2.00@ 2.75
Ind. 5th Vein screenings	Chicago	1.75	1.75	1 65	*0.90@ 2 15*
Standard lump	St. Louis	2.65	2.65	7 75	**3 00@ 3 25**
Standard mine run	St. Louis	1.85	1.95	1.95	1.85@ 2 00
Standard screenings	St. Louis	1.00	0.75	0 60	*0.40@ 0.60*
West. Ky. lump	Louisville	3.25	2.75	2 75	**2 50@ 3 25**
West Ky. mine run	Louisville	2.65	2.25	2.25	2.00@ 2.50
West Ky. screenings	Louisville	1.65	1.30	1.25	*0.75@ 1.50*
South and Southwest					
Big Seam lump	Birmingham	3.75	3.75	3.75	*3.25@ 4.25*
Big Seam mine run	Birmingham	2.15	2.15	2.15	2.00@ 2.25
Big Seam (washed)	Birmingham	2.40	7.40	2.40	2.25@ 2.50
S. E. Ky. lump	Louisville	3.65	3.50	3.50	**3.50@ 3.75**
S. E. Ky. mine run	Louisville	2.35	2.15	2 15	**2.00@ 2 40**
S. E. Ky. screenings	Louisville	1.55	1.50	1.50	1.40@ 1.60
Kanaas lump	Kansa City		5.75	5.75	5.75
Kansas mine run	Kansas City		4.25	4.25	*4.00*
Kansas screenings	Kansas City		2.50	2.50	*2.40*

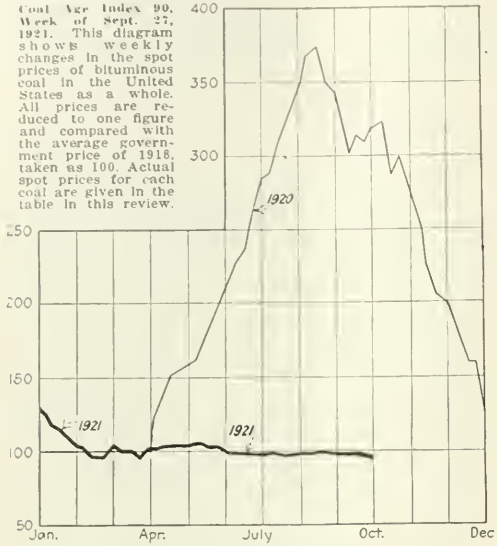
*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in heavy type, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	Sept. 13, 1921 Independent	Sept. 13, 1921 Company	Sept. 20, 1921 Independent	Sept. 20, 1921 Company	Sept. 27, 1921† Independent	Sept. 27, 1921† Company
Broken	New York	$2 61		$7 60@$7 75		$7.60@$7.75		$7.60@$7.75
Broken	Philadelphia	2 66	$7 60@$8 20	7 75@ 7 85	$7 60@$8.20	7.75@ 7.85	$7 60@$8.20	7.75@ 7.85
*Broken	Chicago	5 62	12 75	12 65	12.75	12.65	**13 40**	**12 80**
Egg	New York	2 61	7 75@ 8.25	7 60@ 7 75	7.75@ 8.25	7.60@ 7.75	7.75@ 8.25	7.60@ 7.75
Egg	Philadelphia	2 66	8 10@ 8 35	7 75@ 7.85	8 10@ 8.35	7.75@ 7.85	8.10@ 8.35	7.75@ 7.85
*Egg	Chicago	5 62	12 80	12 65	12.80	12.65	**13 40**	**12.80**
Stove	New York	2 61	8 25@ 8 50	7 90@ 8 10	8 25@ 8.50	7.90@ 8.10	**8 25@ 8 60**	7.90@ 8.10
Stove	Philadelphia	2 66	8 25@ 8 60	8 00@ 8 35	8.25@ 8.60	8.00@ 8.35	8.25@ 8.60	8.00@ 8.35
*Stove	Chicago	5 62	13 40	12 90	13.40	12.90	13 40	**12 90**
Chestnut	New York	2 61	7 75@ 8 25	7 90@ 8 10	7 25@ 8.25	7.90@ 8.10	**8.00@ 8.25**	7.90@ 8.10
Chestnut	Philadelphia	2 66	8 20@ 8 75	8 05@ 8 25	8 20@ 8.75	8.05@ 8.25	8.20@ 8.75	8.05@ 8.25
*Chestnut	Chicago	5 62	13 10	12 90	13.10	12.90	**13.40**	12.90
Pea	New York	2 47	5 00@ 6 00	6 05@ 6 45	5 00@ 6.00	6.05@ 6.45	*6.00@ 5.75*	6.95@ 6.45
Pea	Philadelphia	2 38	4 50@ 5 50	6 15@ 6 25	4.50@ 5.50	6 15@ 6.25	4.50@ 5.50	6.15@ 6.25
*Pea	Chicago	5 62	11 10	11 00	11.10	11.00	**12.40**	**11.15**
Buckwheat No. 1	New York	2 47	3 00@ 3 50	3 50	2.75@ 3 50	3 50	*2.75@ 3.00*	3.50
Buckwheat No. 1	Philadelphia	2 38	2 50@ 3 00	3.50	2.50@ 3.00	3.50	2.50@ 3.00	3.50
Rice	New York	2 47	2 00@ 2 50	2 50	2.00@ 2.50	2.50	*1.80@ 2.15*	2.50
Rice	Philadelphia	2.38	1 75@ 2 00	2 50	1.75@ 2.00	2.50	1.75@ 2.00	2 50
Barley	New York	2 47	1 25@ 1 50	1.50	1.25@ 1.50	1.50	1.25@ 1.50	1.50
Barley	Philadelphia	2 38	1 00@ 1 25	1 50	1.00@ 1.25	1.50	1.00@ 1.25	1.50
Birdseye	New York	2 47		2.50		2.50		2.50

*Prices and freight rates, net tons; quotations f.o.b. cars, Chicago.
†Advances over previous week shown in heavy type, declines in *italics*.

26 were 593,187 net tons—568,955 cargo and 24,232 vessel fuel—as compared with a total of 476,390 tons during the preceding week. Movement for the season to date is 18,362,857 tons, as against 14,838,993 last year.



Coal Age Index 90, Week of Sept. 27, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.

ANTHRACITE

Production of hard coal during the week ended Sept. 17 was 1,837,000 net tons, indicating a prompt recovery from the slump during the preceding week, caused by Labor Day. There is more snap to the trade as autumn days approach and producers are well supplied with orders for family sizes.

Steam sizes are steadier and independent quotations in many cases are approaching circular prices. Movement of hard coal up the Lakes is declining, as shown by the dumpings of 72,400 net tons for the third week of September.

COKE

Production of beehive coke improved slightly during the week ended Sept. 17, when an output of 63,000 net tons was reported by the Geological Survey.

The total production of coke in the United States in August reached 1,650,000 net tons, according to the Geological Survey.

MONTHLY OUTPUT OF BY-PRODUCT AND BEEHIVE COKE IN THE UNITED STATES (*a*)

(Net tons)

	By-product Coke	Beehive Coke	Total
1917 monthly average	1,870,000	2,764,000	4,634,000
1918 monthly average	2,166,000	2,540,000	4,706,000
1919 monthly average	2,095,000	1,638,000	3,733,000
1920 monthly average	2,505,000	1,748,000	4,313,000
June, 1921	1,410,000	232,000	1,642,000
July, 1921	1,285,000	181,000	1,465,000
August, 1921	1,402,000	248,000	1,650,000

(*a*) Excludes screenings and breeze.

In producing the August output of coke, it is estimated that 2,406,000 net tons of coal were consumed. Of the total, 2,015,000 tons were used in byproduct plants and 391,000 tons in beehive ovens.

ESTIMATED MONTHLY CONSUMPTION OF COAL FOR MANUFACTURE OF COKE

(Net tons)

	Consumed in Byproduct Ovens	Consumed in Beehive Ovens	Total Coal Consumed
1917 monthly average	2,625,000	4,354,000	6,979,000
1918 monthly average	3,072,000	4,014,000	7,086,000
1919 monthly average	2,988,000	2,583,000*a*	5,571,000
1920 monthly average	3,685,000	2,758,000*a*	6,443,000
June, 1921	2,026,000*a*	367,000*a*	2,393,000
July, 1921	1,846,000*a*	286,000*a*	2,132,000
August, 1921	2,015,000*a*	391,000*a*	2,406,000

(*a*) Assuming a yield in merchantable coke of 69.6 per cent of the coal charged in byproduct ovens, and 63.4 per cent in beehive ovens.

Foreign Market And Export News

Coal Paragraphs from Foreign Lands

SPAIN — Very little business is being done on the Asturian coal market; sales are confined almost exclusively to screened and large descriptions. Unsold stocks are heavy and the smaller concerns are obliged to agree to important concessions in price. Best quality coal is selling at the following rates f.o.b. Gijón: Screened 80 pesetas, large 78 pesetas, small gas 52 pesetas, small steam 50 pesetas. For Barcelona, 3,000 tons have been accepted at 17 pesetas freight. The prices of Asturian coal are prevented from falling more quickly by the dearness of labor.

GERMANY — Production in the Ruhr region for the week ended Sept. 10 was 1,751,215 metric tons, according to cable advices to *Coal Age*. This is a slight increase as compared with the output of 1,741,810 tons for the week preceding.

AUSTRALIA—Industrial trouble at the mines, with recent dislocation of transportation, so reduced the output of commercial coal that production for the rest of this year at least will not be more than equal to the home demand. It was in pursuance of the Government's protective policy that an embargo was imposed prohibiting the exporting of coal, according to *Commerce Reports*.

JAPAN—The coal market shows signs of recovery, due largely to diminution in stocks, according to a report to *Coal Age* from Tokio. Because of the attempt of many industries to economize in fuel consumption the demand for cheaper grades, coal dust especially, has greatly increased. At the end of July, stocks in Wakamatsu amounted to 212,600 tons of lump, 42,400 tons of uncleaned coal and 68,700 tons of coal dust. As compared with the preceding month, lump coal increased by 9,100 tons and coal dust decreased 9,800 tons.

SOUTH AFRICA — A crisis has arisen in the coal industry owing to the inability of the collieries to compete with Welsh coal prices at East African, Indian, and South American ports.

Coal and Coke Exports from the United States During August

Exports of bituminous coal were nearly two and one-half million tons less in August, 1921, than they were in August, 1920. The slump applies to every country on the list. Shipments to Canada were more than one-half million tons less than they were in August of last year. Movement of American coal to the United Kingdom has practically ceased. The detailed figures as reported by the Bureau of Foreign and Domestic Commerce, are as follows, in gross tons:

	August, 1920	August, 1921
Anthracite	555,406	373,005
Bituminous	4,108,782	1,695,090
Exported to:		
France	207,277	16,068
Italy	129,546	87,399
Netherlands	385,060	...
Sweden	283,296	10,394
Switzerland	54,520	...
Canada	1,867,006	1,319,087
Panama	...	9,611
Mexico	17,994	13,604
British West Indies	27,473	7,856
Cuba	123,610	48,318
Other West Indies	8,444	7,355
Argentina	182,740	47,835
Brazil	111,317	43,419
Chile	18,925	1,022
Uruguay	30,039	...
United Kingdom	2,735	2,442
Egypt	...	21,399
Denmark	...	3,887
Norway	...	12,487
Other countries	658,800	42,907
Coke	71,331	18,029
Imports:		
Anthracite	4,832	394
Bituminous	107,828	134,478

Weak Demand Makes British Operators Uneasy

Sharp Decline in Coal Output in United Kingdom Reported—French Mines Unable to Match British Prices—Hampton Roads Exports Dwindle

A cable to *Coal Age* states that production in the United Kingdom during the week ended Sept. 10 was 3,940,000 gross tons, a rather sharp decrease of 203,500 tons from the output for the preceding week. The decreasing demand is causing operators much uneasiness and several Welsh owners say they will close down when the subsidy ceases on Sept. 30.

Prices have shown a decided drooping tendency, and the coal market remains quiet, according to *Commerce Reports*. Accumulation of stocks at pit sidings is responsible for much short time in the mining districts. Tonnage exported shows a steady increase, with shading prices and declining freight rates. Within the past week the low freight of 15s. 6d. per ton was reported to have been accepted on a cargo of South Wales coal to Singapore. Some business is being placed for Norwegian and Swedish account.

The remarkable fall in the price of coal is intimately connected with British trade revival. Blast-furnace coke in its downward movement is rapidly approximating a figure that will enable ironmasters to restart their furnaces. Export prices have been cut to the uttermost farthing to regain markets lost to American competition.

The extension of the Government's export credit scheme to Italy should undoubtedly stimulate the exportation of British coal to that country. It is estimated that the export trade is already back to about two-thirds of its pre-war volume.

French Mines Unable to Meet Price of British Imports; Reparation Coal Reduced

The French Admiralty is inviting bids for the supply of 50,000 to 60,000 tons of large and small coals, delivery to be made over the next three months, according to cable advices to *Coal Age*.

The general position is still unchanged. There is hardly any business except in the household section where the demand is still rather brisk. The position with regard to the inland navigation has slightly improved this week; a few barges were able to proceed to Paris and consequently less anxiety prevails with regard to coal supplies for next winter.

The Office des Houilleres Sinistrées, which is the Government distributer for German Reparation coal, has reduced prices for coals shipped via Rotterdam, Antwerp and Ghent. These are now on an f.o.b. basis: Mine run 20@25 per cent large, 60 frs.; mine run 30@40 per cent large, 70 frs.; mine run 50 per cent large, 80 frs. These prices show a reduction of 10@15 frs. per ton.

An increase in imports is especially marked in the English section on account of the very low prices quoted; most of the French mines, particularly in the Nord and Pas de Calais districts which still have very high wages to pay on account of the abnormally high cost of living there, are at present unable to compete against these low offers. The French State Railways are reported to have purchased a fairly large amount of Cardiff first-class steams at as low as 90 frs. per ton c.i.f. which, taking the quality into account, is much better than any French mine could do at the present time.

Hampton Road Exports Continue to Decline; Bunker and Coastwise Trade Steady

Export business continues to dwindle, only two vessels taking coal for export, one of them with only part cargo for Trieste. Dumpings, however, this week were practically on a par with the previous week, due to the bunker business and the steady demand for coastwise coal.

Prices are varying more than usual, Pool 1 being bought in considerable quantities during the week for $4.95. The Shipping Board bought a large quantity of Pool 2 for $4.67, which is, however, somewhat below the ordinary cut rates, and being quoted in this instance for an unusually large order.

Coal trimming charges at the Hampton Roads piers may be reduced, as result of a conference here this week. Local interests contend that the trimming charges are too high, in comparison with neighboring ports, and ask the railroads to put Hampton Roads on a better co-operative basis. The railroads will make their decision when the new labor contracts are signed Oct. 1.

PIER SITUATION

	Week Ended Sept. 15	Week Ended Sept. 22
N. & W. Piers, Lamberts Point:		
Cars on hand	1,323	1,217
Tons on hand	67,680	69,024
Tons dumped during week	84,787	93,486
Tonnage waiting	13,500	11,850
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	1,647	1,164
Tons on hand	82,350	83,200
Tons dumped during week	52,601	54,421
Tonnage waiting	2,000	8,200
C. & O. Piers, Newport News:		
Cars on hand	1,945	1,165
Tons on hand	97,000	83,250
Tons dumped during week	52,823	49,290
Tonnage waiting	1,100	2,845

Export Clearances, Week Ended Sept. 22

FROM HAMPTON ROADS

	Tons
For Cuba:	
Cub. SS. Estrada Palma, for Havana	5,558
For Italy:	
Ital. SS. Guilia, for Trieste	2,000

FROM PHILADELPHIA

For Cuba:	
Nor. SS. John Blumer, for Santiago	

Pier and Bunker Prices, Gross Tons

(Foreign Bunker Quotations by Cable to Coal Age)

PIERS

	Sept. 17	Sept. 24†
Pool 9, New York	$5 75@$5 85	$5 75@$5 85
Pool 10, New York	5 50@ 5 60	5 50@ 5 60
Pool 9, Philadelphia	5 80@ 6 00	5 80@ 6 00
Pool 10, Philadelphia	5 40@ 5 70	5 40@ 5 70
Pool 71, Philadelphia	6 00@ 6 25	6 00@ 6 25
Pool 1, Hamp Rds	4 80@ 5 25	5 00@ 5 00
Pools 5-6-7 Hamp. Rd	4 50@ 4 80	4 50@ 4 50

BUNKERS

Pool 9, New York	6 10@ 6 20	6 10@ 6 20
Pool 10, New York	5 85@ 5 95	5 85@ 5 95
Pool 9, Philadelphia	6 10@ 6 30	6 50@ 6 30
Pool 10, Philadelphia	5 75@ 6 00	5 75@ 6 00
Pool 1 Hampton Roads	5 15@ 5 25	5 00@ 5 10
Pool 2 Hamp. Rds		4 80@ 4 90
Welsh, Gibraltar	50s. f.o.b.	50s. f.o.b.
Welsh, Port Said	64s. f.o.b.	64s. f.o.b.
Welsh, Singapore	75s. f.o.b.	75s. f.o.b.
Welsh, Rio Janeiro	75s. f.o.b.	75s. f.o.b.
Welsh, Algiers	50s. f.o.b.	50s. f.o.b.
Welsh, Malta	60s. f.o.b.	60s. f.o.b.
Welsh, Lisbon	57s.6d. f.o.b.	57s. 6d. f.o.b.
Welsh, La Plata	70s. f.o.b.	70s. f.o.b.
Welsh, Madeira	57s.6d. f.a.s.	57s. 6d. f.a.s.
Welsh, Teneriffe	57s.6d. f.a.s.	57s. 6d. f.a.s.
Welsh, Genoa	58s. t.i.b.	58s. t.i.b.
Durham, Newcastle	35s.@37s.	35s.@37s.
Belgian, Antwerp	110 fr.	110 fr.

C.I.F. Prices, American Coal

(In Gross Tons)

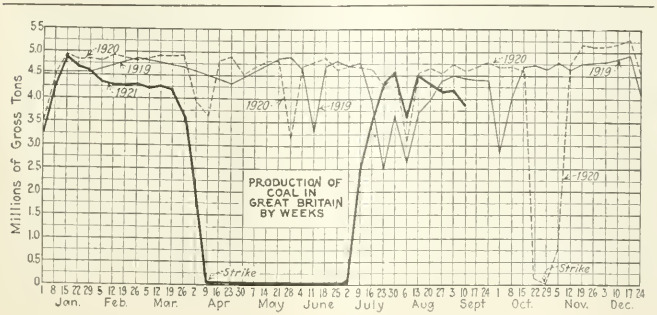
	Sept. 17 Low Vol.	Sept. 17 High Vol.	Sept. 24† Low Vol.	Sept. 24† High Vol.
River Plate	$11 00	$10 20	$9 90	$10 30
French Atlantic	9 65	9 20	9 10	9 45
United Kingdom	9 65	9 20	9 10	9 45
West Italy	9 85	9 40	9 30	9 70
Scandinavia	11.60	11 15	10.85	11 20
Cuba	....	.. .	6 10	7 40

These quotations are purely nominal and as far as can be learned, no business is being done in these markets.

Current Quotations British Coals f.o.b. Port, Gross Tons

Cardiff	Sept. 17	Sept. 24†
Admiralty Large	32s.	30s.@32s. 6d.
Steam, Smalls	19s.3d.	19s.@19s. 6d.
Newcastle:		
Best Steams	29s.	28s. @ 30s.
Best Gas	28s.	27s.6d.@28s.6d.
Best Bunkers	27s.6d.	27s.@28s.

† Advances over previous week shown in **heavy type**, declines in *italics*.



Reports From the Market Centers

New England

BOSTON

No Sustained Improvement in Demand — All-Rail Coal Rather Spotty — Low Quotations at Tidewater Continue — Anthracite Demand Strengthens.

Bituminous—We are unable to report any very encouraging features of trade in this territory. Certainly there is nothing even approaching a horizontal improvement, for in most instances recent quotations have been on the same low levels that were characteristic early in the month. A few special grades, originating on the all-rail route, have been sold in small lots at prices that are slightly firmer, but these do not point to any significant development in the market as a whole. Certain industries, mostly small consumers, make a somewhat better showing, but the heavy users are eating into their reserve piles very slowly. There is no likelihood yet of any broad or sustained improvement in demand.

The railroads are so well stocked that effort is made to slow up rather than increase the flow of supply coal, and while there is a slight increase in general traffic it is so gradual that not yet has there been any effect upon consumption. With all the locomotive coals offering in such volume at low prices, and the railroad exchequers still in a state of depletion, it is small wonder that 60 to 90 days supply at the current rate of consumption is considered entirely adequate for the present.

In certain of the all-rail territory, well removed from the low prices prevailing in the district near Tidewater, there is a better request for spot shipment as well as for delivery extended over several months, but both as to price and locality the demand is spotty. Movement through the Hudson River junction points averages about the same as for the past thirty days, and no material increase is expected. It is proving a long, slow season for the Pennsylvania producers, but not yet is there any ground for more hopeful calculations that involve October output.

The Hampton Roads agencies are most assiduous in their attentions to buyers throughout what is now a rather broad Tidewater zone, and to a moderate degree they are getting results. Sales are reported from day to day, but the transactions are mostly for relatively small tonnages. Cargoes are being divided at the various railroad terminals, and more than a few reluctant buyers are being pressed to take on coal at the low prices ruling. Marine freights continue on an easy basis, 90c. @$1.25, Hampton Roads to Boston, depending upon capacity, and apparently most of the factors are as free to offer deliveries some weeks ahead as they were in August.

Numerous purchases of Pool 1 Navy acceptable coal have been made lately at $4.90@$5 per gross ton f.o.b. vessel at Norfolk or Newport News, and mixtures of Pools 1 and 2 have netted as low as $4.75. The recent bids to the Navy Department show how little expectation there is of much higher levels during the next few months, for offshore the British shippers are again in position vigorously to contest European markets.

Anthracite—The way orders for domestic sizes have come in only confirms the feeling a week ago that the market has made a definite turn for the better. Not only are the companies well supplied with requisitions for October, but stove and chestnut are not being mined in sufficient volume to meet the spot demand.

Retail trade is picking up in most directions, especially in the larger cities and to the eastward where cooler nights have been making themselves felt, and broken, egg and pea, are the only sizes that can be shipped with reasonable promptness.

Tidewater—East

NEW YORK

Anthracite Market Active—Busy Fall Expected—Barley Scarce—Bituminous Quiet but Quotations Show Strength.

Anthracite—Demand for the domestic sizes is steadily increasing. There is a better feeling all around and the trade looks for a brisk market this fall. Increase in orders has driven the dealers into the market although their yards are well stocked. The heaviest increase has been in the call for chestnut. Some independent shippers are refusing orders for immediate delivery.

Independent quotations for stove have varied considerably. Some as high as $9 were reported but the general high quotation was about 30c. lower.

The steam coals are in fair demand with rice and barley moving easier than buckwheat. Barley is scarce in some quarters and the better grades of independent coals are bringing full company circular. Independent buckwheat and rice are much easier and only in occasional instances are being quoted at company circular.

Bituminous—There is not much activity in the local market. Demand along the line is reported as slightly better. The general trend of opinion seems to be dullness for the next few weeks.

There was a slight increase in quotations for Pools 9 and 10 last week. This was accounted for by a fluctuation in the demand for these coals and the scarcity of Pool 11 during the early part of the week.

Consumers seem to be buying only their immediate requirements and then they want quick shipments. They do not appear to be stocking up though quotations are about down to rock bottom.

Careful watch is being kept of the car situation and any indication of trouble is expected to result in a rush of orders to be followed, very likely by the reopening of many mines that have been idle for some months.

Reports received at a prominent local house toward the end of the week indicates a revival of business in some industries near New York which if carried out to any great extent should increase the demand here. Inquiries are being received from consumers in nearby states who buy through local houses. The export situation is quiet, while the bunker demand has not been active.

PHILADELPHIA

Anthracite Demand Strengthens—Irregular Sales Bother Retailers—Steam Coals Unchanged — Bituminous Demand Light—Better Grades Slowly Gaining.

Anthracite—In the city proper there seems to be some strengthening in the demand and all dealers are doing an increasing amount of business. Yet with this slight improvement there is a feeling of disappointment that the trade has not picked up much faster than it has, and on this account there is a continuation of price shading.

Pea coal has fallen off woefully in demand in sections where it used to be in much favor. Stove of course is the lone size that dealers urge, while egg is fast loosing in demand. This scarcity of one large size as against a plentitude of another frequently brings forth the oft expressed wish of some dealers that the companies would adopt the two-size plan.

At this time there is much annoyance caused the retail trade by the increasing number of irregular shipments being made by smaller producers, both to industrial plants who endeavor to supply their employees with family sizes and deliveries from public sidings by teamsters. This has become particularly prevalent in the towns outside of the city.

Mine prices of both company and independents continue firm, except in occasional instances of individual pea; and while company figures are unlikely to be changed for October many look for substantial increases in independent coal.

Steam is unchanged in all respects,

with company buckwheat plentiful but firm at $3.50, and independent coal $3. There has recently been some tendency to better sales of rice, but barley is in exceptionally free supply.

Bituminous—There is no tone whatever to the trade, yet all interests continue hopeful that a demand will finally make its appearance soon. We believe it can be said that there has been an increase in inquiries of late and while orders are slow coming, it is really felt that there is some slight improvement.

The present low prices seem to be the very bottom and any increased buying in even small volume will move them upward. Even now the high-grade coals are better able to hold fast to current market quotations, with an occasional move forward on certain special grades.

Most of the business closed has been from small users, although a few of the larger iron plants, having depleted stocks of certain special coals, have placed a few fair-sized orders, especially of the better grade of gas coals.

The buyer certainly is seeking all kinds of advantage under present conditions and recently it has become the practice for the larger buyers with little or no contract engagements, to request the buyer to make a price for the current month.

BALTIMORE

General Business Improvement not Reflected in Coal Trade — Anthracite Improves a Little but Shortage Is Large.

Bituminous—The trade is in an uncertain state. In some cases there is a line of inquiry that seems to promise better results shortly, but this is offset again by absolute dullness in other lines. Everybody seems to be expecting things to happen now that fall is really here and business generally is reported as picking up a bit, but the concrete evidence of improvement is scarce.

Competition is so keen for all classes of business by those who have decided to keep up mine organization at any cost that even the best grades are selling at figures that should not be quoted. The export movement here is nil, the first half of September having recorded only three loadings, a total of 17,720 tons cargo and 2,455 tons bunker.

From the mining regions where the higher wage scales exist, come further reports of curtailment, a strange story at this season of the year when everything should be booming. The real trouble with the entire situation is that general business lacks confidence; and coal men say that should confidence return suddenly, or even fairly so, the demand for coal will far outstrip any possibility of immediate supply. All that is needed apparently is for a match of optimism to be set to the business world.

Anthracite—There is a little better tone of ordering reported. This is being reflected in a diminishing, to some extent, of the supplies in the local yards, which were over-large as compared with past seasons, despite the small run of coal to Baltimore. Most of the dealers are up with orders now and are merely waiting for cold weather to force purchasing.

Meanwhile the shortage here from normal continues to grow. The trade is somewhat puzzled by the continued hold-off, but cannot see, even if the public holds down purchasing to the extreme, how the shortage of around 120,000 tons is to be made up in time if a really cold winter sets in.

BUFFALO

Decidedly Dull Bituminous Market—High Wages in the Way—Anthracite Moving More Slowly.

Bituminous—The situation does not improve. Road salesmen tell sad tales as to conditions. One of them says he was told lately that he was the fourteenth one who had called on a certain concern that day and it was only middle afternoon then. Another found in the interior of the state from one to four salesmen ahead of him, waiting for an interview with the manager. The salesman is being staved off if not killed off and the buying is kept at the bottom, both as to quantity and price.

There is a rumor that some of the larger operators are considering shutting down and waiting for the miners to offer a reduction of wages on their own account. This might be construed as not being a violation of the wage agreement.

Prices continue unsettled at $3 for Youghiogheny gas lump, $2.75 for Pittsburgh and No. 8 steam lump, $2.50 for Allegheny Valley mine run and $1.75@$2 for slack, with $2.36 added to Allegheny Valley and $2.51 to other coals for freight.

Anthracite — Receipts are considerably less than they were, but the situation is not serious and besides it happens to be just a year from the strikes of 1920, so that the output is really much more than it was then. Nobody appears to be disturbed over the state of things. Canadian consumers are not coming into the trade to any extent and it is said that there is quite a concerted effort being made to cut down consumption on account of the price.

Lakes—Coal comes in so slowly that it is impossible to keep up to earlier records. The week's loadings total 72,400 net tons, of which 27,000 cleared for Duluth and Superior, 17,400 for Milwaukee, 10,500 for Port Arthur, 7,500 for Fort William, 7,500 for Ashland and 2,500 for Menominee (first of the season). Freight rates continue slack on account of a big surplus of tonnage at 65@70c. to Chicago, 65c. to Menominee, 60c. to Milwaukee, and 50c. to Duluth, Ashland, Port Arthur and Fort William.

Coke—The disturbed state of the market continues on account of labor difficulties in the Connellsville district. Prices are a trifle higher from light supply, at $4.25@$4.50 for 72-hr. Connellsville foundry, $3.35 for 48-hr. furnace and $3 for stock, with a small amount of chestnut selling for domestic at $4, all subject to an additional $3.64, to cover freight.

Northwest

MILWAUKEE

Market Still Devoid of Seasonable Activity—Stove Anthracite Scarce—Lake Receipts Falling Off.

Notwithstanding the advent of autumn, the coal market is devoid of activity. Business is growing better, but buyers seem to have lost the sense of preparedness, and are letting things drift along. There is bound to be a sudden awakening with the first sharp frost.

Business now being done is mainly in anthracite. Stove is still scarce and many orders are unfilled. Dealers say there will be enough stove coal received to supply the demand before navigation closes. The soft coal market is dead, and will probably remain so until October, when the hotels and apartment houses begin to operate their heating plants to something like normal capacity. Industrial demand shows a slight improvement.

There is little danger of a coal or coke shortage during the coming winter. Receipts by Lake thus far during September aggregate 75,900 tons of anthracite, and 109,238 tons of soft coal, making the season's receipts to date 743,426 tons of anthracite, and 1,909,092 tons of soft coal, or 2,652,518 tons combined. This is 680,201 tons greater than during the same period last year.

DULUTH

Interior Market Improves as Lake Receipts Decline—Prices Firm—Shortage of Anthracite Stove.

Coal is now being shipped out from the majority of the docks here in as great or greater quantities than are being brought in by boat from Lake Erie ports, according to dock operators.

During the last week shipments to country dealers have increased in an even greater ratio than selling agents here had hoped. Many municipalities have also been ordering for electric and house-heating plants.

An appreciable decrease in the number of cargoes received was recorded last week when only sixteen ships arrived in the harbor, of which five carried anthracite. This is a falling off from last week when twenty-six cargoes arrived. The decrease is due to the shortage of bottoms because of the scarcity of down cargoes.

Bituminous prices are firm throughout the territory and operators foresee a strong market next spring. They are preparing to conserve stocks and are not sacrificing as they believe it possible that labor difficulties may cut down the supply here by the time winter is over.

A shortage has occurred in anthracite stove, due to a delay in shipments of this size. Sales are much larger, as a recent cold snap has convinced the public that the time has come to lay in a supply. Country dealers are ordering freely and are disposing of stocks as fast as they receive them.

MINNEAPOLIS

Leisurely Interior Movement—Steam Buyers Strike Continues—Domestic Orders in Smaller Lots—Outlook Improves.

Coal continues to move to the interior in fair quantities. As there is a good stock at the Head-of-the-Lakes, the Northwest is free from the worry which prevailed a year ago. But it is far from a guarantee that this winter will have another easy fall to precede and allow a gradual distribution of coal to serve. There will be no serious shortage. But unless there is a larger distribution to the interior, it may result that when cold weather strikes, many will be unprepared. Despite that situation, consumers are yielding most reluctantly.

Steam buyers are holding back as much as ever. Their success a year ago encourages them to hope for another this fall. Coal men say that there are sales being made now at prices which do not cover all expenses involved, and that it is simply impossible for costs to go any lower.

A year ago there were some extreme prices which had developed under the stress of the shortage. As the shortage was overcome, these undue prices yielded and declined. But everyone in the coal trade in the Northwest insists that there are no such extremes of cost now prevailing and so there is nothing on which a decline can occur, unless at a loss to someone.

In portions of the interior, there will be considerable reduction of domestic consumption through people turning to wood. It will not be feasible to use wood which has to be shipped for any distance, as freights would make the price too high. But where it can be obtained by team, and where farmers have wood available, there will be a greater wood consumption than for a long time.

Inland West

MIDWEST REVIEW

Domestic Cancellations Follow Milder Weather—Screenings Prices Tumble—Car Shortage Improving.

During the past few weeks we have interviewed a number of railroad officials in regard to the probabilities of a car shortage in the Middle West during the coming fall and winter. The opinion of these gentlemen is identical, namely, they believe when the domestic demand starts it will bring about a very decided car shortage, principally because so many cars are in bad order. Practically no repair work has been done by the railroads ,and more cars are proving faulty from the standpoint of equipment every day. Admissions from the railroad men interviewed bring to light the fact that the equipment on some of the Eastern roads doing business in the Middle West is in very much poorer shape than that of the roads operating only in the Middle West.

Instead of having seasonably cold weather, we have been experiencing a number of hot days. Coal which the retail trade ordered in the last of August and early September has arrived, bins are full, and the coal is not moving out to the householder. In addition, orders which were placed early in the month for shipment late in September, are being canceled. The number of these experienced by operators in the Middle West exceeds anything they have been up against since last January when the market broke.

Some of the best steam coals from southern Illinois experienced a very severe break this week. Two or three weeks ago the level for high grade Southern Illinois screenings was somewhere in the vicinity of $1.25 a ton. During the past few days it has been no difficult feat at all to pick up this same coal around 90c. Some operators are maintaining their prices on domestic, but owing to the huge storage supplies of screenings on hand, they have cut their steam prices to a level which they believe will move the coal. It is openly predicted that steam coal may go to lower figures.

Some of the cleverest sales agents have refused to take on contracts for screenings calling for shipments between now and the first of April. The best price that can be obtained on a contract at the present time is somewhere in the vicinity of a dollar and seventy-five cents to two dollars a ton. This price is not attractive to the sellers as it does not represent cost of the coal at the mines. These sales agents believe there will be a very strong demand for steam coal around Jan. 1, when the manufacturers begin to discover there is going to be serious difficulty with the United Mine Workers around April 1. It is believed a scramble for steam coal will develop, and it has been freely predicted that good southern Illinois screenings will bring from $3.50 to $4 Jan. 15.

COLUMBUS

Fair Domestic Trade—Steam Business Is Extremely Slow—Prices Weaker—Lake Shipments Show Increase.

The domestic branch of the trade is purely a weather proposition. On colder days orders are more numerous than on the extreme warm days. Retailers are preparing for a more active demand with the first cold spell and are stocking up as a consequence.

The trade is showing a decided preference for the fancy grades such as Pocahontas, New River and splints. Retail prices are firm at former levels.

Lake trade is showing increased activity after a lull of several weeks. The large portion of Lake shipments are now coming from West Virginia. The H. V. docks at Toledo during the week ended Sept. 17 loaded 114,944 tons, as compared with 74,090 tons the previous week, making a total of 3,263,687 tons for the season. This is far ahead of the records of last year, when 2,306,576 tons were handled by Sept. 18. The T. & O. C. docks during the same week loaded 35,615 tons as compared with 10,267 tons the previous week, making a total of 854,108 tons for the season.

Steam business shows no improvement. Resultant sizes are becoming a drug on the market. Outside of public utilities there is little demand for the smaller sizes. Requisitions of railroads are still small. Many manufacturing concerns are still provided with fairly large stocks.

The output in the Hocking Valley is varying between 22 to 27 per cent of normal. In the Pomeroy Bend field it is close to 30 per cent. Crooksville and Cambridge are producing about 25 per cent.

CINCINNATI

Spotty Market—Smokeless Coals at Lower Prices—Domestic Market Reviving.

A greater price variance was noted last week than for some time past. A few cool nights sent in orders for domestic coal, but this demand was soon filled and the edge of a slight increase in prices was soon worn off. There was much price cutting to effect sales, smokeless suffering just a degree worse than the bituminous. Lake business was featureless and so far as industrial requirements go, orders were few and far between.

Smokeless operators, with slack Tidewater business staring them in the face, turned their attention to the Inland market. Quotations, at the mines, were $4.25@$4.50 for lump; $4@$4.50 for egg; $3.50 for nut and $2.25@$2.75 for mine run. An accumulation of slack has been showing and some of this sold as low as $1.25, although the bulk of it was moving at $1.50@$1.75.

Bituminous slack also took a tumble, Kentucky selling $1@$1.10, West Virginia, $1.20@$1.30; mine run $1.50@$1.75. Kentucky lump and block was $3@$3.25 and West Virginia, $2.75@$3.

Retail business has been on the upgrade. Deliveries made were double this week over the first week of the month. There has been no corresponding drop in prices to parallel the wholesale slump and no change in prices since the last quotations in this column.

CHICAGO

Business Very Dull—Heavy Retail Stocks—Market Saturated with Smokeless—Labor Trouble Looms.

Old timers with many years experience in the Chicago trade venture the opinion that times have never been so dull as they are now. The steam market is extremely sluggish. The only

activities reported have been sales that were forced aggressively. The domestic market is in no better shape as the little flurry of business which we experienced a few weeks ago has come to a definite stop. Retailers report their yards full of coal with no demand.

Predictions of a serious coal shortage are now becoming more prevalent. Retail dealers are at last coming to their senses, and there is a movement on foot in Chicago to start an extensive publicity campaign advising the public exactly what the situation is and what the prospects are for domestic coal during the winter months.

Coal men are giving more and more thought as to what is going to happen on the first of April. It looks today as if the mine workers will absolutely refuse to take any reduction on the present scale. Another factor in the situation is the fight which is being staged between President John L. Lewis of the United Mine Workers, and Frank Farrington, president of the Illinois District of the United Mine Workers. The hard feeling between these two labor leaders has arisen over the expenditure of $27,000 which Farrington authorized two years ago during the strike. The fact that some of the union officials are fighting among themselves is not going to help matters.

Prices on smokeless coals are holding firm in the wholesale trade. Eastern producers have found that the market has reached the point of saturation, and that further price cutting fails to stimulate sales. A great deal of Pocahontas coal has been moving into our market during the past thirty days with the result that practically all the retailers are well provided for. Anthracite is moving in a satisfactory way, and prices are holding firm at circular.

CLEVELAND

More Optimistic Feeling Prevails—Prices Unchanged—Spot Buying Increases.

Sentiment in the coal trade continues to improve, as signs of industrial betterment grow more pronounced, but actual closing of contracts for future needs is an infrequent occurrence as yet. Industrials are manifesting considerable interest in the market, while stocks are sufficiently low to compel increased hand-to-mouth buying. Large consumers are obtaining prices on coal for stocking purposes during the winter.

The coal trade is watching the general situation anxiously. The definite passing of the money tension and the declaration of Chairman D. C. Wills, of the Cleveland federal reserve bank, that banks should now loosen the credit reins and permit borrowers to abandon their policy of hand-to-mouth buying has given comfort to the trade.

Dealers in bituminous coal, believe that prices have struck bottom on the basis of present freight rates and wages. Receipts of bituminous coal during the week ended Sept. 17 were 1,159 cars, divided; industrial 792, retail 367. This is a decided increase over receipts of the previous week of 727 cars.

The Lake movement continues to slow up. The distribution of fuel into consuming channels in the Northwest, however, leads some to forecast that more coal may be sent to that quarter. In the meantime the slackened movement is resulting in curtailed mine operations in the Ohio district.

ST. LOUIS

Domestic Buying Starts Prices up—Steam off, with No Demand—Domestic Becoming Scarce.

Domestic business has started to pick up on some coals, and as a result the price of lump went up at the mine and the dealers had to raise their figures accordingly. The retail price, however, has only advanced 25c., but Standard 2-in. lump went up from $2 to $2.50 and 6-in. lump from $2.50 to $3@$3.25, while Mt. Olive and Carterville mine prices will change on Oct. 1.

Most of the demand, however, is occasioned by country business for Standard coal. A fairly good tonnage of coke is being delivered to consumers.

The steam situation is bad everywhere. Standard screenings are down, with no takers in this market, and Carterville screenings are reported as low as 75c., but are generally held at about 90c.@$1, with no demand.

In the last week several miscellaneous orders, principally railroad, have been placed for mine run in the Standard district. These prices range $1.65@$1.75. The Wabash bought 600 cars with a low price of $1.65@$1.75 for Standard, and it is understood that about 150 cars were placed in the Mt. Olive district for mine run that netted $2.50.

Retail prices are: Carterville, $7.75; Mt. Olive, $6.50; Standard, $5.75; sidewalk delivery.

DETROIT

Neither Steam Nor Domestic Trade Shows Seasonal Activity—Receipts Continue Light—Anthracite Distribution Also Sluggish.

Bituminous—Buyers are still holding back on either steam or domestic. Some of the wholesalers and jobbers are receiving a larger number of steam inquiries, but orders have not yet developed. A considerable part of the business seems to be in the way of offerings of bargain lots.

There is now in Detroit sufficient coal to provide for requirements, under normal conditions, for about 30 days. To guard against the depletion of retailers' stocks by a rush of buyers with the coming of the first winter weather, dealers are urging their customers to purchase some coal now, even if the order is not to exceed one ton.

Four-inch lump from Ohio is quoted $3.25, 2-in. lump, $3; egg, $2.50; mine run, $2 and nut and slack $1.35. Three-inch West Virginia splint is $3.25, 2-in. lump, $3; egg, $2.50; mine run, $2; nut and slack, $1.50. Smokeless lump and egg is $5, mine run, $2.90 and nut and slack, $1.60.

Anthracite — Household consumers are still holding off on stocking up. Retailers find that many of their customers who usually have their bins filled early in the summer are still without coal. The high prices are held responsible.

South

BIRMINGHAM

Market Conditions Weak and Unstable — Quotations Remain Unchanged — Some Increase in Production to Follow Resumption of Coke-Making.

There is still an absence of any marked activity in coal buying in the commercial field. Demand is reported light for all grades of steam fuel. Sales are still on a basis of immediate requirements and the demand is of an irregular and unstable character.

Weather conditions have been extremely unfavorable for an active domestic market, the heat for the month of September being the most oppressive for the same period in the last twenty-four years. Dealers consequently are taking on a minimum of contract quotas from the mines. Wagon mines in the environs of Birmingham are working steadily and supplying a large tonnage of domestic direct to consumers, which, in the majority of cases is medium or low-quality fuel and is sold somewhat under dealers' quotations for better grades.

Several mines that have been idle for months will again commence producing for coke-making at byproduct plants, some of which are scheduled to resume operations about Oct. 1. There will be considerable impetus given to mining operations with the beginning of another month, as iron-making will be more active with the placing in blast of four or five stacks which are now out of commission.

LOUISVILLE

Prepared Demand Increasing—Car Shortage Indicated — Screenings Weaker.

Reports of 70,000 fewer idle coal cars last week would indicate that industrial demand is picking up. More promising reports are being heard from the steel, gas and byproduct consumers, and utilities are beginning to buy a little better. Increased demand for prepared sizes, however, has not been offset by industrial demand for screenings, with the result that fine coal is weaker.

Prepared coals are a little firmer, operators working to get 25c. a ton more for prepared, to offset weakness in screenings.

That a car shortage is impending is the general belief. Cars are generally in bad repair, and flat bottoms are hard

to secure, although operators are not so generally asking a premium on flat bottom shipments as they were.

West

DENVER

Production Still Low—Seasonal Demand for Domestic—Slack Coal in Distress Position.

Seasonal buying has caused a slight increase in production. In August twenty-three counties in Colorado produced 777,329 tons. The output for the period, Jan. 1 to Sept. 1, however, still shows a decrease of more than 2,500,000 tons, in comparison with last year.

Slack coal is still weak, although the pickup in domestic trade and the first cool days of autumn are bringing hope of steadier sales. Slack is selling for 75c. in some instances.

Louisville lignite lump trade is increasing. The mine price of $5.75 is within 25c. of the price of bituminous lump. Demand, however, is spasmodic, and there is some doubt as to whether lignite will continue to retail at $9.75 and bituminous lump at $10.75 for any length of time. The latter price must rise in order to keep up the lignite sales, according to predictions. Routt County bituminous lump is $6 at the mine and $11.75 retail.

Canada

TORONTO

Anthracite Moving More Freely—Large Stocks on Hand—No Reduction in Canadian Freight Rates—Bituminous Continues Quiet.

Dealers report an appreciable increase in anthracite orders, although business is not nearly as active as usual at this season. Yards have large stocks on hand and a rush is anticipated as soon as cold weather sets in. The expectations entertained by some of a drop in price due to lessened freight rates have not been realized, the Canadian Railway Commission having decided to make no reduction at present. Conditions as regards bituminous show no change, demand still very light.

Quotations are as follows:

Retail	
Anthracite egg, stove, nut and grate	$15 50
Pea	14 80
Bituminous steam	$11 00@$11 50
Domestic lump	12 25
Cannel	16 00
Wholesale f.o.b. cars at destination	
3-in. lump	7 75@ 8 50
Slack	6.00@ 6 75

The price of both furnace and foundry coke has stiffened considerably and furnace is now quoted firmly $3.35@$3.40 with some operators asking $3.50 and even $3.75. Foundry coke has a wide quotation of $4.25@$4.75.

The Rainey interest is now operating all of its plants on a limited basis supplying coal only for its byproduct plant at Swedeland. The Nellie and Clarissa mines of the Corrado interests have resumed operations on a foundry coke order. These plants have a hundred ovens.

It is believed the change in the coke situation means the end of the worst and longest period of depression which the industry has seen in its history. Since Sept. 1 there has been an almost daily change in the situation as consumers came into the region with orders. The labor disturbance is held to be the principal cause for the increase in coke prices, but inability to get tonnage by consumers when they actually needed it for the first time in a year also contributed to the new price range.

CONNELLSVILLE

Byproduct Ovens Take Business Formerly Tributary to Connellsville—Market Merely Steady.

The coke trade is feeling the competition of steel interests having byproduct coking plants which their own requirements now fall far short of engaging in full. At least one furnace coke contract, and perhaps one or two others, have been lost to the Connellsville industry in the past ten days, by the underbidding of byproduct ovens. Operators suggest that consumers who have left the region may be inconvenienced later if the iron and steel industry picks up, for the byproduct ovens could not continue to serve them if it became necessary to operate the attached furnaces. No steel works has a surplus of byproduct coking capacity over the requirements of its own furnaces, and most of them are underbalanced in this respect.

The quotable market is not changed from a week ago, but it does not look altogether as strong and there is no distinct upward trend to be seen. A point that may be significant is that the last two fourth-quarter contracts made were at $3.40 and $3.25 respectively, and the $3.25 contract was the later of the two.

It is held that the wage advance by independents means about 25c. per ton of coke, and thus should support a price of $3.25, since before the advance the market had gotten down only to $3 or $2.90.

The *Courier* reports production in the week ended Sept. 17 at 14,400 tons by the furnace ovens and 26,970 tons by the merchant ovens, a total of 26,970 tons, an increase of 1,100 tons.

CENTRAL PENNSYLVANIA

Better Production Rate Predicted—Non-Union Mine Cost Enables Lower Quotations.

If the production of coal for the remaining months of 1921 is at the same rate as for the first eight months, the

News From the Coal Fields

Northern Appalachian

ANTHRACITE

Chilly Weather Increases Demand—Men Seek to Reopen Mines Closed by Kohler Law.

With the advent of chilly weather there has been an increase in demand and all companies have been working full time. In a few cases in the lower field there has been a water shortage, due to the drought that is now ended.

The Glen Alden Coal Co. may reopen six of its mines that were closed under the Kohler act, following the efforts of various committees during the week, if it can be assured that it is not liable to prosecution. This week the friendly suit to test this law comes up in court.

PITTSBURGH

Market Remains Stagnant—Slight Increase in Industrial Demand—Retail Movement Abnormally Light.

The market remains in a stagnant condition, despite the progress of the season and the slight improvement in industrial operations. Such increase as there may have been in shipments to the industries is nearly balanced by the decrease in the Lake movement. The key to the particular stagnation that obtains in the district, as compared with coal conditions generally, is of course the competition of non-union districts.

All the independents in the Connellsville region have recently advanced from the independent scale of July 1 to the Frick scale of Aug. 1, but they are left with a strong competitive advantage. Connellsville coal prices have not advanced materially.

Pittsburgh district gas coal continues in fair demand, perhaps with a slight improvement. Prices are fair but not particularly remunerative. Demand on retailers for domestic coal is very small, although there has been some improvement in the past week or two.

Prices are not quotably changed from those of a week ago, figures on steam coal being chiefly asking prices, with little business done, while in gas coal there is a definite market. Quotations are shown in the Weekly Review.

UNIONTOWN

Coal Market Inactive—Resumption of Coke Plants Follows Better Call.

While there has been a decided improvement in the coke market, resulting in plants resuming here and there, coal remains inactive with prices stationary and demand not much better. There is a little more byproduct coal moving but the price remains at $2. Other grades carry prices from $1.50 up.

central Pennsylvania field will produce a little in excess of 38,000,000 tons. This will be the lowest production since 1908.

Tabulations showing monthly production of union and non-union mines from December, 1920, to August, 1921, inclusive, discloses heavier losses by mines operating under the present wage scale. In other words, mines that have made the wage adjustment have taken about 5,963 carloads of business from the mines that have not made the adjustment.

Central Pennsylvania, for the year 1921, from January to September, has lost a total of 68,227 cars or 3,411,000 tons, from all sources. Fall demand is expected to increase the production rate.

FAIRMONT AND PANHANDLE

Conditions Unchanged — Lakes Still Sluggish—Some Inquiries but Little Actual Closing.

Fairmont

Operating conditions were little improved during the week ended Sept. 17 and only about 25 per cent of the mines were in operation, such mines being engaged in filling contract orders. The spot tonnage was very small although some coal was being consigned to Canadian railroads. Aside from a better line of inquiries, the spot market remained sluggish.

Northern Panhandle

Conditions remained practically unchanged with inquiries being circulated but no new business developing as a result. Northern and Inland West markets were securing the bulk of production and the Lake outlet was insignificant.

EASTERN OHIO

Production Drops—Mines Hard Hit by Lake Slump, Which Is Passing—Industrial Stagnation Lowers Prices.

Mines are just about holding their own, even though properties which were operating rather exclusively on the production of Lake coal have either closed or are curtailing output because of the continued slowing down in the Lake trade and lack of sufficient demand from other quarters. Tonnage mined during the week ended Sept. 17 amounted to 342,115 tons, or approximately 55 per cent of capacity. Accumulated figures indicate an aggregate production for the current year of 12,458,115 tons as against the total rated capacity for that period of 23,150,000 tons, based on railroad ratings.

Association mines operated 42 per cent of possible worktime during the week and produced approximately 50 per cent of capacity. Statistics show that "no market" conditions have increased, now being estimated at about 58 per cent.

Railroad fuel is conservatively estimated to be about 35 per cent of the total output. It is expected that the requirements of the carriers will be increased with the approach of cold weather and heavier traffic.

The general industrial situation remains unchanged, as gains in one branch were offset by losses in another. The market is quiet, and competition is keen for such business as is offering. Due to the continued apathy in demand, there was a slight softening in spot quotations.

Lake movement is a little more liberal, but many steamers are compelled to make two ports to fill out loads, as well as a number going up light. However, it is expected, in view of the fact that the reduced rail rates from mines to lower ports expire on Oct. 31, that there will be a flurry in this movement during October.

UPPER POTOMAC

Demand at Complete Standstill—Prices out of Line with Non-Union Fields.

Comparatively few mines were in operation during the week ended Sept. 17, the situation being unchanged as compared with the preceding week. Lower prices prevailing in non-union fields have brought the general demand to a complete standstill. With buying at such a low ebb, prices naturally remained at an unprofitable level, with mine run $1.75 a ton and even lower.

Middle West

SOUTHERN ILLINOIS

Some Unexpected Activity — Heavy Railroad Buying—Standard Lump Goes Up—All Steam Sizes Down.

Carterville domestic lump is far oversold at $4.05@$4.25 and orders must be accompanied by those for egg and nut. Nut is almost as hard to move as screenings, which size has been offered at as low as 75c. Railroad orders are heavier than usual. A slowing up in car supply is reported.

In the Duquoin and Jackson County fields similar conditions prevail as to prices. The heaviest tonnage from any of the fields is moving North and Northwest.

Mt. Olive shows up more active. Prices are unchanged, but working time is better and prospects brighter.

The Standard field apparently has resumed domestic activity. Heavy buying of mine run is helping several mines. This is railroad coal, low price, but it covers cost and will soon help the congested screening situation. Prices on all kinds of Standard lump will probably continue to show steady advances. St. Louis shipments are fairly good; Chicago likewise, but the country west of the river is drawing heavily. Working time shows up better, averaging three to four days per week.

INDIANA

Sales Few, but Inquiries Increasing—Domestic Market Is Backward—Working Time Improves.

While the coal situation is becoming easier, it is far from satisfactory from the operator's point of view. There is a tendency toward more factory production and there has been an increase in the number of inquiries for steam coal, but the volume of direct sales is far below normal. Some of the mines in the western and particularly the southern part of the state are working more hours a week, but for this season of the year the days of operation are disappointing. Mine run is selling at about what can be secured for it. Most of the quotations range around $2.

Retail dealers are not advancing prices. The public does not appear to be taking advantage of present figures and for this reason there is little demand. In view of the attitude of the public, there is not likely to be any demand until cold weather comes and then it will be such that it will be difficult to fill.

WESTERN KENTUCKY

Situation Shows Little Change—Screenings Weaker—No Industrial Improvement.

Mines are working on an average of two days a week, and there is a slightly better movement to the South, and fair tonnage to the Northwest. Chilly weather is resulting in some little increase in retailers inquiries.

Screenings have been very weak, and some pea and slack has been shipped South at as low as 50c. a ton during the week. Fifteen cars of screenings went to one Louisville buyer at 60c. Nut and slack is stiffer, and low quotations are running around 90@95c. However, there is no large tonnage moving at these low prices, as a number of mines are quoting pea and slack at $1.25 and nut and slack at $1.50.

Operators are optimistic, and feel satisfied that business will pick up rapidly with colder weather, although increased industrial demand is needed more than domestic business.

Middle Appalachian

HIGH-VOLATILE FIELDS

Signs of Stronger Market—Production Still Low—Logan Labor Situation Better—Quotations Show More Firmness.

Kanawha

Production failed to reflect any larger run of business during the week ended Sept. 17, the output averaging from 14,000 to 17,000 tons daily. Inquiries were undoubtedly more numerous but prices quoted were not such as to secure much new business. A slight improvement in the demand was limited to steam grades, the domestic market remaining stagnant.

Logan and Thacker

Steam and domestic coals were in better demand in the Logan region. This gave impetus to production and the output at no time during the week was less than 700 cars daily. The labor scarcity, caused by the "seige," was gradually being overcome.

Williamson mines worked on a 40 per cent basis. There were signs of an

awakening demand and sales were somewhat improved. Contract orders, however, for the most part sustained production with railroad fuel constituting the bulk of such business.

NORTHEASTERN KENTUCKY

Only a few of the larger companies, having their own dock facilities, were operating in the Big Sandy territory. Marketing conditions remained virtually unchanged. Domestic demand was only fair. A few operators resumed for the purpose of getting out more coking coal.

Production improved somewhat, reaching about 54 per cent of capacity, or 110,000 tons. The output was heaviest on the C. C. & O. and the Interstate. However, no market losses were not far short of 100,000 tons. Larger plants were still working on a half-time basis, and there was little or no spot business offering.

LOW-VOLATILE FIELDS

Producers Cut Prices—Markets Quiet and Output Declines—Car Shortage Loss Appears—Tide Demand Unimproved.

NEW RIVER AND THE GULF

Lack of demand for export, bunker or coastwise coal kept down prices and production in the New River field during the week ended Sept. 17. The daily output varied around 16,000 tons daily. Prepared coal was down in price and slack was still going to New England at bargain figures.

Conditions in the Gulf region were similar to those in New River, in fact the output was not over 30 per cent of normal. The feeble demand at Tidewater made the dullness even more pronounced and prices on Inland coal were also low.

POCAHONTAS AND TUG RIVER

Pocahontas production was slightly in excess of that for the preceding week, although not reaching more than 40 per cent of capacity. Failure to return empties from Western points, where a heavy tonnage has been flowing, caused a car shortage loss of about 7,000 tons. The Tide market was quiet; even bunker shipments were at a minimum and aside from the regular contract run much of the coal was going West at extremely low figures.

There was a slight spurt in Tug River production, the output increasing to about 80,000 tons. Production was somewhat retarded by a shortage of equipment, the same as in the Pocahontas region. The spot market failed to reflect any increased activity during the week.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Domestic Prices Stimulated by Seasonal Demand—Steam Market Inactive.

Movement of domestic coal continues good. Screenings are in better demand, but prices remain low. Mine run lags with practically no call and not a few of the smaller mine run operations are reducing or closing down entirely.

With conditions in the South very materially improved, a better feeling exists among operators and a fairly good market is expected soon. The long hoped-for freight reduction is still having its effect and buying is still on a hand-to-mouth basis.

Prices on Harlan and Straight Creek block are $3.50@$3.75; egg $2.50@$3; nut and slack $1.40@$1.60; mine run, $2@$2.25.

West

UTAH

Retail Price Cut Made — Mine Sizes Readjusted — Trading Below Normal.

Another stir was caused recently when one of the largest retail agencies in Utah announced that it would sell furnace lump at $8.25. Business resulting has been very fair, hut even now is not what it should be at this time of year. Production continues at about 65 per cent of capacity.

Some trouble has been caused by the insufficient demand for the smaller sizes and a new size scale, as follows, has been announced by the operators. Straight lump will be over 3 in.; domestic lump over 1¾ in.; stove over 1¾ to 6 in.; nut over 1¼ to 3 in.; screened slack over ¾ to 1¾ in.; straight slack over 1¾ in. The prices at the mines will be $5, $4.75, $4.75, $4, $2.25, and $1.75 respectively. The Coast trade continues satisfactory and is likely to increase somewhat.

News Items From Field and Trade

ALABAMA

George Park has been appointed associate mine inspector for Alabama, with jurisdiction over the second mining district. Mr. Parks succeeds **David Kelso**, resigned.

The Alabama Fuel and Iron Co. has a large force of men working at Overton on the slopes and drifts of its new mine. From McCombs Switch, the Central of Georgia R.R. is building a spur track to the new site. This mine will have an ultimate daily capacity of 2,500 tons of washed steam and domestic coal.

A. F. Hilleke, formerly superintendent of the operations of the Semet-Solvay Co. in the Birmingham district and now general manager of the coke department of the corporation, with headquarters in Syracuse, N.Y., was in the district on a trip of inspection recently and also visited the works of the company at Holt, where the byproduct ovens will soon resume operations after idleness of several months.

ILLINOIS

St. Clair County coal companies have been awarded the contracts to furnish the City of St. Louis with coal for the coming year, contracts having been signed for 184,000 tons, with more to be filled later. **The Egyptian Coal and Mining Co.** of Marissa has received the contract to furnish 87,000 tons of screenings for the waterworks and 46,000 tons for the Koch Hospital, at $1.65 per ton. The price last year was $2.87 per ton. **The West Virginia Coal and Mining Co.** has secured the contract to furnish 15,000 tons of mine run coal for the waterworks and 37,000 tons for the workhouse at $2.29 per ton. The price last year was $3.95 per ton. The total amount contracted for is $110,000 less than the figures for last year.

E. S. White of Chicago has succeeded **E. J. Weimer** as chief engineer of the Kathleen mine of the Union Colliery Co., at Dowell.

Charles E. Crouch, formerly vice-president and general manager of the March Coal and Fuel Co., has severed his relations with that company and has organized a new firm to be known as the **C. E. Crouch Coal and Fuel Co.** Mr. Crouch has taken over a mine near Peoria.

INDIANA

Chicago capitalists are said to be negotiating for the sale of the mine of the **Bosse Coal Co.**, at Buckskin, on the Big Four R.R. Benjamin Bosse of Evansville is president of the company.

E. L. Reed, vice-president of the Walter Bledsoe Co., returns to Indianapolis after being in charge of the company's office in Cincinnati. **H. L. Jump**, in charge of dock operation at Indiana Harbor, succeeds him.

Notices of an examination for mine bosses, fire bosses and hoisting engineers for District No. 11, United Mine Workers of America, have been sent out by the Indiana State Mine Inspector. The work will be open to all United States citizens who are engaged in the coal mining industry. The first examination will be held at Terre Haute on Oct. 2, and another meeting will be held for the southern district at Evansville, on Oct. 3. Registrations for entering in the examination will close at 9 o'clock in the morning, and all names should be in by that time.

H. M. Ferguson, president of the Clinton Coal Co. and the Ferguson-Spears Coal Co., Clinton, has signed a pledge for $10,000 to the Vermillion County hospital fund. He is president of the county hospital board which is making a campaign to raise money.

KENTUCKY

The Asher Coal Mining Co., with operation at Varilla, on the Harlan road, has closed with the Jeffery Mfg. Co., of Columbus, for what is to be the longest retarding conveyor in the world. It will bring the coal from two seams, the highest of which will be 1,500 ft. above the railroad.

E. M. Sackett spent several days in Pineville recently in connection with the purchase of the eight miles of railroad on Pucketts Creek, known as the Black Mountain R. R. and his purchase of the Frost interest in coal land comprising 4,000 acres at the head of Pucketts Creek.

The Kentucky Block Fuel Co. has commenced the erection of a new steel tipple at its properties at Pikeville, estimated to cost about $30,000. A number of other extensions and improvements will be made at the properties.

The Commercial Coal Mining Co., Lexington, recently organized, is arranging for the operation of coal properties. The company has a tract consisting of over 300 acres of land, and proposes to install a plant and equipment for a daily output of close to 300 tons. W. H. Hoover is president; and J. H. Hall, secretary and manager in charge.

The Western Kentucky Coal Bureau, traffic organization for western Kentucky coal operators, has moved its headquarters from the Intersouthern Building to 613 Starks Building, Louisville.

The St. Bernard Mining Co., Louisville, has moved into the Flexner Building, formerly the Masonic Temple.

W. B. Gathright, manager of the Louisville division of the St. Bernard Coal Mining Co., is making a trip to Cincinnati, Cleveland, Pittsburgh and other cities on combined business and pleasure, one of his plans being to investigate methods in use in some of the larger retail companies in coal handling and accounting.

H. H. Albers, Pineville, manager for the Riddle Coal Co., has been transferred to the head office of the company at Chattanooga. The Pineville office will be in charge of **J. E. Settle**, who is also a Straight Creek operator.

T. C. Thompson, of the Federal Coal Co., a large operator in the Straight Creek field, is in New York.

White L. Moss, of the White Moss Coal Co., was in Louisville recently.

MARYLAND

Judge Robert R. Henderson sustained the demurrer of the **Consolidation Coal Co.** in the equity suit filed two years ago by 116 former employees for back wages alleged to be due them for shortages of weights from October, 1902, to October, 1917. The suit involves more than $1,000,000. The court held no allegation was made in the original suit that the weighmaster intended to give short weight. Leave to amend in ten days, to conform to the views of the court, was granted.

The Marva Coal Co., Baltimore, has been organized with a capital of $50,000 to operate coal properties in the state. The company is headed by James P. Wilcox, Frederick H. Henninghausen and Charles F. Stein, Jr.

MINNESOTA

B. Gorham, second vice-president of the Northwestern Fuel Co., recently visited Duluth with Mrs. Gorham. They motored here from St. Paul.

Peppard & Fulton have completed the pouring of the foundation for the machine shop and office building of the **Superior Coal & Dock Co.** at Duluth.

J. H. Macouvray, secretary of the Northwestern Fuel Co., whose main office is in St. Paul, has been in Duluth recently on a tour of inspection of the company's docks.

The Long Branch Coal Sales Co., Minneapolis, is a new incorporation, with a capital stock of $500,000. Incorporators are O. W. Miller, L. L. Benjamin, G. C. Borchard and G. A. Anderson.

NEW YORK

Ira H. Shoemaker, formerly for a year with the Marquette Coal Co., Inc., as assistant general sales manager, has been made vice-president of the company, in charge of sales.

The Dooley-Weston-Shuler Coal Co. has filed notice of change of name to the **D. S. Weston Coal Co.**

W. A. Reed has been appointed Buffalo sales agent of the Philadelphia & Reading Coal & Iron Co., to succeed D. L. Tuttle, deceased. He has been promoted from the management of the Detroit agency of the company and was formerly its Western traveling agent, with headquarters at Elyria, Ohio.

P. O. McIntire, of Cleveland, who lately took a position in the Buffalo office of the Lake City Coal Co., of Cleveland, has been elected vice-president of the company. He has Ohio mining operations, but will remain in Buffalo for the present.

Bids were opened on Sept. 7 for furnishing the Department of Plants and Structures of the City of New York with 4,000 tons of Buckwheat No. 1 and 1,000 tons of bituminous. The lowest bidders were the **Commonwealth Fuel Co.**, who submitted a price of $3.59, gross ton, on the buckwheat, and **George D. Harris & Co.**, on a basis of $2.34, net ton, f.o.b. mine, on the bituminous.

OHIO

W. K. Tuttle, of the Tuttle Coal Corporation, has returned to his Cincinnati office after a two weeks' vacation at his old home in Hastings, Minn. While in the northwest Mr. Tuttle paid a visit to the docks on Lake Superior.

Kuper Hood, sales manager for the Houston Coal Co. has returned to his office in Cincinnati after six weeks spent abroad.

E. L. Hutchinson, Frank B. Stewart, Brooks Hutchinson of Fairmont and Gorin Arnold of Charleston were present at a directors meeting of the **Central Fuel Co.** held in Cincinnati recently to outline the further policies to be pursued now that the Charleston and New York offices of the concern have been closed. The Cincinnati and Detroit offices will be continued.

The Kentucky Fuel Co., of Cincinnati, has been appointed sales agent for the **Malva Coal Co.** and the **Hughes Coal Co.**, two operations on Horse Creek in Clay County, Ky.

Colonel Charles R. Moriarty, of Cincinnati, western sales manager for the Cabin Creek Consolidated Coal Co. is away on a vacation in the Adirondacks.

T. V. Bush, formerly general traffic manager of the Raleigh Coal & Coke Co., has accepted the position of coal service agent of the C. & O. Ry. Co., headquarters at Cincinnati.

The Cincinnati Traffic Department of the **Raleigh Coal & Coke Co.**, by reason of consolidation, has been transferred to the traffic manager's office at Raleigh, the treasurer's office at Cincinnati absorbing the sales duties that formerly came over that desk.

The Murray City Coal Co., Columbus, has just completed the installation of large overhead bins with a capacity of 1,500 tons daily. This concern is managed by C. H. Boardman, Jr.

Judge Frank E. Christian of Lynchburg, Va., president of the Imperial Coal Association, was in Cincinnati recently attending the sessions of the American Bar Association.

PENNSYLVANIA

The J. Ed Lee Coal Co., Philipsburg, is erecting a new concrete and tile building at the No. 9 mine, to be used as first aid and charging room for storage batteries.

H. W. Montz has been appointed assistant general manager, Lehigh Valley Coal Co., Wilkes-Barre.

The Public Service Commission has dismissed the complaint of the **St. Clair Coal Co.** against the rates of the Eastern Pennsylvania Light, Heat and Power Co. Objections were made to increased power rates effective in 1919 and 1920 but the commission found that the wholesale rates were not unreasonable nor unjustly discriminatory.

Bruce Payne, vice-president of the Alden Coal Mining Co., of New York City, has severed his connection with that concern to become head of the **Payne Coal Co.** with headquarters at Wilkes-Barre, Pa. He will have as his associate **C. E. Banker**, now representative of the Alden Co. at Wilkes-Barre. Mr. Payne was at one time a member of the coal firm of Haddock and Payne, at Wilkes-Barre, and later served throughout the late war. Mr. Banker was at one time connected with the Lehigh & Wilkes-Barre Coal Co. and with the Central Coal Co. In addition to handling anthracite the new concern will deal in bituminous.

The Clearbill Coal Mining Co., Burnside, has been organized with a capital of $150,000, to operate properties in that section. William G. Browne is treasurer.

The Mount Airie Coal Co. has filed notice of change of name to the **Mount Airie Coal Mining Co.**, at the same time increasing its capital from $80,000 to $150,000 for proposed expansion.

State charters recently issued to coal companies are: **Reliable Coal Co.**, Philadelphia; capital stock, $50,000; treasurer, Max B. Shuhin, who is an incorporator with Joseph I. Isaacman and Harry Polish, Philadelphia. **James C. Stineman Coal Co.**, South Fork, mining of coal and purchasing of coal lands; capital, $50,000; treasurer, I. E. Lewis, Ebensburg, who with James C. Stineman, Ebensburg and Leroy Mahan, South Fork, incorporated the company.

The Jefferson Gas Coal Co. has notified the office of the Secretary of the Commonwealth that the capital stock of the company has been increased from $200,000 to $240,500.

The Schuylkill Valley Coal Co., through its president, A. B. Benesch, has notified the Secretary of the Commonwealth of an increase in capital stock from $5,000 to $500,000, and an increase in indebtedness from nothing to $150,000.

UTAH

The Federal Land Office has sold about 160 acres of coal land in the Castlegate district, which the State of Utah was claiming as its property under the state school grant. Protest was immediately made in a letter sent out from the office of the state land commissioner on learning of the sale. The letter announces that the state will insist on its right to be granted a hearing of its former protest filed against the sale of this land. The government has sold the land to the **Utah Fuel Co.** The Utah attorney-general is preparing the case for the state.

C. A. Allen, State Inspector of Mines, who has returned to Salt Lake City after an inspection trip in the southern part of the state, reports he found huge coal fields stretching from Escalante to the Arizona-Utah line. Mr. Allen says the seams run as high as twenty feet in thickness. On account of the distance from a railroad, and the nature of the country lying between, the coal is probably of only local economic value as yet.

The mine rescue team of the **Independent Coal and Coke Co.** at Kenilworth won first place in the international contest staged at St. Louis recently. It is said that the Utah team easily took first place in both the first-aid and mine rescue tests.

Bonds belonging to the **Cameron Coal Co.** which were taken from the office of the company in October, 1918, have been found in Chicago.

VIRGINIA

The Superior Red Ash Fuel Co., recently incorporated, is to start development at once, according to D. C. Yates, president of the company. The company is incorporated for $200,000 and has acquired a very valuable lease of 754 acres of Raven Red Ash coal at Red Ash.

George Howard Loeb, Norfolk manager of the Central Pocahontas Coal Co., is in the West on his honeymoon. He was married recently to Miss Beatrice Morris, of Norfolk.

WASHINGTON, D. C.

Recent revenue rulings of interest to coal producers, are:

Section 214 (a) 8—Deductions allowed: Depreciation.

Section 214 (a) Art. 161: Depreciation. The term "useful life" as used in Article 161, Regulations 45, is interpreted to mean the period of time over which an asset may be used for the purpose for which it was acquired. In the case of a new building, this period starts at the time the building is completed and capable of being used. Buildings under construction are not subject to a depreciation allowance for income tax purposes.

Section 214 (a) 10—Deductions allowed: Depletion.

Section 214 (a) 10 Art. 208: Determination of mineral contents of mine. Held that when material error has been made in an estimate of mineral contents of a mine, a new estimate may be made, and the capital remaining to be recovered should he recovered thereafter through depletion in the year or years of continued operation.

Dr. George Otis Smith, director of the Geological Survey, will address the annual meeting of the New York State Oil Producers' Association at Olean, on Sept. 31. His subject will be "The Real Value of Oil." Dr. Smith has accepted an invitation to address the General Staff college of the Army on Oct. 5 on the "Strategy of Minerals." Later in the course, he will address the class on "Superpower."

WEST VIRGINIA

The deal for the purchase of the holdings of the **Winters Coal Co.**, a Pittsburgh concern, to the **Parkersburg Dry Dock Transportation Co.** of Parkersburg has finally been consummated.

A. Spates Brady, coal operator, has moved his offices from Fairmont to Elkins.

Capitalized at $25,000, the **Coburn Hill Coal Co.** has been organized with a view to operating near Tunnelton in Preston County. Active in forming this company were: H. C. Miller, A. L. Sidwell, L. W. Dawson, E. L. Wolfe and A. C. Bolyard, all of Tunnelton.

Offices of the **Blair Parke Coal Co.** of Philadelphia, in Fairmont, have been removed from the suite of the third floor of the Home Savings Bank Building to rooms 14 and 15 of the same building. Although many other coal brokerage concerns have closed their branch offices in Fairmont in recent months, this is one of the companies whose office has been retained, Kenna Clark being the local manager.

Uniontown capital is principally interested in the **Bear Mountain Gas Coal Co.** which has just been organized with a view to operating in the Bear Mountain territory near Flemington. The capital stock has been fixed at $200,000, the general offices of the company being at Uniontown, Pa. Closely identified with the new coal corporation are A. Q. Davis, F. B. Hess, J. E. Hess and E. L. Zearley, all of Uniontown, Pa., and W. A. Gadd, of Morgantown, Pa.

Interests affiliated with the **Percy Hellner & Sons** corporation of Philadelphia have about completed arrangements for shipping coal from the Thacker field over a branch of the N. & W., which runs from Lenora. Four to five cars a week are moving from the temporary tipple which will give way to a modern plant in the next few months.

Nelson Rodgers of Cleveland, has purchased three-eighths of an undivided interest in six tracts of coal land in the Pittsburgh seam on Sycamore and Buffalo creeks in the Harrison County field from the trustees of Isaac Semans, bankrupt, the purchase price being close to $58,000. Trustees who joined in making a final conveyance of the property were C. E. Lenhart, W. W. Parshall and Frederick G. Kay. These tracts comprise the coal under the Andrews farm, the Curtis Allen tract, the A. A. Post tract, the Hiram Post tract, the George T. Post tract and the Robert Wagner tract.

Frank Stewart, president of the Winifrede Coal Co. was one of the executives of West Virginia mines who was caught in the armed demonstration of the miners in their recent advance on Logan. He endeavored to stave off the robbery of the company's store but was unsuccessful.

Vice-President William O'Toole of the Central Pocahontas Coal Co., made a roundabout return to Welch, after a stay in New York, by visiting Cincinnati while en route.

Carl E. Keck, formerly superintendent for the Summit Connellsville Coal & Coke Co., Pleasant Unity, Pa., is now general superintendent of the Woodland Coal Co., Capitan.

E. H. Arnold, president of the Randolph Colliary Co., located at Elkins, returned about the middle of September from a trip to France, having been among the members of the American Legion who visited the battlefields during August.

George Waddell and Alex Waddell, of Philippi, who control the Waddell Coal Co., were recent visitors at Elkins.

WISCONSIN

C. G. Watts, Minneapolis manager of the Great Lakes Coal and Dock Co., made an inspection of the company's dock construction work at Superior.

C. S. Williamson, of Chicago, Western manager of the Mead-Morrison Mfg. Co., visited the Superior dock of the Great Lakes Coal & Dock Co. recently.

BRITISH COLUMBIA

Under the laws of British Columbia the collieries are required to pay wages in fortnightly periods. **The Pacific Coast Coal Mines, Ltd.**, operating on Vancouver Island, which ceased work some months ago owing to financial difficulties, was guilty of a breach of this statute. Recently action was taken on behalf of twenty men whose wages were not paid within the time limit defined by legislation. Judgment was secured and the company fined $25 in respect of each employee named. It is said that the case will be appealed.

Diamond drilling is in progress on the Chu Chua coal deposits near Kamloops. The purpose is to thoroughly explore the field and, if warranted, to make the investment necessary for further development

COAL OUTPUT FOR AUGUST, 1921

VANCOUVER ISLAND DISTRICT

Mine	Tons
Canadian Western Fuel Co.	68,430
Canadian Collieries, Ltd.,	
Comox	35,888
South Wellington	7,495
Extension	17,875
Nanoose Wellington Collieries	3,865
Granby Consolidated MS&P. Co., Cassidy	23,802
Old Wellington (King & Foster)	481
Total	157,836

NICOLA-PRINCETON DISTRICT

Middlesboro Collieries	5,563
Fleming Coal Co.	3,178
Coalmont Collieries	9,607
Total	18,348

CROW'S NEST PASS DISTRICT

Crow's Nest Pass Co.,	
Coal Creek	44,318
Michel	26,923
Corbin Coal & Coke Co.,	
Corbin	3,936
Total	75,177
Grand Total	251,361

Traffic News

The Interstate Commerce Commission has set a hearing for Oct. 17 in Washington on the matter of increased freight on coal to the Twin Cities under the **Holmes & Hallowell case.** Trade organizations of Minneapolis complained that the increase was ordered without their being allowed to be heard. The increase was 13½c. on soft coal.

In the complaint of the **Hillsboro Coal Co.**, the I. C. C. decides that the failure of the Cleveland, Cincinnati, Chicago and St. Louis and other railways to make arrangements whereby the coal company's mine on the Big Four at Hillsboro, Ill., would be enabled to avail itself of the service, facilities and rates of the Chicago & Eastern Illinois in connection with the interstate transportation of coal, does not result in undue prejudice or disadvange.

In the complaint of the **Benton Coal Mining Co.**, the commission decides that the failure of the C. B. & Q. to extend to the coal company's mines near Benton, Ill., the services, rates and facilities of the C. B. & Q. through trackage or other agreements does not subject the coal company to undue prejudice or disadvantage, and dismisses the complaint.

The M. E. Case Coal Co. and others of Peoria, Ill., have complained to the I. C. C. against unreasonable rates on bituminous coal from La Marsh, Ill., to Galesburg, Ill., because the rate was not the same as that from Peoria to Galesburg.

The Sloss-Sheffield Steel & Iron Co., of Birmingham, Ala., alleges unreasonable rates on coal between points in Alabama because of the increase under General Order No. 28 being applied to separate factors of combination rates.

The Standard Portland Cement Co., of Charleston, S. C., complains against unreasonable rates on coal from Carbon Hill, Dora, Empire and Townley, Ala., to Leeds, Ala.

In the complaint of the **Minnesota Steel Co.**, the Director General of Railroads has filed a brief contending that the rate of $15 per car on coal shipped between June 25 and Nov. 15, 1918, from Missabe Junction, Minn., to Steelton, Minn., was not unreasonable and that no reparation should be awarded.

In the complaint of the **Reeves Coal & Dock Co.**, the commission decides that demurrage charges on coal held at Minneapolis were illegally assessed and awards the company reparation.

The I. C. C., in the case of the **Michigan Builders Supply Co.**, has decided that the rate on anthracite from Carbondale, Jessup, Scranton, and Winton, in Pennsylvania, to Detroit, between June 25, and Nov. 12, 1918, was unreasonable because it exceeded $3.76 a ton.

In the complaint of the **P. Koenig Coal Co.**, the I. C. C. decides that the rate charged on shipments of coal from points in Ohio, Kentucky, West Virginia, and Pennsylvania to Seven Mile Road yard in the city of Detroit were illegal.

In the matter of intrastate rates on bituminous coal in Ohio, the **West Virginia Coal Association** has been permitted by the I. C. C. to intervene.

In the complaint of the **Mathieson Alkali Works**, the **Virginia Iron, Coal and Coke Co.**, intervenor, asks that the commission find that the rates on coal from the Pocahontas, Va., group to stations on the N. & W., between Bristol and Roanoke, are unreasonable and that they be reduced. The railroad contends that the complaint should be dismissed and that a readjustment of all rates in this territory be made.

In the complaint of the **Fairmont & Cleveland Coal Co.**, request has been made that the commission refuse to reconsider its opinion which provides for proper car distribution at their mines in West Virginia, the railroads having asked for a reconsideration.

The Terre Haute, Indianapolis & Eastern Traction Co., in a brief to the commission, says that the commission should decide that the rates on bituminous coal from points in Indiana to Terre Haute were unreasonable between June 25, 1918, and Aug. 31, 1920.

The Consolidation Coal Co of Baltimore complains against unreasonable combination rates on bituminous coal from points on the Millers Creek R.R. in Kentucky to various destinations and Canadian points.

Obituary

Advices received in Birmingham announce the death of **J. H. Lord**, a well-known electrical engineer, which occurred in Bengal, India, where he was connected with the Tata Iron Works. Mr. Lord was in charge of the installation of the electrical equipment in the big Fairfield plant of the Tennessee Coal, Iron & R.R. Co.

Oscar Horton Chellborg died at his home in New Rochelle, N. Y., on Sept. 14. He was 62 years old and for many years connected with the coal firm of Robinson, Haydon & Co. He was a graduate of the College of the City of New York; charter member of the Knickerbocker Yacht Club and for many years a member of the New Rochelle Yacht Club, and a former chairman of the regatta commitee of that organization.

Cassius C. Thomas, former resident of Evansville, Ind., and who for years operated large coal mines in Evansville and at Morganfield, Ky., died recently at Silver Palm, Fla.

W. Lacey Kirtley, long a figure in the Cincinnati coal trade, having started many years ago with the Smokeless Fuel Co., and for the last ten years with the Darby Coal Sales Co., died in Covington, Ky., recently.

Death recently ended the career of **Clarence Ivan Lantz**, general manager of the Rosedale Coal Co., and one of the leading business men of Morgantown, W. Va., at the West Penn Hospital at Pittsburgh, following an operation. Not only was Mr. Lantz eminently successful as a coal man but he was widely known as a bridge engineer. He was one of the pioneers in the Scott's Run field and in 1917 aided in the organization of the Rosedale company. He was general manager of the Mapletown Coal Co. and sales manager of the Blue Flame Fuel Co.

Warren C. Barber, since 1916 connected with the Alden Coal Mining Co., died at his home in Brooklyn on Sept. 5. The funeral service, which took place on Sept. 8, and was attended by many coal men.

J. Luther Neel, Norfolk manager for the Weston Dodson Co., and one of the best known coal men of that section of the State, died at the Norfolk Protestant Hospital recently. He had been in declining health for several months. He was associated with the Pocahontas Fuel Co. early in his career, and with other prominent coal concerns.

William G. Halbert, one of the pioneers in the coal industry in Illinois died recently at his home in Danville. In 1895 he organized and developed the Halbert Coal Co.

Coming Meetings

The annual Institute meeting of the **Alabama Coal Operators' Association** is scheduled to be held at the Empire Mines of the Empire Coal Co., at Empire, Walker County, Oct. 4. This is the first meeting to be held by the Institute in several years, the sessions having been dispensed with during the war.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The twenty-fourth annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

American Manufacturers Export Association will hold its twelfth annual convention at the Waldorf-Astoria, New York City, Oct. 5 and 6. Secretary A. W. Willmann, 160 Broadway, New York City.

The Coal Mining Institute of America will hold its annual meeting at Pittsburgh, Pa., Dec. 7, 8, and 9. Secretary H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

An Industrial Relations Conference for all industries in the State of Pennsylvania has been arranged for October 24 to 27 at Harrisburg, Pa. by the Commissioner of Labor and Industry, C. B. Connelly.

The sixth annual convention of the **National Association of Purchasing Agents** will be held Oct. 10-13 at Indianapolis, Ind.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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Unemployment in Coal

DRAMATIC indeed was the setting that had been staged for the delegates to the conference on unemployment at Washington. Opened by the President of the United States, presided over and under the leadership of Herbert Hoover, the conferees have found every possible stone removed from their path in the pursuit of their objective—emergency and then permanent measures to relieve the plague of idleness. The great things that such a gathering of citizens of the highest type, under such auspices, could hope to accomplish are not finding jobs for the unemployed but awakening the national consciousness to the magnitude of the problem and setting every one, from lowly village mayor to highest executive in industry, to the task. The problem is so big, so elusive and so impossible of direct solution that everyone must admire the courage and vision as well as the faith in the ultimate good sense and resourcefulness of the American people of the men who dared make the undertaking.

Unemployment and employment are relative terms. At no time is everyone at work. Demand for materials and goods creates demand for labor and diminishes idleness; a depression in business closes the avenues of employment. Hence there is no panacea for the great ailment of the world today except to resuscitate buying. In other words, the problem of unemployment is primarily a matter of commerce and not one of labor—hence we find the Secretary of Commerce, Mr. Hoover, and not the Secretary of Labor, Mr. Davis, the leader of the national conference on unemployment at Washington.

Coal bulks large in the problem, for two reasons: A large part of the idle men the country would put to work are at the coal mines and the high price of coal is held to be a contributing cause in the hesitation of other business to resume and to employ more men.

Unemployment in the coal industry cannot be entirely charged to the obstinate policy of the United Mine Workers in refusing even to consider a reduction in wages, because a fair-sized and growing portion of mine labor is non-union and has accepted lower wages and is working. The conference in Washington has concluded its preliminary canvass of the situation, but the committee on mining will not report until Oct. 10. There is no intimation as this is written as to the angle the conclusions of these men, representative of the coal industry, will take.

They must, however, have taken cognizance of the accepted fact that the union coal miners, with the building trades labor, have refused wage reductions and that railroad labor has been reduced but a small portion of what must come if high freight rates are no longer to bar the revival of business. It must also have come to their attention that in the anthracite region, with wages the highest in history and coal prices at the highest recorded level, labor has been as fully employed this year as in any normal year.

This has been true because the operators have been willing to produce and store what they could not sell and the retail dealers have been willing to buy and store what they could not induce customers to put in their cellars. The miners in the anthracite region have not been given work at better than war-time wages because they were entitled to such wages by the high cost of living but because the country must have the coal. Public condemnation of hard-coal prices has been continuous and strenuous. But there has been no unemployment problem in the hard-coal region.

Bituminous Coal a Special Problem

WITH soft coal the case is different. Unemployment has been rife since early in the year and the prospect for more work is not promising. The bituminous industry, therefore, presents a special problem to the conferees on unemployment. As we noted in these columns two weeks ago, out of the maximum of 640,000 employed in 1920, some 150,000 men are now idle or at least are not mining bituminous coal. Of those at work the portion afforded the opportunity for full-time employment is reduced from last year by one-half and the percentage of opportunity to work three days or more has dwindled on the average from 60 to 42.

Mine labor does not generally fully avail itself of its opportunity to work. From 60 to 75 per cent is a fair average of the number of men who work three-fourths or more of the hours in which they have the opportunity to labor, according to extensive studies made by the Bureau of Coal Economics of the National Coal Association and introduced as evidence before the Bituminous Coal Commission in 1920. This appears to be true whether the opportunity to work, as represented by days of mine operation per month, is 10 or 20 and is a condition in the industry that cannot be classed as unemployment.

But aside from the habits of work and non-work of the individual miner in good times and bad and its effect on the apparent unemployment of this class of labor is the fact that the year 1921 inherited some 640,000 to mine soft coal and work has been available either part or whole time, for only 500,000. To what extent has high cost of coal necessitated by high union wages militated against the greater employment of these men? Is the price of coal for industry holding back the tide of prosperity? There can be but one answer. The cost of coal is a factor contributing to the hesitation of industry, but to a lesser degree than many suppose. Non-union mine operators have reduced wages and the buyers of coal have been getting the advantage of lower costs in cheaper coal. The average

price of smokeless coal, the best steam coal this country produces, was $1.30 per net ton in the twelve months prior to July, 1914. The navy has just closed a large contract for smokeless coal at $1.92 per net ton, an increase over the pre-war figure of 62c., or less than 50 per cent. Wages have been materially reduced at the mines where this coal is produced.

Somerset (Pa.) coal is now to be had at $2 per net ton, compared with $1.30 before the war. Wages of non-union miners have been reduced here. Eastern Kentucky (a non-union field) mine-run coal is now quoted at $1.60 per net ton, compared with a pre-war average of $1.52 per ton.

Turning to the union fields, however, we find Clearfield now $2.20 per ton, about double the pre-war price of $1.12; Pittsburgh steam coal at $2.25 against the 1913-1914 average of $1.26; Kanawha now $2.25 compared with $1.16 and southern Illinois mine-run from $2.25 to $3.50 compared with a pre-war average of $1.16. Connellsville, the home of beehive coke, is now a coal producer and with wages nearly to pre-war levels and with coke ovens idle is finding a wide market for coal.

Comparative figures of operating time in the coal region as published by the Geological Survey show that it is the union fields that are suffering the most. It is reported that one of the emergency measures that will be proposed for unemployment will be to divide up what work there is. The union miners cannot share more generously in the labor there is until they accept a lower wage. There is no other answer to the unemployment problem for these men.

Non-union fields cannot, however, produce the coal that will be required for even a moderate revival in business. The responsibility of the coal industry in helping the country return to normal is great. Lower freight rates hinge in part on cheaper union coal and lower freight rates with more cheap coal and coke from coal are needed to give the iron and steel industry a feeling of stabilization. If, as now appears probable, the program of the United Mine Workers be to refuse consideration of wage changes until next spring and settlement then only to be affected after a strike, the solution of unemployment not only in coal but other industry will be interminably and inexcusably delayed, though the eventual outcome be assured.

A Revival in Cost Accounting

IN PROMOTING cost accounting at the coal mines the National Coal Association is again entering a field that is at once non-controversial and that is constructive. So much of the time, money and effort of the national association has been spent on the firing line that the everyday needs of the rank and file of the membership have suffered. In Cincinnati last week there were assembled some 100 coal operators, auditors and secretaries to spend the day in a discussion of uniform cost accounting, the first meeting of the kind in two years.

Teaching cost accounting for cost accounting's sake alone is unproductive. The subject is intricate, the details many, and one soon tires. But to teach cost accounting and the collection of field costs as a means to an end can produce good. And if that end be the illumination of the facts of the industry there is opportunity to arouse some enthusiasm on the subject. For instance, between now and the signing of a new wage scale with the United Mine Workers there will be occasion for the operators to go before the people of the country with their side of the story. The next, as was the last, wage negotiation will be fought over in the press, and cost data will be invaluable in that contest.

There should, however, be no such impelling reason required to induce every coal operator to adopt and follow a uniform cost accounting system. Not all the experts will agree that the system of the National Coal Association is perfect, but all can and do, it appears, agree that it is good and that it should be universally followed. That being true there remains the greater task of getting it introduced. Here again the national body, by holding sectional meeting and by energetic teaching, can be of great help to the local organizations.

The New Connellsville Region

A BEEHIVE-OVEN region has its peculiarities. It does not seek to obtain maximum coal tonnage unless it is selling raw coal. When it sells its coal uncoked it misuses the product which is needed to get service out of the ovens. As the ovens cost more than the mine and the number of ovens has been so regulated as to use the coal of the field apportioned to it during their life, it would not do to rob them of the coal. Hence, in a beehive-oven region raw coal is not sold. When enough coal is mined to fill the ovens that are ready to be filled the mine is closed down till another batch of ovens becomes ready.

For this reason the Connellsville region has not kept pace with some other localities in the matter of coal output per plant. The original installations were laid out with their restrictions in full view. Now, with the departure of the beehive oven, a new day has arrived. It no longer matters what mine produces the coal, as it is not coked at the mine. However, it ceases to be desirable to operate as many plants as in the past. One big mine would seem more economical than several smaller ones if the coal is to be shipped. A consolidation of mining areas now seems probable, and nothing will hamper the largest of development except the fact that the region is already quite generally despoiled of its coal, and virgin tracts are no more.

There is still room for concentration in some places, however. We are learning from time to time that proposals for larger plants are under way, and the Connellsville region, the home of an enforced conservatism, may yet show the stuff out of which its engineers are made. The region has been in the past a leader in social experiments and coal conservation. From now on it may exhibit once again its pre-eminence in transportation and hoisting methods. It will be well worth watching. The subsidiaries of the United States Steel Corporation have given proof of their mining enterprise in Gary, Westville, Benton and Lynch. They will hardly be less active under the new conditions in Fayette and Westmoreland counties. The promise of a marvelous rubber-belt conveyor, miles in length, seems to be a forerunner of such activity.

The beehive and Belgian ovens have not by any means shipped their last ton of coke. They may have their periods of revival but faith in them is so greatly shaken that no longer will it be desirable to conserve coal for their operation, so irregular is that operation likely to be and so sure is it that before long the last day of the last beehive oven will be celebrated. For this reason we may look for an increase of coal production in the Connellsville region, not all of which will by any means go into byproduct coke.

Improved Rolls, Feeders and Chutes Greatly Reduce Degradation in Anthracite Breakers*

Performance and Design of Rolls—Feeders Which Give Even Flow of Coal—Chutes with Irregular Delivery—Box and Other Automatic Chutes—Screen Areas for Coal of Different Sizes

By Dever C. Ashmead†
Kingston, Pa.

UPON the kind of rolls used in the preparation of anthracite and how they are operated depends in large measure the quantity of prepared sizes that can be obtained. Any excess production of the smaller sizes reduces the profit realized from the operation of a mine. Many types of rolls are now on the open market, and there are others which the coal companies have designed for their own use. A roll should crush or, rather, break the coal of a given larger size to a given smaller one, producing, in so doing, a minimum of over- or under-sizes. All roll tests show the percentages of the prepared sizes of coal together with those of the unprepared sizes (if indeed today any sizes may be regarded as unprepared). It is more correct to call these small coals steam fuels than unprepared sizes, for in many places the smaller grades receive as careful preparation as the larger ones.

About Ten per Cent Loss in Each Breakage

The accompanying set of curves, Fig. 1, were made from data obtained in a long series of tests by the Lehigh & Wilkes-Barre Coal Co. The rolls upon which these trials were made are of a special design worked out in this firm's own mechanical engineering department and are particularly suited to its conditions. It will be noted from the line marked "Steamboat" that the quantity of prepared sizes made in breaking coal from lump to steamboat is 93.4 per cent. In breaking steamboat to broken it is 91 per cent and in breaking broken to egg it is 88.8 per cent.

Table I shows a long series of roll tests made in different parts of the anthracite fields. Here is given the name or make of the roll, the locality where the test was made and the results obtained, also any special feature which the roll may embody.

In this table mention is made of the Johnson hollow-ground tooth. This element of roll design differs from the old-style spear tooth in that it has four cutting edges spaced equidistantly around its periphery, as shown in Fig. 2. Here also is shown the old type of spear tooth. In Fig. 3 will be found the "hawk-bill" tooth, which is composed of manganese steel. In Fig. 4 is shown an older type of tooth, which also is made from manganese steel.

In the Johnson tooth the areas between the four cutting edges, which converge to a point, are concaved to a depth of $\frac{1}{4}$ in., allowing the edges to stand out prominently. This constitutes the distinctive characteristic of this tooth, in that the only part of it which comes in contact with the coal is the cutting edge, whereas with the older types, possessing only two cutting edges, the sides of the tooth present an unbroken surface to the coal. This has resulted in a grinding instead of a cutting action. It also is asserted that the wear on this type of tooth is such that the cutting edge is maintained through the entire length of its period of service.

Referring to Table I it will be noted that tests 26 and 27 were made with Johnson teeth and that the percentage of the prepared sizes obtained exceeds that shown in tests 24 and 25, made at the same colliery with the other type of tooth. Furthermore the percentage of the larger sizes of coal are greater for the Johnson teeth than for those of other types.

Tests 30 and 31 of the same table show that with no steamboat in the second test and a smaller percentage of broken coal, the proportion of prepared sizes was greater than in the first trial.

In test 35 it will be seen that the Johnson tooth made practically no broken coal, yet the percentage of prepared sizes was greater than in test 34 when 36.4 per cent of broken coal was produced.

Probably the greatest recent departure from ordinary roll construction is the new roll invented by Frank Pardee and now in daily service in the Colerain breaker. This is not really a roll but it does the work of one. Referring to Figs. 5 and 6 it will be noted that the machine consists of two shafts revolved toward each other by means of gearing. On one shaft is mounted a steel plate carrying cutter teeth on its periphery. These are similar to the teeth on a circular saw, but the distance between the adjacent cutters is equal to about the diameter of the pieces to which it is desired to break the coal. Thus an egg crusher would have teeth $2\frac{3}{8}$ in. apart.

On the other shaft are plain steel disks. The cutter and the disks revolve in the same plane, their tops moving toward each other. The coal is fed to this device

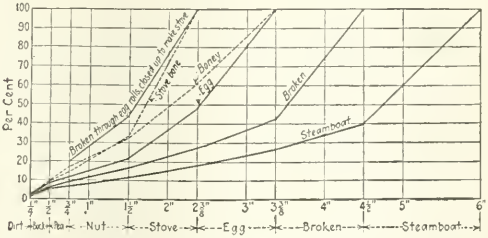


FIG. 1. GRAPH OF PERFORMANCE OF ROLLS AT LEHIGH & WILKES-BARRE COLLIERIES

Each line in the graph is denominated by the size desired. Thus the line marked "steamboat" shows the quantity of each prepared size obtained when 100 per cent lump is reduced to steamboat. It will be noted that in crushing, the aggregate percentage of sizes rated as pea and under is about 6.6; hence the total percentage of prepared sizes is 93.4. The line marked "broken" shows the prepared and "unprepared" sizes resulting from the breaking of 100 per cent steamboat to broken.

*Excerpt from article, entitled "Preparation of Anthracite," presented at the Wilkes-Barre meeting of the American Institute of Mining and Metallurgical Engineers.
†Anthracite Field Editor, *Coal Age*.

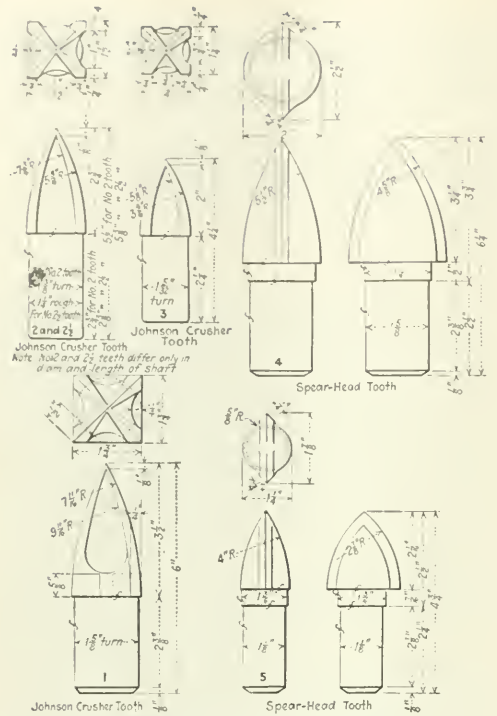

Johnson Crusher Tooth
Note that end teeth differ only in diam. and length of shaft
Johnson Crusher Tooth
Spear-Head Tooth
Johnson Crusher Tooth
Spear-Head Tooth

FIG. 2. JOHNSON HOLLOW-GROUND TOOTH AND THE OLD-FASHIONED SPEAR-HEAD TOOTH

The letter "f" appearing in many parts of the illustration designates that the part thus characterized is tool-finished. It will be noted that the purpose of the roll is to break, not crush, the coal.

by a new and ingenious spiral feeder in such a manner that each piece of coal is delivered with its major axis at right angles to the plane in which the cutters revolve.

The feeder and the cutter are synchronized, so that each piece of coal is delivered in front of a tooth, which carries the coal forward and against the opposite disk. This acts as a fulcrum, against which the cutter breaks the coal. Between adjacent cutters as well as between the disk wheels is placed a spring spacer. Any coal that lodges between either the cutters or the disks will push the spring back, thus preventing the coal from being crushed.

Table II is the result of a test that was run on one of these rolls.

TABLE II TEST OF PARDEE ROLLS

	Per Ct.		Per Ct.
Over 1½ in. and through 2 5/16 in.	71.42	Over ½ in.	2.38
		Over ¼ in.	2.85
Over ⅜ in. and through 1½ in.	21.42	Over 3/16 in	0.48
		Over 1/16 in.	1.07
		Smaller	0.48

It is interesting to note that the material was crushed directly from broken into egg coal without any oversize, giving a total of 92.84 per cent of prepared sizes. With the common roll it is generally expected that the highest yield of prepared coal will occur when 15 to 20 per cent of oversize is made by the roll.

Little need be said as to the design of shaker screens, as these have become so nearly standardized that few improvements have been made during the past several years. Commencing with page 277, Vol. 42, Transactions American Institute of Mining and Metallurgical Engineers, Paul Sterling describes fully the revolving and the shaker screen. What Mr. Sterling has already discussed will not be considered here but a few details of current practice at certain breakers will be recorded.

In the new Wanamie breaker of the Lehigh & Wilkes-Barre Coal Co., the areas in square feet of screening surface per hour allowed for one ton of coal were fixed as in Table III.

TABLE III. SCREEN AREAS ALLOWED AT WANAMIE BREAKER PER TON-HOUR

	Sq.Ft.		Sq.Ft.
Broken	2.4	Pea	6.4
Egg	1.9	No. 1 Buckwheat	4.2
Stove	2.1	Rice	6.9
Chestnut	2.3	Barley	7.8

TABLE I. RESULTS OF ROLL TESTS AT VARIOUS BREAKERS

Name of Colliery	Name of Make of Rolls	Size	Special Characteristics	Size of Coal Crushed	Speed, Ft. per Min.	R.p.m.	Date	Steamboat, per Cent	Broken, per Cent	Egg, per Cent	Stove, per Cent	Chestnut, per Cent	Prepared Sizes, per Cent	Pea, per Cent	Buckwheat No. 1, per Cent	Rice, per Cent	Barley, per Cent	Buckwheat No. 4, per Cent	Total Small Sizes, per Cent	Number of Teeth per Shell	Condition Teeth	Test	Remarks
Short Mountain	Solid cast	No. 2	Teeth diagonal and alternate	Broken	918	115	1910			47	5	21	0	13	5	82	0	6	0	5	5	3	5	1	75	1	25	18	0	896	Fair	1	
Williamstown	Manganese	No. 2	Teeth Alternate	Broken		80	1911			1	3	37	3	27	7	16	2	82	5	5	0	6	0	3	6	1	2	1	7	17	5	840	Good	2	
Williamstown	Manganese	No. 2	Teeth alternate	Broken		80	1911			9	0	39	5	22	9	13	2	84	6	4	5	4	6	3	0	1	5	1	8	15	4	840	Good	3	
Williamstown	Manganese	No. 2	Teeth removed	Broken		80	1911			7	0	39	4	22	8	14	8	84	0	5	0	4	5	3	3	1	7	1	5	16	0	840	Good	4	
Williamstown	Manganese	No. 2	Each sheet	Broken		80	1911			3	8	40	0	23	0	14	9	81	7	5	9	5	6	3	7	1	4	1	7	18	3	840	Good	5	
Wm Penn	Manganese	No. 2		Steamboat	301		1920		43	0	21	0	12	5	9	0	85	5	6	0	3	5	4	0	1	0			14	5			6	
Cameron	Manganese	No. 2		Steamboat	256		1920	12	5	38	8	12	5	13	7	9	2	86	7	4	2	4	3	2	0	2	5	1	3	13	3			7	
Luke Fidler	Manganese	No. 2		Steamboat	233		1920	2	9	26	2	18	0	18	4	16	0	81	5	6	8	4	9	3	4	2	4	1	0	18	5			8	
Slott	Manganese	No. 2		Steamboat	364		1920			42	7	19	0	12	7	11	7	86	1	4	7	4	2	2	6	1	5	0	9	13	9			9	
Pennsylvania	Manganese	No. 2		Steamboat	345		1920			29	0	35	0	21	0	11	2	96	2	1	5	1	2	0	5	0	3	0	3	3	8			10	
Wm Penn	Manganese	No. 1		Lump	905		1920	51	0	21	0	8	5	6	0	4	8	90	3	3	0	3	2	3	0	0	5			9	7			11	
Cameron	Manganese	No. 1		Lump	250		1920	64	5		6	5	4	5	7	8		89	3	3	5	3	7	1	0	1	5	1	0	10	7			12	
Luke Fidler	Manganese	No. 1		Lump	1,107		1920			11	6	7	12	4	9	5	10	0	86	7	6	0	3	3	1	9	1	4	0	7	13	3			13	
Scott	Manganese	No. 1		Lump	1,008		1920	30	0	21	9	14	7	11	7	10	0	88	3	4	2	3	7	2	1	1	1	0	6	11	7			14	
Pennsylvania	Manganese	No. 1		Lump	240		1920	36	0	20	5	15	3	11	3	10	0	93	0	3	0	2	5	0	8	0	5	0	2	7	0			15	
Richards	Manganese	No. 1		Lump	288		1920	43	3	17	8	12	3	8	3	8	4	87	3	4	3	2	7	2	3	1	8	1	1	12	2			16	
Cameron	Manganese	No. 3		Broken	246		1920			15	3	38	7	18	0	15	8	87	8	4	5	2	2	3	0	1	5	1	0	12	2			17	
Luke Fidler	Manganese	No. 3		Broken	281		1920			5	0	26	0	33	0	23	0	87	0	5	0	2	5	2	5	1	5	1	5	13	6			18	
Richards	Manganese	No. 3		Broken	289		1920			35	0	27	7	15	6	15	2	88	7	4	9	3	5	2	8	1	4	1	4	14	0			19	
Jeddo No. 4	Lloyd	No. 2		Steamboat and broken		135				52	0	28	0	10	0	99	0	3	0	3	0	2	0	1	0	1	0	10	0			20	10 tests average
Jeddo No. 4	Lloyd	No. 1		Lump		135			38	0	20	0	19	0	8	0	6	0	91	0	3	0	2	0	2	0	1	0	1	0	9	0			21	7 tests average
Highland No. 5	Lloyd	No. 1		Lump		135			41	8	29	0	20	0	9	4	5	2	0	97	3	1	0	0	7	0	7			0	3	2	7			22	
Highland No. 5	Lloyd	No. 2		Steamboat and broken		135						63	4	19	2	9	6	92	2	2	8	2	0	1	7	1	0	0	3	7	8			23	
Lansford No. 5	Lloyd	No. 1		Lump		135	1920	41	4	19	8	11	1	8	2	8	3	88	8	3	6			7	6					11	8			24	
Lansford No. 5	Lloyd	No. 1		Lump		135	1920	30	5	24	0	15	5	9	2	10	1	89	3	3	8			6	9					10	7			25	
Lansford No. 5	Lloyd	No. 1	Johnson	Lump		135	1920	45	1	23	6	7	6	7	9	8	6	92	8	2	6			4	6					7	2			26	
Lansford No. 5	Lloyd		Johnson	Lump		135	1920	46	1	22	5	9	6	4	9	7	3	90	5	3	4			6	1					9	5			27	
Lansford No. 6	Lloyd	No. 2		Steamboat		135	1920	9	6	38	7	20	9	10	6	9	3	89	1	3	8			7	1					10	9			28	
Lansford No. 6	Lloyd	No. 2		Steamboat		135	1920	0	6	43	6	27	4	9	8	8	7	90	1	3	4			6	5					9	9			29	
Rahn No. 11	Manganese	No. 2		Steamboat		135	1920	21	0	35	4	16	6	8	6	7	2	88	8	4	0			7	2					11	2			30	
Rahn No. 11	Manganese	No. 2	Johnson	Broken		135	1920			26	8	39	0	15	3	10	6	90	9	3	9			5	2					9	1			31	
Rahn No. 11	Manganese	No. 2		Steamboat		135	1920			4	4	37	2	28	3	16	2	86	1	3	5			10	4					13	9			32	
Rahn No. 11	Manganese	No. 2	Johnson	Steamboat		135	1920			5	9	51	8	20	5	11	0	89	2	3	8			7	0					10	8			33	
Tamaqua No. 14	Lloyd	No. 2	Johnson	Steamboat		135	1920			36	4	32	8	11	5		8	9	89	6	3	5			6	9					10	4			34	
Tamaqua No. 14	Lloyd	No. 2	Johnson	Steamboat		135	1920			0	5	54	8	22	8	12	0	90	1	4	1			5	8					9	9			35	

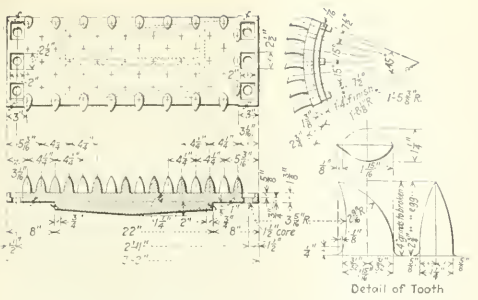


FIG. 3. HAWK-BILL TOOTH AND ITS SETTING
This form of tooth is extensively used in the anthracite region for breaking down coal.

These large screen areas are provided because, for a short period in the morning, the tonnage is unusually heavy and if there were not sufficient screen area it would be impossible to handle the coal and screen it properly.

The Susquehanna Collieries Co. uses different multiples for screen areas per ton capacity per hour. These are recorded in Table IV.

TABLE IV. SCREEN AREAS PROVIDED BY SUSQUEHANNA COLLIERIES CO. PER TON-HOUR

	Sq.Ft.		Sq.Ft.
Egg	0.75	No. 1 Buckwheat	1.50
Stove	0.75	Rice	1.75
Chestnut	0.875	Barley	2.00
Pea	1.25		

In the first table both the broken and egg coal are screened dry and in the second the egg only. The other sizes are screened wet.

When the breaker begins operations in the morning there is, under ordinary conditions of mining, an abundance of coal which possibly has been produced by the night shift or which may have been left over from the preceding day. This means that during the first few working hours there possibly may be more coal than the breaker can handle properly. Later on the rate at which the coal arrives decreases, and consequently the breaker may not receive its capacity supply. At times during the day the coal may come in spurts or unsteadily, so that at one moment the preparation equipment may be overtaxed though a few moments later it may not have sufficient coal to operate properly.

To meet these abnormal conditions the breaker may be made of so large a capacity that no matter how rapidly the coal is brought to it it will be handled without difficulty. This method is extremely expensive as it requires the construction and equipment of a building far beyond the average needs. Another and better method is to provide storage hoppers to bridge over the peaks. When this plan is adopted the breaker can be so designed that the cost of construction and operation may be reduced to a minimum. In most cases these hoppers are placed at the top of the breaker. They may be so located, however, that both the coal passing through the bull shakers and that leaving the main rolls goes to the hopper. In addition to this storage many companies have arranged storage pockets in front of, and feeding, the jigs. If the coal comes too rapidly for the jigs to handle it, the coal is placed in these storage pockets, so that it may be fed evenly.

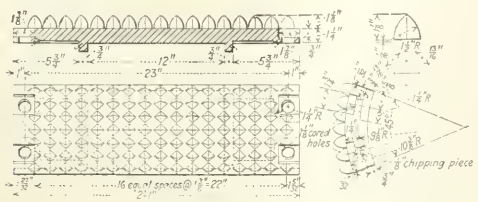


FIG. 4. OLD-FASHIONED SPEAR TOOTH
Illustration also shows how the teeth are arranged on the segments.

To accommodate a temporary excess of coal and assure its being fed properly from the hoppers or storage pockets to the breaker equipment, feeders are used. In some places these are operated by hand, the tender using his judgment as when to open or close the gates to the pockets. The more common method, however, is to employ an automatic feeder. This opens and closes the pocket gate at predetermined intervals and admits to treatment a certain quantity of coal at each opening. The number of openings and the quantity of coal admitted can be regulated to suit the conditions existing at the plant.

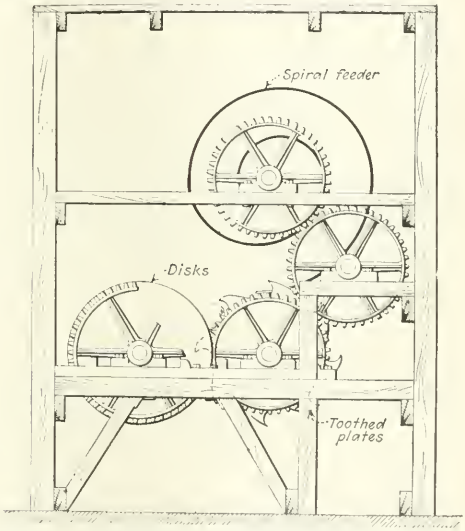


FIG. 5. NEW PARDEE ANTHRACITE FEED AND ROLLS
This is a radical departure from the present roll practice. The coal is fed to the teeth by a spiral feeder synchronized with the teeth of the rolls.

Feeders are of many types. The most primitive is the ordinary gate feeder that raises and lowers a gate at suitable intervals. This is objectionable, as coal is likely to get under the gate and be crushed. The coal also may interfere seriously with the movement of the gate. A second type operates like a door, opening outward and then closing. The objection to this device is that a large lump of coal may prevent the door from closing properly. A third type is a gate feeder that raises through the coal to shut it off and sinks below the pocket or chute floor to allow the material to flow. This feeder does not break the coal.

A fourth type is the reciprocating feeder. Many modifications of this excellent type of regulated discharge have been introduced, but they all have the same principles. The device is driven by an eccentric which

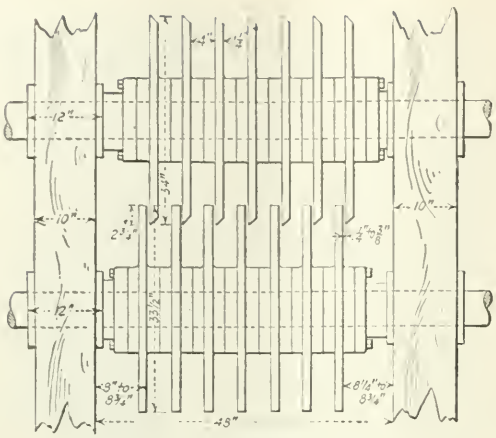


FIG. 6. PLAN VIEW OF PARDEE ROLLS NOW OPERATING AT THE COLERAIN BREAKER

One roll has plain disks and the other cutter teeth. These are cutters spaced to accord with the diameter of the size desired.

pushes a plate backward and forward. It usually operates at the bottom of the pocket. The coal slides gently down to the feeder, which takes a measured quantity of it and pushes it forward onto the shaking screens or other preparation equipment and then returns for another load. The fifth type is the revolving feeder. It resembles a shrouded gear or pinion, bearing, say, four teeth, but instead of teeth are a corresponding number of feeding compartments, into which the coal runs, and it is discharged as the feeder revolves. The rate of feed depends entirely on the size of the feeder and the number of revolutions per minute.

Shaker to Car Chute Ten per Cent Breakage

The three pieces of equipment employed in the preparation of coal where most degradation occurs are the rolls, the chutes and the pockets. A general manager of one of the larger companies says: "It is difficult to give figures on chute tests because of the varying conditions, but it is probably safe to say that the total breakage in handling coal from the shakers to the lip screen at the loading pocket would be from 10 to 12 per cent." This loss due to degradation figured over a year's time can become something enormous, for the prepared sizes of coal are worth at the mine from $7.50 to $8 per ton, whereas the steam sizes are worth only from $1.50 to $3.50.

In order that breakage may be decreased, space economized and a longer life obtained from the chute linings anthracite companies are experimenting with many types of chutes.

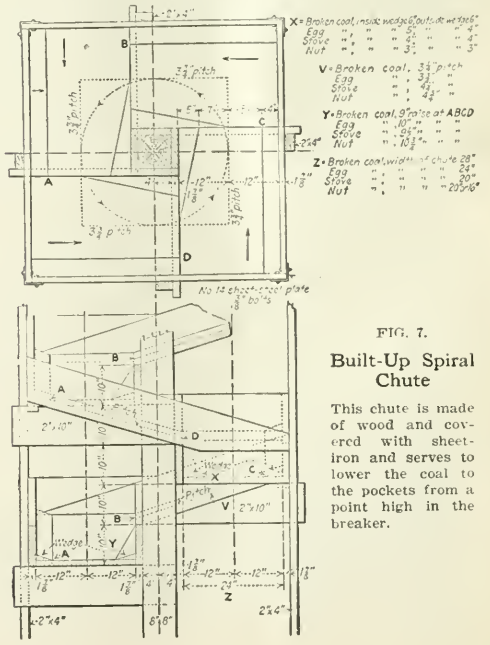
When coal is prepared near the top of the breaker some provision must be made for transporting this coal to the pocket. In the past this was done by means of long inclined chutes. In one breaker I have in mind one of these slides was 350 ft. in length. The friction of the coal on the chute lining and against the sides together with poorly-designed curves has caused much unnecessary coal breakage.

Today instead of these long chutes shorter ones of different designs are provided for lowering the coal. Among these are the spiral cast-iron chute, the spiral steel chute, and lastly, the spiral built-up chute shown in Fig. 7. This type of chute is advantageous in that it takes up little space and the coal is passed around curves so designed that breakage is reduced to a minimum. On the other hand, the acid water corrodes the lining rapidly.

The box chute, shown in Fig. 8, is rapidly coming into favor. It is a square box built of wood and lined with sheet iron. The coal passes down an inclined chute leading to the top of the box, in which is placed a pan that rises and falls in accordance with the amount of coal upon it. This pan is connected by a lever and wire rope to a door in the bottom of the vertical chute. When the pan ascends the door closes and when the pan is forced down by the weight of coal upon it the door opens. The vertical box is constantly filled to the top but as the coal backs up the slant chute the pan is depressed and the bottom door is opened, allowing the coal to pass out. When the weight of coal on the pan is not sufficient to weight it down it rises automatically and the door closes. In this way the box is kept full of coal. Because the box used is square there is some breakage in the corners, but in the new chutes now being built the corners are rounded. One disadvantage of the box chute is the difficulty experienced in relining it when the lining is worn out. In place of the present type of box it is probable that round vitrified clay pipe can be used.

Shaking Chute Works on Slight Pitch

In many places a shaking chute is employed to convey the coal from one point to another. The advantage of this construction is that the chute can be operated on only a slight pitch and the vertical space taken up by this type of chute is reduced to a minimum. Conveyors similar to the retarding conveyor are in common use for raising coal but are seldom employed for lowering it. When they are used breakage is reduced greatly.


X = Broken coal, inside wedge, outside measure
Egg " " " " 5" " " 4"
Stove " " " " 4" " " 3"
Nut " " " " 3" " " 3"
V = Broken coal, 34° pitch
Egg " " 34" "
Stove " " 43" "
Nut " " 43" "
Y = Broken coal, 9° raise at ABCD
Egg " 10" " "
Stove " 9½" " "
Nut " 10½" " "
Z = Broken coal, width of chute 28"
Egg " " " 24"
Stove " " " 20"
Nut " " " 20"-6"
No 12 chrome steel plate
FIG. 7.
Built-Up Spiral Chute
This chute is made of wood and covered with sheet-iron and serves to lower the coal to the pockets from a point high in the breaker.

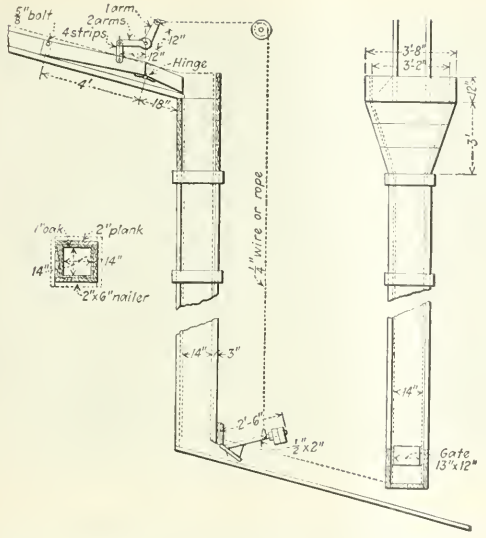


FIG. 8. BOX CHUTE OF SUSQUEHANNA COLLIERIES CO.
Lowers coal in the breaker and reduces breakage. Regulation is merely to keep box chute full, not to give an even feed or to regulate feed to accord with demand.

Still one other type of chute should be mentioned, namely, the White chute, which is used to deliver coal to pockets. This chute is shown in Fig. 9. Here the coal is fed through a spiral chute provided with a control regulating the quantity that can pass. This arrangement is similar to the box chute already described, except that it works in an opposite manner. In this case the coal passes under the pan and operates the gate in the chute.

From the stationary chute the coal is fed onto a movable one which discharges close to the sloping bottom of the pocket, down which the coal runs. As the pocket fills, the coal pushes the traveling chute back to offset the friction in the traveling chute. By actual tests it has been found that this type of chute reduced the breakage in the pockets 5 per cent.

What Percentage of Carbon Monoxide May Coal Gas Be Allowed to Contain?

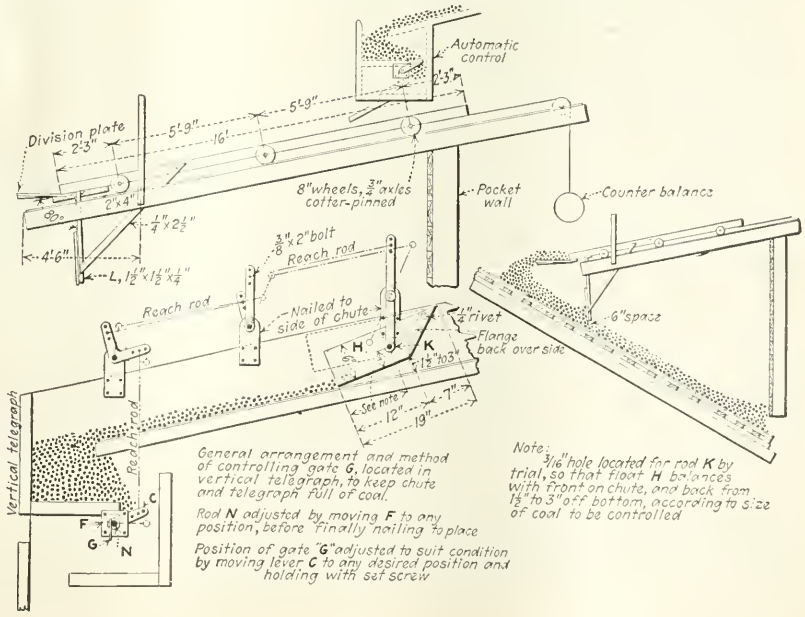
DOUBT having arisen as to the safety of using coal gas with large percentages of carbon monoxide, a departmental committee on that gas has been appointed by the Board of Trade of Great Britain, which has now presented a report that in the interest of cheap gas—an important desideratum in a country which has been much troubled with the smoke from half-burned coal and the fog arising therefrom—no limitations shall be put on the percentage of carbon monoxide. The committee says that in view of the warning conveyed by the "distinctive pungent smell of coal gas" it should be made an offense to furnish gas that does not have that characteristic.

There is no law regulating the percentage of carbon monoxide in the gas supplied, but the Ministry of Health, following the practice of the Local Government Board when sanctioning loans for municipal undertakings, made it a condition that "in ordinary circumstances the total percentage of carbon monoxide in the gas supplied shall not exceed 15 per cent. Dr. Haldane advocated a restriction of the percentage to 20, holding that such a percentage was permissible because the improved gas burners, both incandescent and flat-flame, now constructed pass much less gas in a given time than in 1898. This would allow 33 per cent of blue water gas or about 50 per cent of carbureted water gas to be mixed with the coal gas. The report constitutes White Paper Cmd. 1422.

FIG. 9

White Chute

For sending coal to the pockets and controlling its velocity so as to reduce breakage. This control can be used on any and all the chutes in the breaker. The lower left-hand illustration exhibits method of handling box chute by movement of float H. The other illustrations show how the sliding chute regulates delivery to a pocket so that, full or empty, coal will be broken as little as possible. The new material is always deposited without an appreciable drop on the talus of the coal already in the pocket.



VIEW OF MINERS' HOMES IN VILLAGE OF LYNCH, KY., WITH BASEBALL GROUND ON LEFT AND COMMUNITY

Building Complete Thousand-Population of 7,000

Two Rooms Provided for Every Man with One Room for Every Twenty Inadequate, Has 133 Rooms — Fifty

By H. N. Eavenson
Pittsburgh, Pa.

THE section in which Lynch is located is entirely isolated from any large community; in fact the only town of any size is the neighboring village of Benham, which contains perhaps 2,000 people. There is no other town having more than a few people within twenty miles by rail or nine miles across a steep mountain trail. Everything required for comfortable living in the ordinary large town would have to be furnished by the United States Coal & Coke Co., so it was fortunate that all the property was owned in fee simple and that there were no outside lots or owners to create embarrassment in laying out the town.

How Probable Population Was Estimated

It was estimated that to produce the capacity required the average daily output by employees of all classes would be about four tons; so for the desired production of 8,000 tons per day 2,000 men would be required for all purposes. At the older plants of the United States Coal & Coke Co., in the Pocahontas field, a careful census, taken at various times, had shown that ordinarily there were two people on the plant for each man on the payroll. It was thought that at Lynch, partly because of its location and partly because so many of the foreign miners had left the country, this small proportion would not hold, but that the probable population would be about 6,000 to 7,000.

The number of rooms per man employed in coal-mining communities in isolated situations of this kind has been steadily rising for some years. In the Pocahontas region, at the older plants, the number of rooms has risen within six years from 0.99 to 1.85 rooms per man; so it was decided that two rooms per man should be built, or a total of 4,000 rooms. As the most popular type of house averages four rooms, this meant a total of 1,000 houses.

The amount of space available for various purposes, though larger than is usual in this mountainous region, was not adequate for a town of this size, using single houses; even with double houses it was necessary to place the houses closer together than would otherwise be desirable. The final decision was to construct 400 double houses and 200 single ones, and to place the houses at a minimum distance of 30 ft. apart.

Company Hotel Found to Be Too Small

At many of the older plants the need of a large clubhouse or hotel has been badly felt many times. Prior to starting the Lynch plant it had been the custom at many of the large plants to provide a fair-sized building in which the clerks, engineers, store employees and some of the unmarried mine officials could find suitable living accommodations. After a careful study of the conditions and requirements at the older plants of the company it was decided that a building having at least 100 bedrooms with the necessary dining rooms, parlors, toilet rooms, etc., would be required for the Lynch plant.

The building erected contains 133 rooms, of which 108 are bedrooms, in addition to a large basement and attic; the remainder are the usual service rooms. The size of this building has been much criticized, but at practically no time since it was completed have there been any unoccupied rooms. In fact, during much of this time it has been necessary to provide sleeping quarters in the attic. The basement was utilized for a shoe shop, clothing store, jewelry shop, soda-water fountain and cigar store; four bowling alleys and three pool tables also were installed. In addition, five large boarding houses were built for the accommodation of the unmarried miners. Table I shows how many houses were erected.

*Third installment of an article entitled "Lynch Plant of United States Coal & Coke Co.," presented at the September meeting of the American Institute of Mining and Metallurgical Engineers. The two prior installments were "An 8,000-Ton Tipple with a 5,000-Ton Storage Bin for Coking Coal Erected at Lynch, Kentucky," which appeared Sept. 22 on pages 452-458, and "Heavy Cover and Need for Quick Tonnage Determine Underground Methods at Lynch Mines," which appeared Sept. 29 on pages 492-494.

HOUSE TO RIGHT OF CENTER. TWO-THIRDS OF HOUSES CONSTITUTE DWELLINGS FOR TWO FAMILIES

Dwelling Town for a Mine at Lynch, Kentucky*

Employed—In Addition a Hotel Employees—Hotel, Already Houses Heated with Hot Water

TABLE I. SCHEDULE OF HOUSES ERECTED IN LYNCH, KY.

Plan Number	Type	Number of Rooms	Bath*	Number of Houses	Total Number of Rooms	Number of Families
46*	Single	8	Yes	1	8	1
33†	Single	7	Yes	6	42	6
40	Single	6	Yes	6	36	6
41	Single	5	Yes	6	30	6
32	Single	4	Yes	7	28	7
37	Single	3	No	18	54	18
38	Single	3	No	42	126	42
39	Single	4	No	95	380	95
35	Single	5	No	15	75	15
42	Single	23	Yes	5	115	5
14	Double	8	No	182	1,456	364
29	Double	8	No	58	464	116
36	Double	10	No	30	300	60
34	Double	12	No	10	120	20
31	Double	6	No	120	720	240
				600	3,954	1,000

* For superintendent. † For officials.

The various types of houses are shown in Figs. 1 to 6. They are all plastered and are constructed of wood except a small number of wood houses built the first winter (which are ceiled with wall board) and six officials' houses, which are of concrete block, stuccoed. All the plant buildings and about fifty of the houses are heated by hot water. These have solid stone-wall foundations. The other houses are heated by grates, one in each room, are set on stone piers, and have double floors, with building paper between, for the lower floor. Spaces between piers and between porch posts are closed by flooring boards. All the roofs and gables and in some houses the upper stories also are covered with asphalt shingles, both green and red being used. Experience has shown that, taking both appearance and wearing qualities into consideration, this type of roof is the most satisfactory cheap covering yet tried.

In many of the house types it has been possible to vary the details and shapes of the house and porch roofs of houses while maintaining the same interior arrangement. These changes, the number of plans and the various colors used have averted the monotony in appearance which coal mining plants so frequently have. All houses are given three coats of ready-mixed paint on the outside and two on the inside. Yellow, light gray and white body colors are largely used, though a small number are painted green and red. White, green and black are used for trim.

Where the ground is flat, the lots are usually 100 ft. deep and from 32 to 66 ft. wide, depending on whether the house is single or double. On the hillsides a broad

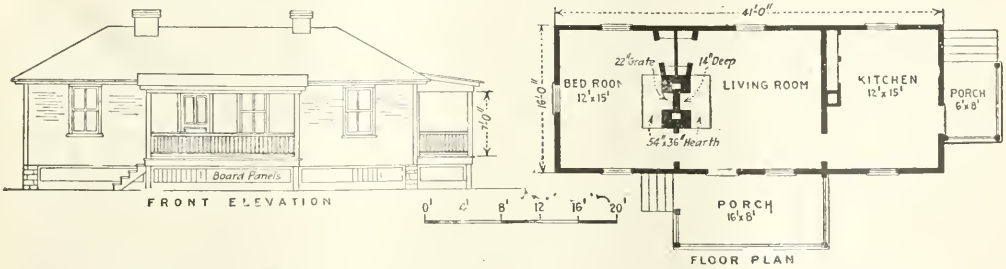


FIG. 1. ONE OF TWO TYPES OF THREE-ROOM HOUSES, ALL ROOMS BEING ON SAME LEVEL

In all sixty three-room houses have been built, all of them single as is this one. Each house has a porch of fair size in the front and a small porch at the side.

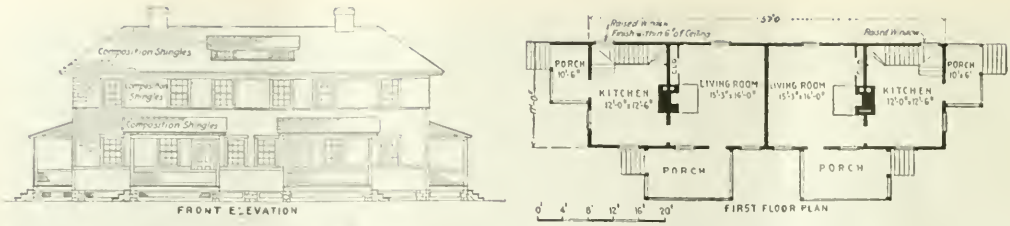


FIG. 2. ONE OF TWO TYPES OF FOUR-ROOM DOUBLE, TWO STORY HOUSES
The porches in the front are not made continuous but are separated several feet from each other, thus keeping the families apart.

slightly sloping bench about 43 ft. wide is excavated, a road and sidewalk being placed at the bottom of the slope, just back of the house. The lots used allow gardens as large as the ordinary family cares to cultivate, although they would have been made larger had space allowed. All houses are fenced with a standard steel-wire fence. In this climate this type of fence has proved durable and satisfactory.

The town layout was made so that none of the street grades exceeded 10 per cent at any place; on the main street none over 5 per cent was allowed. The main street throughout the town is a part of the state highway system and a roadway width of 22 ft. with a 4-ft. walk on each side was provided. On the side streets the roadway was made 16 ft. wide with the same sidewalks. Alleys were made 10 ft. wide. All sidewalks, curbs, gutters, walks from the sidewalk to the front and rear porches of each house, and the entire roadway of the main road were made of concrete; all are one-course work, 1:2:4 mix, and built in accordance with standard specifications of the Portland Cement Association. It is the intention to macadamize only side streets, as the traffic on them will be comparatively light.

Allowance of 50 Gal. per Person Adequate

Experience at the older mines had shown that a water supply of 50 gal. per person per day would be sufficient for town purposes, so a steel tank with a capacity of 300,000 gal., or about one day's supply, was installed on the hillside above the power house, at an elevation sufficient to supply pressure for two standard fire streams at the highest fire hydrant in the town. The supply mains are 8 in. in diameter, and the distributing lines have a diameter of 8, 6 and 4 in., and are so interconnected that water can be furnished practically anywhere in the town through two lines. All pipes are steel, asphalt-coated, with sleeve joints. All fittings are flanged; flanges are also put on all lines at intervals of about 200 ft.

Every line has a valve where it leaves the main, and blow-out valves are provided at dead ends. The house supply lines are all 1-in. asphalt-coated pipes, and in each kitchen a cast-iron sink about 20 x 30 in. is installed. Each service pipe is provided with a stop and waste cock underground with a handle extending into the kitchen; between the ground and the floor it is boxed and surrounded by manure. Fire plugs are placed at intervals so that no house is more than 200 ft. from at least one plug, and waxed canvas fire hose, $2\frac{1}{2}$ in. in diameter, with 1-in. nozzles in 250-ft. lengths, on reels, is provided at suitable intervals.

Water is procured from deep wells, located near and above the power plant. These are blown by compressed air, and the water flows to a concrete sump at the power plant, from which centrifugal pumps, having a capacity of 800 gal. per minute, lift it to the tank. The pumps are in duplicate, but only one is used at a time. The well supply has not been sufficient, so lines have been laid up Gap Branch and Looney Creek to points well above the town, from which the creek water will flow to the sump, where it will be chlorinated before being pumped to the tank. In exceptionally dry periods the creek supply also is quite limited, so provision is being made for a storage supply by driving some rooms in the mine under Gap Branch, which will be filled through a borehole in the run and the water be retained by a dam until needed, when it will flow by gravity to the sump at the power plant.

The town is lighted by electricity, the main distributing lines to transformers being at 6,600 volts, and from the transformers on the three-wire system at 230-115 volts. All houses have at least one light in each room

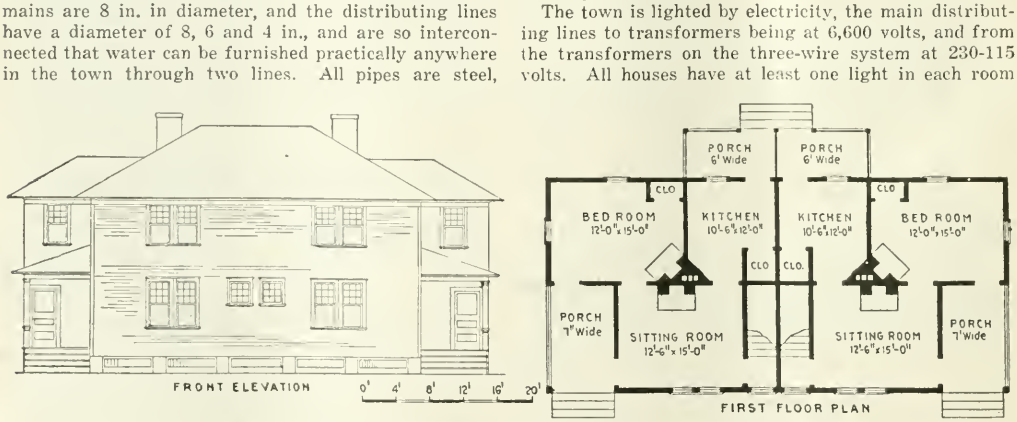


FIG. 3. ARRANGEMENT OF DOUBLE FIVE-ROOM TWO-STORY HOUSE, OF WHICH THERE IS BUT ONE TYPE
The porches are set in on either side of the building and in the rear. There are only thirty of these houses, sheltering in all sixty families

and one on the porch. Where the houses are close to the streets, the porch lights give enough illumination; in other places street lights on poles are used.

Except the main buildings and houses having inside toilets all houses have outside closets equipped with concrete septic tanks which are constantly kept filled with water. The fecal matter in these liquefies and escapes through 4 or 6 in. sewer pipes, to which also the kitchen sinks drain, into the main sewer. The entire town is sewered and at its lower end the sewage flows into a concrete sump, from which centrifugal pumps lift it to a treating plant on the hillside (Fig. 7).

Here the sewage passes through septic tanks, a settling basin and a chlorination tank, from which it flows to the creek. Provision has been made for a sand filter after the chlorination treatment, but this has not been built, as it is felt that for the present this treatment is unnecessary. The sewage treatment plant was designed by L. D. Tracy, of Pittsburgh, Pa. The pipe lines were designed for a flow of 250 gal. per house per day, with allowance for 300 additional houses, and for an infiltration of 40,000 gal. per mile of sewer per day.

The surface drainage from the various ravines ex-

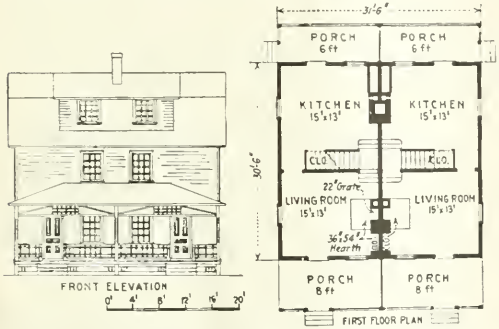


FIG. 4. DOUBLE SIX-ROOM HOUSE WITH TWO STORIES AND ATTIC

The stairway ascends from the kitchen, leaving the living room an unobstructed 15x13 ft. The porches abut both front and back.

tending through the town site is taken care of by open-masonry culverts, the sizes of which are calculated by the formula

$$\text{Area in square feet} = \sqrt[3]{\text{Area in acres}^2}$$

which gives results suited to this mountainous country with its steep slopes and quick runoff. The open culverts are more easily cleaned and cared for than closed ones.

As the town is entirely isolated from any sources of amusement it was necessary to provide everything required to keep the inhabitants amused. A ball park was laid out at the lower end of town, and during the season the ball team furnished one of the main attractions. The ground is also made for carnivals, circuses and such attractions; an additional park may some time be built above the upper end of town on space reserved for the purpose.

In the lower end of the town a large frame building for community purposes has been erected and is always well patronized. On the ground floor (Fig. 8) are located a restaurant, where both white and colored are served in separate rooms, from one kitchen, and a movie theater; on the second floor is the gallery of the theater, which is used by colored people, the ground floor being reserved for the whites; and a room containing four bowling alleys, one billiard and two pool tables,

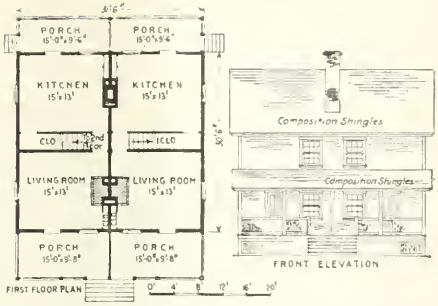


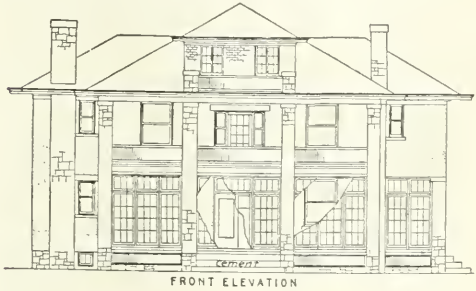
FIG. 5. DOUBLE FOUR-ROOM HOUSE

This is of type different from that in Fig. 2. This plan has depth rather than breadth, which is the characteristic of the other double four-room house.

and a barber shop; on the third floor is a large dance hall with the necessary retiring rooms, and a lodge hall for the fraternal organizations. The theater seats about 450 persons, and has a stage and dressing rooms where the usual program can be varied by occasional vaudeville shows.

A similar but larger building has been designed for the upper part of the town, but has not yet been built. This theater will have about 900 seats. It is to be built of stone. Dances are held in the hotel at intervals.

With the exception of a few small stores operated by



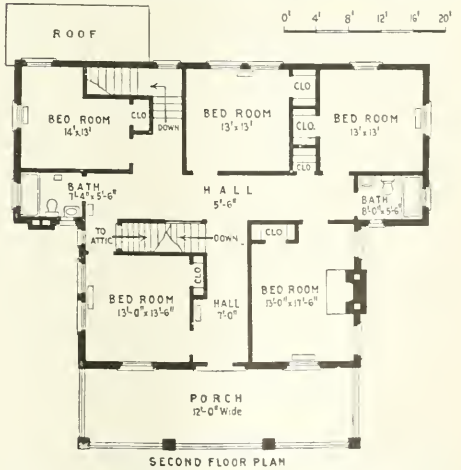


FIG. 6. SUPERINTENDENT'S EIGHT-ROOM HOUSE

This house has two bathrooms, a hall and plenty of closet room. The porch also is quite spacious.

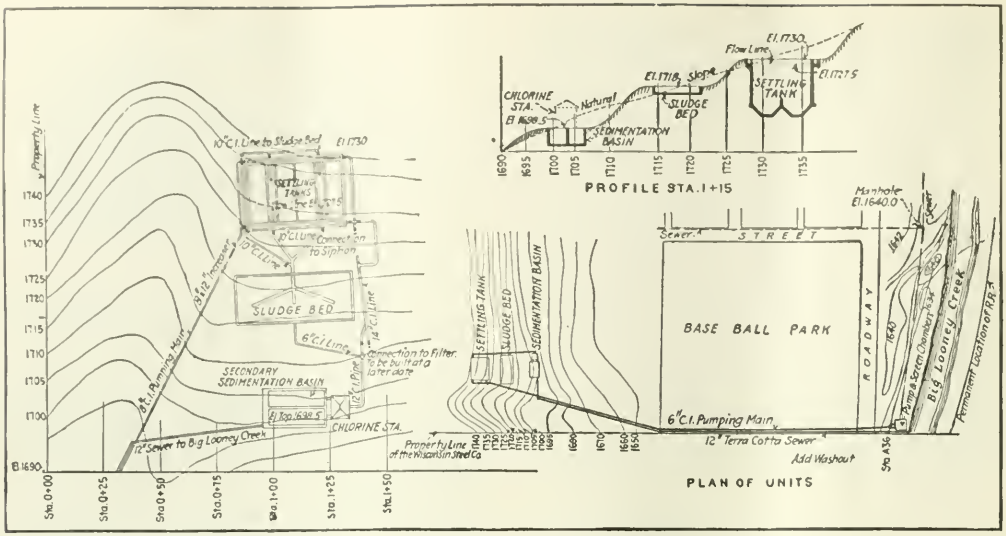


FIG. 7. SEWAGE-DISPOSAL PLANT SET ON EDGE OF TOWN BY BASEBALL PARK
All the houses not having inside toilets have outside closets with concrete septic tanks which are kept constantly full of water. The fecal matter liquifies and escapes to the main sewer. Reaching a concrete sump it is lifted by centrifugal pumps to the treating plant on the hillside

some of the tenants in the houses, where soft drinks and a few staples are sold, the store business in the town is handled by the United Supply Co. After a careful study of the requirements by James W. Anawalt, president, plans were drawn for a store building 160 ft. wide by 100 ft. deep, three stories high with a basement as long and as wide as the building. The outside walls of the store are of native sandstone, and the columns, floors and roof beams are of reinforced concrete. The roof is of structolite blocks, which are covered by prepared asbestos roofing.

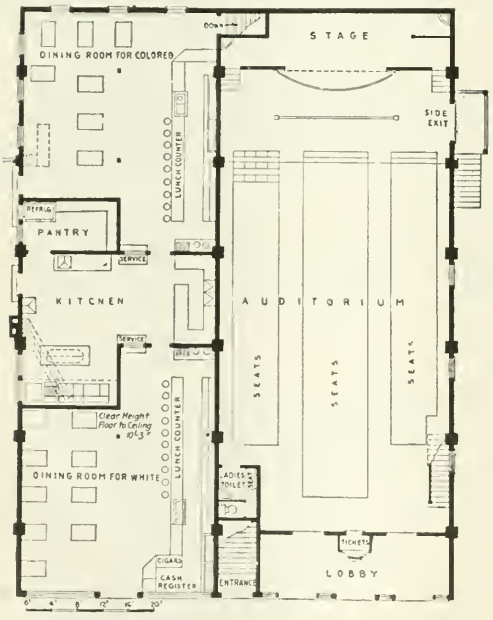


FIG. 8. AMUSEMENT OR COMMUNITY BUILDING
This is shown on the frontispiece. The floor of the auditorium is reserved for whites and the gallery for colored people. On the second floor are four bowling alleys, one billiard and two pool tables and a barber shop. A large dance and lodge hall occupies the third floor.

12-Ton Refrigerating Plant Installed

In the basement one 7- and one 5-ton machine manufacture ice and refrigerate two cooling rooms, each with a capacity of a carload of meat, and the main refrigerator and the refrigerated counters in the meat shop in the main store room. A bakery also is located in the basement; this has a continuous type of oven with a large daily capacity of bread, cakes, pies, etc. The basement is arranged so that a truck can be driven through it and loaded; goods kept in storage can be unloaded directly into it from cars on a siding back of the store.

On the first floor the main storeroom, a drug store, meat shop and supply room are located; and on a mezzanine are located a ladies' and children's dress and shoe department, a storeroom and ice-cream room for the drug store. On the floor above are one five-room and one six-room flat with bath, six bedrooms with bath for the male help and large storage rooms for furniture, carpets and other household goods.

The main storeroom and the drug store are floored with linotile; the meat room is floored with white vitrified tile and wainscoted with opaque glass, and the refrigerated counters have a display of meats, butter, cheese, etc., and a large refrigerator for the meats actually being handled. The entire room is well screened and is thoroughly sanitary in every respect. So far as is known, this is the largest and most complete store for this purpose in this country and compares well with department stores in many of the cities.

West Virginia-Kentucky Mine, Mechanical and Electrical Engineers Meet Conjointly with Coal Exhibit—II

Conditions Under Which Bond on Ball of Rail Can Be Made to Work—Reversing Polarity of Track and Trolley—Headlighting Locomotives—Method of Replacing Material in Tire Grooves

By R. Dawson Hall*

ONE of the interesting addresses of Wednesday, Sept. 21, was that by C. A. Hornell, chairman of the Committee on Cars and Operation of the Nickel-Iron Type of Mine-Locomotive Battery. R. R. Webster wanted to know if holes in the battery casing could be electrically welded with satisfaction and without injury to the battery. Mr. Hornell believed that this would be a satisfactory solution, every attempt to solder such holes having hitherto failed. The solder would not remain in place.

W. P. Bovard then reported on the bonding of track in coal mines, saying: "Basically, rail bonds in any return circuit must furnish a continuous path of low electrical resistance for all of the current to flow from joint to joint. In a mine-haulage circuit of any appreciable length it is often found that the voltage between trolley wire and rail at some distance back from the mouth of the mine is extremely low, often as low as 90 volts under peak-load conditions. With this prevailing condition it is difficult for the power equipment to handle the loads. Armatures are overheated and in many cases frequent burnouts occur.

Where Good Bonding Eliminated Repairs

"I know of an actual incident in which an armature repair company was receiving a steady flow of business from one of its mine customers on rewinding of armatures and repair of commutators. This business suddenly stopped and upon inquiry by the repair company it was found that the mine operator had seen the error of his ways and had completely rebonded his mine, the result being that the loads were more easily handled, with greater speed, and armature failures were only a small percentage of what they had been with the poor bonding.

"Dim lighting both along the entries and from headlights on motors is another result of a poor return circuit, and is dangerous, as all the advantage of an otherwise efficient lighting system is lost owing to the low brilliancy of the lamps."

J. H. Edwards asked Mr. Bovard whether any bond attached to the ball of the rail had been found satisfactory for mine use and received as a reply a statement that he did not know of a single instance. E. D. Knight asked what was the minimum weight of rail to which such a bond might be applied, and Mr. Bovard answered: 40 lb., but the weight would depend much on the standard of operation maintained. Explaining that this has reference to the flanging of the wheel he said he regarded even $\frac{3}{4}$ in. as an excessive flanging for this method of bonding.

Mr. Knight wanted to know if the false flanging did as much harm where the wheels, being new when the bonds were installed, gradually flanged in service. Would not the bonds wear down as the wheels flanged whereas with a false-flanged wheel and a new bond there would be a bad shock?

Mr. Bovard agreed that the bonds might give satisfaction under those conditions. In fact the locomotive could bump over upstanding welds if the welds had been well made. Mr. Wesley said that the degree of interference of the bonds with the passage of locomotives along the track much depended on the degree to which the welder had built up metal in making his weld. Many put the bonds too high. The fishplates should be tightened up well before the bonds are put on. One member was disposed to believe that no attempt should be made to bond rails to the ball of the rail with a rail weighing less than 60 lb. per yard, for the least movement of the joints would break the bond.

Mr. Tyler advocated attaching the rail to the positive terminal of the generator instead of to the negative. He favored this arrangement because with it better welds would be obtained. The heat would be on the work and not on the electrode, which was the end desired. Mr. Bovard said the polarity could be changed at night for night welding, but Mr. Tyler said: "Why change back again?"

Will Reversed Polarity Cause Electrolysis?

Mr. Bovard was a little afraid of electrolysis if the bonding was bad and urged that with the rails positive the current might do more harm to the pipes near the track. Mr. Tyler replied that it would seem to him that the electrolytic action would be less severe if the rail were positive, for though metal might be removed from the rail by the current leaving the track it would not remove it from the pipe into which the current went.

Mr. Edwards said that there would be electrolysis, however, where the current left the pipe. Nevertheless, he believed that coal mines would soon break away from railroad practice (which was planned to save the pipe lines of gas, electric and steam-heating companies) and would take up with the positive rail and negative trolley. He declared himself ready to modify his practice by introducing the positive rail.

It was pointed out that where the rail was positive the point at which the current left the pipe and exposed it to electrolysis was near the locomotive. This was a moving point, so that electrolysis would be scattered. Where the rail is negative, the current leaves the track near the locomotive and the pipe lines are not subjected to electrolysis except near the mouth of the mine, where the current begins to leave the pipe for the generator.

The generator is fixed, so this point is somewhat definite; at any rate far more fixed than the point at which the current when the rail is positive will leave the pipes for the locomotive when reversed polarity is used. As this is so in the case of the standard polarity it is easy to bond the pipe line to the rail near the power house and drain off the stray current without electrolysis, thus confining that action to the rail in the neighborhood of the locomotive.

Difference of View as to Positive Rail

F. M. Reigher said that with the use of the positive rail there would be greater corrosion in the bonds; that they would be destroyed in five years. The life would be taken from the copper and it would break off. The electric current would not leave by the rail alone. It would leave at the bonds also and they would suffer by electrolysis. He said he had not had any experience with reversed polarity but that was how he viewed the matter theoretically.

E. D. Knight said that a mine had run with reversed polarity for two years before it was discovered and another said his had run for a year that way and neither had experienced any bad results. Those present in general did not seem to fear the electrolysis of pipes, especially as in many of the cases the piping paralleled the rail for only a short distance and then made off at a considerable angle. One member declared he had bonded his pipes to his rail and had had no bad effects.

Roscoe Woltz said that he had found that electrically-welded bonds had given him unfavorable results, which he

*Editor, *Coal Age*.

ascribed to the inexperience of the welders employed and the rust on the rail. An incompetent welder does not trouble himself about a little rust.

R. R. Webster had found his welding arc was blown out when the locomotives were working close by. He presumed that this was due to the magnetism in the rail. Mr. Bovard said that was one of the causes but the instability of the current under those conditions was another.

George Donelson, chairman of the Committee on Mine-Locomotive Headlights, was not present to report. George E. Suiter, however, made a short statement expressing his preference in favor of a 115-volt incandescent lamp in series with the resistance and mounted on an Edison base.

Double-Contact Base for Lamps Preferred

J. Lewis Dawson, another member of the committee, said that he preferred the double-contact base because the screw lamp could be stolen for house use and the single-contact base lamp for the automobile. The lamps at the two ends of the locomotive should not be in series, for then if one went out the other did also, and the motorman had to come out in the dark.

He preferred the mirror reflector because of its permanency. He did not believe in mounting the headlight above the locomotive, as in many places curtains were hung to divert the air current into the rooms and the curtain often caught in the headlight as the locomotive passed.

The discussion then drifted to theft. Mr. Woltz wanted a lock on the lamp, but the question arose as to who should have a key. If every motorman had one, the number of keys that would be abroad would be legion. At many mines everyone seemed to have one, and lamps were always missing.

If only one man had a key, motormen would be found going around in the dark, with great danger to the mine workers and to the annoyance of inspectors. One member wanted the company initial stamped on the glass of each lamp and said it could be done for one cent.

Unfortunately, lamps such as were used for headlights were for sale at stores and if found in the houses of workmen could not be proved to have been stolen, and if stolen they might have been taken from some other company that was using them. However, it was possible in a degree to circumvent the declaration that the lamps were not stolen by saying that the company furnished house current with the understanding that 50-volt lamps and under were to be used. All lamps of larger capacity when discovered could be ordered out, but that was a provision almost impossible of enforcement. One man spoke favorably of the arc-lamp headlight with the Crouse-Hinds reflector, believing this combination to be the best.

Automatic Taper, or Even Potential, Charge

On Thursday R. A. Whetstone, Jr., chairman of the Committee on Care and Operation of Lead-Type Mine-Locomotive Batteries, introduced Mr. Tierney, who read a report on the charging of lead-type batteries, emphasizing the importance of distilled water and clean batteries. He advocated the automatic taper charge at constant potential. The generator delivers current at 126 volts.

Suppose the battery has been discharged to such an extent that it will generate only 100 volts. The current at 126 volts is passed through the cells, gradually raising the voltage of the battery to 120 volts. With the finishing current 24 amperes and the final voltage drop 6 volts, the

$$\text{resistance R, } = \frac{\textit{voltage difference}}{\textit{current}} = \frac{E}{I} = \frac{6}{24} = 0.25 \text{ ohms.}$$

Taking this resistance and the starting voltage difference as 26 volts, then the starting amperage,

$$I, = \frac{\textit{voltage difference}}{\textit{resistance}} = \frac{E}{R} = \frac{26}{0.25} = 104 \text{ amperes.}$$

Thus the charge has tapered from 104 amperes at the start to 24 amperes at the finish. This is also termed the constant potential charge. For this purpose a motor-generator set delivering current at 126 volts should be provided.

The other method of charging is by the two-step charge. The early part of the charge is given rapidly by a relatively large current and the finishing charge by one which is smaller. The small quantity of lead sulphate in the negative plate when the charging is nearly complete is not able to consume all the current by chemical change and if the current is not reduced the rest of the current is taken up in the dissociation of the oxygen and hydrogen in the water, causing gassing.

The members of the Committee on Repair Shop Equipment and Methods being absent the report was read by Herbert Smith. Roscoe Woltz felt that the report did not contemplate such a repair shop as he thought a good mine plant should possess. The committee favored omitting any machine tools in the electric room. Mr. Woltz believed a lathe should be provided for electrical work. He also would have a foundry in connection with a plant of that character with an expert pattern maker and foundry man.

Mr. Rogers remarked that an electrical engineer had said to him that no mine ought to manufacture electricity, as its proper business was digging coal, not running a power plant. Yet this same engineer had an elaborate repair shop and did not only repair work but built machinery also. He thought the electro-mechanician at a mine should spend his time below ground avoiding the need for repairs rather than above ground neglecting his equipment and specializing on its repair. Mr. Woltz did not agree with Mr. Rogers and gave an example where a foundry had saved much delay which, had it occurred, would have severely hampered operation.

F. Auld then gave an address on "Elementary Principles of Electricity," introducing an interesting model elucidating the principles of the two-phase current. The mechanics of this model were too complicated to make it possible to extend the principle to cover three-phase operation.

What Kind of Drive Should We Provide?

J. B. Pennman read the report of the Committee on Comparison of Belt, Chain, Gear and Direct-Connection Drive for Stationary Equipment, such as mine pumps and fans. Mr. Pennman pointed out that the chain could be modified to suit a change in the fixed centers and so could accommodate itself to conditions better than the gear drive. It also takes up shock, which the gears would transmit unimpaired. The committee believed that the chain drive was preferable for fans.

R. R. Webster said that after about six months' experience he had gone back to the belt from the silent chain drive. The chains invariably would climb on the sprockets. Another declared that he had been using two Link-Belt silent chains side by side since 1918, and had experienced no trouble. They were driving a fan which required 200 hp. by day and 60 hp. by night. The chain had about 18 in. of slack. He complained that with a belt drive when there was a surge on the fan the stitches of the belt frequently tore loose.

N. A. Johnson said that he had used a silent chain drive for picking bands at a tipple with excellent results. It had been in operation two years and despite the dirt to which it was exposed it had given no trouble. A little grease had kept it going steadily. Thus assured he had installed some eight or nine months ago a chain drive for a fan. This had more favorable conditions but destroyed the sprockets from overdrive. The chains were of identical make and all the conditions would have led one to expect failure where there was success, and success where there was failure. He said it was cheaper to buy pins than to purchase new belts. Mr. Edwards said that he had found so much trouble with direct-connected motors that he had thrown practically all of them out.

In the afternoon some of the members visited the plant of the Ironton Engine Co., where an 8-ton duplex locomotive of the same model exhibited at the Huntington Coal & Industrial Exposition was being manufactured. This type of locomotive has motors on either end of the car which drive through a single direct-connected shaft and worm gear. By this means it is possible to run the locomotive either with power from the trolley wire or from the storage batteries which the locomotive carries with it.

By the arrangement provided, the motors can be, and

are, designed respectively for the circuit from which they operate. Thus each motor is suited to the voltage which is supplied to it—250 volts or thereabout from the trolley line, or 80 volts from the storage batteries. The motor consequently works under conditions most favorable to economical operation. All the wheels are drivers with the axles connected to obtain maximum tractive effort.

If the weight comes more on one pair of drivers than on another, as is invariably the case in starting a trip, the locomotive gets the full advantage of the motor power. That would not be the case were one motor independently geared to each axle. Speed from the battery operation is approximately 3½ miles per hour at rated draw-bar pull. This, of course, is used on the temporary track in rooms where a greater speed would be likely to result in derailments.

When running from the trolley line the speed is approximately six miles per hour at rated draw-bar pull. Thus the locomotive performs its duties like an ordinary storage-battery locomotive when on poor rail and is able to make the speed of a trolley locomotive, which, indeed, it is, when traveling on the more solid roads. In this manner it is arranged that both motors are constantly revolving, and when one is in operation the other is being cooled by virtue of its rotation, that rotation being off-load.

Electric Arc Welding Pays Big Dividends

On Friday, Sept. 23, E. Wanamaker, electrical engineer, Chicago, Rock Island & Pacific Railway Co., gave a most valuable and interesting address on the "Electric Arc Welding Process and Its Commercial Application." Mr. Wanamaker described the early development of the process in railroad shops. He said he had found that the welder should not be asked to do hard work such as lifting, as it binds the muscles so as to destroy the wrist action. The skillful penman, the artist and the telegraph operator using the Morse key should all avoid muscular strain, and what was true of them was equally true of the welder.

Mr. Wanamaker had abandoned the graphite or carbon electrode. The good welding engineer should know what heat to employ at the point being welded, the correct polarity to be employed in doing the work, how to control the heat, how to protect the weld from oxidation, at what angle to hold the electrode and the direction of working the weld. Different welds needed different methods of operation. He should also learn how to inspect a weld. He should be able to judge whether the metal had flowed smoothly, whether there are inclusions of slag or air bubbles. A good method of examination was by the use of kerosene, which would go through a poor weld that had air bubbles.

He said that his company had expended $50,000 in the preliminary experiments, not enough knowledge of the art being available to guard against expensive mistakes. With 117 outfits valued at some $150,000 the company was saving 300 per cent of that amount annually on its repair bills. He hoped soon to have 150 outfits but he was about to tackle jobs which were not as profitable as those performed in the past and on these he expected to save only about 40 per cent per annum.

How to Renovate a Worn Locomotive Tire

Mr. Bovard asked how to build up a locomotive tire. Mr. Wanamaker said that before the flange had reached such thinness to justify its being discarded a coating of metal reaching from the point of the flange to the tread of the wheel was added by welding all around the wheel. He used a medium-carbon steel electrode of about 0.5 per cent carbon. Later he tried a high-carbon steel and finally an electrode of manganese steel with 12 per cent manganese.

This was put on circumferentially in lengths of 8 to 14 in. and not by weaving to and fro radially. He said that with a large wheel there was no risk that overheat would cause a necking or nicking effect where the tangent of the flange and the tread meet. Asked specifically as to the manner of correcting false flanging, he said he would use manganese steel with 12 per cent manganese and would apply it in the same way as he had described in the case of the improvement of the flange. Mr. Wanamaker said that with a weld of this type the wheels should, he believed, give better service than ever and would show less false flanging than before.

A report was then read written by J. S. Shepherd, chairman of the Committee on Specification of Equipment, in which the other members of the committee had not had an opportunity to collaborate. Mr. Shepherd said that the demands on motors were more constant at coal mines than at steel mills, and that consequently a motor that would stand a 25 per cent overload without rising in temperature over 50 deg. F. in two hours would be perfectly well suited to mine conditions.

Make Motor Conforming to Foreign Standards

Mr. Wanamaker remarked that the reason for changing from a specification calling for an increase of temperature less than 40 deg. F. for a two-hour period of 25 per cent overload to one requiring a rise of less than 50 deg. in that length of time was that the American manufacturers desired to standardize on a motor that would meet European specifications in export trade. He did not believe that we were getting any too good a motor as it was. In fact he believed the motor manufacturers were not providing for sufficient natural ventilation of their motors and were calling on the purchaser to use fans at an expenditure of power to make up for this defect. He added that manufacturers said that if it was desired to obtain the results now obtained with the 40-deg. motor the purchaser should buy a 50-deg. motor of the next size larger, but he could see no reason for this.

Roscoe Woltz said that he had had difficulty in getting present motors to stand up under working conditions and had specified specially impregnated wirings, and since these had been provided he had had no trouble.

E. D. Knight explained that by using a size larger than now used it would be possible with a 50-deg. motor to get the same results as with a 40 deg. motor such as now specified. This 50-deg. motor operating at normal load would run indefinitely and not for two hours only without excessive heating, so that the slightly increased price possibly would be justifiable. He was not clear what was the right course to pursue.

Mr. Edwards said he had favored the change in rating but was now in some doubt. It was finally agreed to form a committee to study the matter in detail. The American Society of Mechanical Engineers has a committee with Mr. Wanamaker as chairman studying the matter of specifications for motors. The American Railway Association also is interested.

Officers to Take Charge in the Coming Year

In the business meeting J. H. Edwards, of Huntington, the retiring president, was re-elected. E. D. Knight, of Kayford, was made vice-president. M. A. Maxwell was made a member of the executive committee in place of Louis Hill, of Winding Gulf, whose term had expired. The executive committee will consist of J. H. Edwards, Huntington, W. Va.; E. D. Knight, Kayford, W. Va.; W. R. Harler, Eccles, W. Va.; J. J. Fluck, Huntington, W. Va.; J. S. Shepherd, Omar, W. Va.; C. H. Tyler, Sharples, W. Va.; J. B. Pennman, Deegans, W. Va.; R. R. Webster, Weeksbury, Ky., and M. A. Maxwell, Huntington, W. Va. Herbert Smith was re-elected secretary-treasurer. With this the meeting adjourned to assemble in Huntington again next autumn.

Reduce Compensation Rates in Pennsylvania

REDUCTION of compensation insurance rates as they affect coal mining companies is announced by the State Insurance Department of Pennsylvania as a result of the recent statistical survey made by E. H. Downey and other Pennsylvania rate experts.

Investigation by the department shows improved conditions and a much better experience in the insured mines, compared with 1916. In that year the insurance rate of the State Bureau for workmen's compensation was $3.83 for bituminous mines and $4.64 for anthracite mines. The 1922 rates will be $2.25 for soft and $3.25 for hard coal.

Problems of Operating Men

Edited by James T. Beard

Use and Abuse of Booster Fans

Booster Fans a Proper Resort in Cases of Emergency — Present Abuse of the Practice Will Make Necessary the Enactment of Laws Restricting Their Use in Mines

MANY thoughts have been aroused, in my mind, by the reading of the editorial entitled "Booster Ventilation Problems," *Coal Age*, Aug. 11, p. 204. To my way of thinking, it is strange that the use of a booster fan in a mine should be advocated or recommended under any conditions except as a last resort.

The suggestion that the booster, in mine ventilation, has much to commend its use from an economical standpoint may be admissible in certain extreme cases where the ventilation is poor in a mine or section of a mine that is about to be abandoned, and installing a booster for temporary use will avoid incurring the expense of a larger fan at the surface.

Aside from such extreme cases, however, the intimation that, with proper safeguards against the intermittant action of a booster, located as it is in a mine where it is unattended, the ventilation by that means may be safer than by a single fan is unthinkable. I am not surprised that the editor adds, "though about this, opinions may differ."

Personally, I am opposed to the use of underground fans of any description and have often heard it remarked that if operators continue the present practice of installing boosters in mines, except as a dire emergency, it will result in the enactment of laws restricting and defining their use.

Conditions the War Imposed

There is no doubt that, under prewar conditions and the extraordinary demand for coal, many mines were opened and worked under inadequate equipment, in order to supply a public necessity. It goes without saying that our laws should make proper provision for these cases, in order that no injustice may be done to operators who acted in the public need, at a time of danger.

Mining men will not deny that an underground installation, particularly that of a booster fan, will seldom receive proper attention. Experience has shown that, owing to one cause or another, the continuous action of a booster is very uncertain. For that reason, some boosters have been equipped with automatic starters that enable these fans to start again, after a brief period of idleness.

No argument is required to show that a booster equipped with a self starter is dangerous. During the short period in which the fan is idle for lack of current, gas may accumulate and be ignited at the commutator when the current is again turned on and the machine starts.

I have heard of an instance where the gas had to be brushed from around a booster fan, before it was safe to start the machine. What would such a condition develop if the booster was equipped with a self-starter and the current turned on when it was necessary to operate the fan, but without taking the precaution to first examine the place and see that it was safe to turn on the current.

Five Boosters in One Mine

In a mine where I was employed, there were five booster fans. As the mine worked three shifts, the proper attention to these boosters would require fifteen attendants to devote much of their time in looking after them, the fans being located in different sections of the mine. Under normal conditions, this added expense would soon decide the fate of such a mine and the scheme would be pronounced impracticable.

Different schemes have been devised to warn the mine officials of any failure of a booster fan to operate, and thus avoid the expense of its continuous attendance. Such warnings, however, have often passed unnoticed as the ticking of a clock and, in fifteen minutes time or less, there is trouble.

In some instances, I have known booster fans to be displaced and even wrecked by the firing of shots. What might be expected to be their condition following an explosion in the mine? Of what service would these fan be in the subsequent attempts to restore ventilation in the sections they control?

The editorial to which I have referred, very properly mentioned the dread of mine inspectors for this type of installation in mines in their districts. This dread is not limited to the mine inspectors, but is shared to a large extent by every one concerned and whose fears are not unfounded.

A full discussion of this subject would occupy more space than is available. It will be asked, what is the remedy for conditions that invite the use of a booster fan in a mine? My answer is, plan the mine for a good system of ventilation, giving to each district a separate air split and its full quota of air. Most important of all is the building of stoppings, doors, overcasts and brattices that do not leak but conduct practically the entire air volume to the working faces.

Linton, Ind. W. H. Luxton.

Safety in Electric Lamps

Electric lamps save six out of seven men when gas explodes in a mine—Weight of battery a hindrance in use of the lamp—Suggested improvements.

REGARDING safe practices in gaseous mines, Robert A. Marshall refers to the use of electric mine lamps, in reply to the objections offered by a previous writer, who claimed that the lamp will not detect the presence of noxious gases in mines. The letter of Mr. Marshall, which appeared in *Coal Age*, July 21, p. 101, interested me deeply and recalled an experience that I shall never forget.

While the electric lamp has some disadvantages, these are much outweighed by its many points of superiority over the gauze safety lamp. That is not to say, however, that the gauze lamp must give place wholly to the electric lamp, in the operation of a gaseous mine, where its presence is still necessary for use of firebosses and safety inspectors.

Electric Lamps Save Six Men

Only last summer (1920) I was called upon to assist in restoring the ventilation in a mine where much damage had been done by an explosion of gas on the main haulage road. The explosion was caused by the sparking of the trolley of the mine locomotive.

The blast killed the motorman and seriously burned the night foreman, who was nearby at the time. Had it not been for the fact that the men, including the foreman, all used electric cap lamps, none of the seven at work in the mine at the time would have escaped alive. As it was, six of these men were able to find their way out.

In this instance, the electric lamp proved a good friend. It was not extinguished, as a gauze lamp would have been, by the force of the explosion. After this occurred it would have been suicidal or impossible to have attempted to relight an extinguished lamp, and the foreman would have found himself in the dark and helpless.

Although he was seriously burned and the flesh hung loose from his hands

and arms, the night foreman realized that he had five men working inside and in peril of their lives. With great fortitude he rushed forward and succeeded in reaching the places where they were working at the extreme end of the mine.

All of these men owe their lives, not only to the bravery of the foreman, but to the fact that he and they were using electric cap lamps, which continued to give light on their way out of the mine. The place is known as one of the most hazardous operations, I believe, in the state and it is the general opinion that the use of electric lamps in this mine has rendered its operation safer.

Dangerous Practice Permitted

While the mine is equipped throughout with electric lamps and careful experienced foremen and firebosses are employed, the gauze safety lamp is still in use by these officials in their examination of the mine. The ventilation is good and while the men are permitted to use the carbide lamp, if they choose on reaching their working places, they travel in and out of the mine by the light of their electric lamps only.

The last statement may seem strange to any one unacquainted with the particular conditions in this mine. Some of the men employed there prefer to use the carbide lamp in their work and have been permitted to do so, the practice not being thought dangerous. Regarding that matter, there may be some difference of opinion.

There are, I admit, some things about the electric lamp that give rise to a preference for the carbide light with some men. I would not like to repeat the profane language I have heard used in the lamphouse when miners were trying to hitch up a suitable cable and battery for their use, before going into the mine.

There are perhaps twenty or thirty cables and batteries in a rack. The man who gets there first has his choice of these; but the late comer who has to take what is left often expresses himself in a manner that is not calculated to recommend the use of the electric lamp to one who has not experienced its many advantages.

Individual Electric Lamps to Avoid Difficulty

In this connection, let me suggest that it would be a great improvement if each lamp and cable was numbered and each miner had his own outfit and was made responsible for its proper use. Any fault to be found with the lamp, cable or battery would then be promptly reported to the proper authorities and the trouble remedied.

Much of the trouble in the use of the electric lamp is due to the ignorance or carelessness of the workman who uses it. To overcome these difficulties requires greater system in the handling of the lamps and their distribution to the men. Naturally, a man will take better care of a lamp that he knows he must use again the following day.

Another difficulty often experienced in the use of electric lamps is the gradual failing of the light toward the end of a shift. This may be due to defective batteries or the fact that they are not sufficiently charged to enable them to give a good light up to the end of the shift. Working with a poor light is both dangerous and costly.

Another point worthy of consideration is the weight of the battery. At present, some of these are bulky and cumbersome. A short time ago I overheard a remark made by a man who had put in a hard shift mixing cement, and said that he thought his battery weighed at least 20 pounds.

I have often wondered if it would not be better to use smaller batteries and more of them. Then, each man could take with him into the mine, in the morning, two or three of these batteries and use them to replenish his light as needed, much as a miner refills his carbide lamp. This would relieve the worker of the extra weight.

Linton, Ind. W. H. Luxton.

Locomotive Should Pull the Trip

Danger stalks where locomotive is pushing a loaded or empty trip. In safe practice locomotive operated to pull all trips.

Referring to the inquiry of S. A. Bowes, *Coal Age*, June 30, p. 1165, allow me to advise that he should arrange to pull all trips, as a general working proposition, if this can be done by any reasonable possibility.

Saying nothing about the wear and tear on tracks, wagons and motor when the latter is made to push loaded or empty trips, in a mine, my experience has taught me that such practice is a most blindfolded system and should never be employed where it is possible to do anything else.

Red lights, white lights, clanging gongs and other alarms will form no safeguard against accident when the motor is operated at the tail end of a trip and the cars are pushed ahead of the machine.

Any kind of obstruction, such as a chunk of coal, a broken rail or a misplaced switch will cause a wreck that may put the entire working system out of commission, and nothing will prevent this from happening when the motorman is where he can have no knowledge as to the track being clear ahead of him.

Imagine what will take place when a locomotive is pushing a thirty-wagon trip, empty or loaded, and a single car jumps the track. It may be the head car in the trip or one a short distance back. The speed is probably six or eight miles an hour and, before the motorman is aware, the cars are piled up so as to practically choke the entry.

Timbers are torn out, much roof falls and the ventilation is cut off. To make matters worse the locomotive is on the inby side of the wreck, and it may be the only machine available in the mine. Perhaps the mine is generating some gas and, if so, the stoppage of the ventilation on the main airway and haulage road will quickly create a dangerous situation in the workings.

Having been caught in just such a trap myself, in what was then one of the largest mines in western Pennsylvania, I fully realize the danger involved when a haulage system is arranged for the locomotive to push the trips, either loaded or empty. Sooner or later the unavoidable will happen and the mine will be thrown idle, or a worse accident result.

Wreck Occurs When Locomotive Pushes Loaded Trip

In the instance last mentioned, a ninety-wagon, loaded trip was being pushed out of the mine by a steam engine. The wreck completely closed the passageway and the engine being on the inby side there was no power available for disentangling the cars, except a bull chain. The mine was generating gas and, under normal conditions, was ventilated by a current of 90,000 cu.ft. per min., circulating under a 2½-in. water gage.

The lesson taught by that accident I shall never forget. It will explain why I favor a haulage system in which the locomotive pulls but never pushes a trip, whether going out of or into the mine. It will not be thought strange that no arguments can persuade me to employ any other system than one where a mine locomotive is operated to pull all trips.

This statement, of course, applies only to a general working proposition, in the arrangement of a haulage system, in a mine. Conditions out of the ordinary may often require that a locomotive push a trip of cars for a short distance or for a brief period of time. In such cases, however, extra precautions should be taken to avoid accident.

Gans, Pa. R. W. Lightburn.

ANOTHER LETTER

Kindly allow me to add a few words to what has already been said in reply to the question of a locomotive pulling or pushing a trip of cars in a mine. From my own experience, I am convinced that no system of mine-locomotive haulage can be conducted successfully where the locomotive is required to push either the loaded or the empty trips.

Some may claim that, theoretically, the resistance to traction is the same whether the locomotive is pushing or pulling the trip; but in actual practice this is not true. When a trip of cars is pushed ahead of the locomotive the carwheels do not adjust themselves readily to any irregularity of the track, which creates a tendency to derailment of the cars.

Many times, I have watched the effect of the locomotive pushing a trip, and observed that there is always a sluing action that tends to swing the cars across the track. The result is that, especially when rounding a curve, the forward right-hand or inner carwheel and the hind left-hand or outer car-

wheel both hug the rails closely. Under this condition the forward wheel tends to mount the rail at any irregularity caused by a loose joint or a lack of alignment.

This condition is greatly aggravated when the cars are equipped with side bumpers. In that case, the force is applied wholly to the inner bumper when rounding a curve. The same is true, but to a less extent, on a straight track when a wide gage or a worn axle gives rise to a greater sluing of the car. There may even result the interlocking of the bumpers.

Should it become necessary to stop a heavy trip, on a more-or-less sharp curve, when the locomotive is about to enter the curve the strain on the drawbars is almost sure to derail one or more cars, especially if the weight of a long trip is out of proportion to the weight of a single car.

Calculating Weight of Locomotive

One correspondent, writing on this subject in *Coal Age*, Aug. 18, p. 261, has attempted a calculation to determine the size of locomotive required for the output in question (2,400 tons, in an 8-hr. shift). In this calculation, he assumes a track resistance of 30 lb. per ton and estimates a drawbar pull or push, at the locomotive, when hauling a trip of 120 tons, to be 120 × 30 = 3,600 lb., or 1.8 tons. He concludes that the weight of locomotive required would then be 5 × 1.8 = 9 tons.

It is a question in my mind whether such a calculation would meet the conditions in practice, unless it is known that the track resistance does not exceed the estimated 30 lb. per ton. If there are grades to be overcome and short curves, this resistance may be much increased and a heavier locomotive will be required.

Referring to the difficulty mentioned in the original inquiry, where it is required to push the cars into a rotary dump in order to avoid running the locomotive through the dump, allow me to suggest making arrangements to shunt the locomotive to the end of the trip, so that the cars can be pushed onto the dump, as required.

In a mine where I have worked there was a run-around track provided for shunting the locomotive, so as to allow the locomotive to pull the empties back into the mine, after having pulled the loaded cars to the shaft bottom. Where there is not sufficient grade to feed the dump by gravity, two locomotives should be employed, so that one can feed the dump while the other is making a trip into the mine.

In closing, allow me to refer to a safety rule of at least one large coal mining company in Alabama, where keen interest has always been taken in the safety of mine employees. The rule reads as follows: "No motorman shall push cars, unless with the permission of the mine foreman." This rule was made soon after the death of a trip-rider, who was killed in a wreck that occurred while a trip was being pushed.

Bayview, Ala. JOHN WALLS, SR.

Ruling of Examining Board in Conflict with Law

The law authorizes examining boards to formulate rules governing the examination, but requires rating candidates on both oral and written work.

RECENTLY a correspondent, who signs himself "Fairplay," *Coal Age*, Aug. 25, p. 300, questions the right of the examining board in charge of the inspectors' examination, held a short time since, in Pittsburgh, Pa., to make a ruling that candidates who should fail in the written examination would not be given the oral questions, which the law distinctly specifies.

Reading the paragraphs he has quoted as taken from the Bituminous Mine Law of Pennsylvania, one is led to believe that the lawmakers contemplated giving to each candidate both a written and an oral examination, inasmuch as it is stated that the oral examination shall be reported, verbatim and typewritten to assist the board in its rating of the candidate.

In my opinion, the board took an unfair advantage in availing themselves of the privilege granted them by law to formulate their own rules for conducting the examination. In ruling that a candidate who should fail in his written work would not be given an oral examination, the board deprived such a candidate from any advantage he might have in the oral test.

It is well known there are many men who can answer questions verbally and would make good mine inspectors, yet they are unable to put their ideas in writing so as to pass a satisfactory examination on paper. If the same questions were asked in an oral examination, they would probably be able to explain their meaning fully to the satisfaction of the board.

Again, inasmuch as the ruling of the board, in this case, affected only those candidates who should fail in the written examination, it discriminated between the candidates in the final rating. In order to treat all candidates equally fair, it is my opinion that there should be no discrimination and each man should be given the full test required by the law.

Judging from an unprejudiced standpoint, it would seem that the lawmakers had in mind the rating of a candidate's qualifications on the results of both a written and an oral test. But setting this aside, the board decided to pass on each man's qualifications prematurely, by examining his written work before applying the oral test.

My conclusion is that where the law specifies both an oral and written test, as it does in this instance, the oral examination should be given before the written work is examined, particularly where the rating is to be based, as in this case, on the results of each test.

Farr, Colo. ROBERT A. MARSHALL.

Inquiries Of General Interest

Ventilating Two Seams by a Single Fan

Difficulty Experienced in Ventilating Two Seams of Coal When Starting Development Work in the Upper or Overlying Seam — Shaft Sunk Connecting the Two Seams Gives Unsatisfactory Results

WHEN starting operations on our property it was decided to work the lower of the two seams underlying the tract, before opening the upper seam. Having in contemplation the working of that seam at a later period, however, we installed a reversible fan capable of producing 150,000 cu.ft. of air per minute.

Work progressed well in the lower seam and some time ago it was decided to begin operations in the seam above. Everything went well until the development had progressed to that stage that the upper mine demanded more attention in respect to its ventilation.

After some investigation, we concluded to sink a shaft to connect the two seams, for the sole purpose of ventilation. The size of this shaft was 5 x 10 ft., in section, and it was sunk to a depth of 260 ft. We confidently expected that the completion of this shaft would enable us to ventilate the two seams by means of the large fan already installed and in operation, which would avoid the expense of setting up another ventilator.

Much to our dismay, however, the results were far from satisfactory. We first tried running the fan as an exhaust, as formerly; but this proving unsatisfactory the circulation was changed and the fan operated as a blower. Again we were doomed to disappointment as the change showed no improvement in the circulation of the air in the two mines.

As far as we were able to judge, there appeared to be an air column, or a certain atmospheric condition, that controlled the direction and the course of the air, which we desired to circulate in each of the mines. Further than this, however, we were unable to determine what the difficulty was or its proper remedy.

I want to ask, here, what would be the effect of installing a small fan in the upper seam and operate it either

as a blower or as an exhaust fan. The idea would be to have this smaller fan work in conjunction with the main fan and assist in diverting some of the air into the upper seam.

MASTER MECHANIC.

Salt Lake City, Utah.

This correspondent has not given sufficient data to enable us to reply intelligently. It is not stated whether the shaft sunk to a depth of 260 ft. was started from the surface, or only sunk from the upper to the lower seam. We will assume, however, that this second shaft was started from the surface and sunk through to the lower seam.

Again, it is not clear how the lower seam was ventilated before this extra shaft was sunk. Very much will depend on these arrangements, as well as on the relative depths of the two seams below the surface, the amount each seam is developed and the means taken to direct the air current and distribute the air proportionately between the two mines.

In attempting to ventilate two seams by a single fan located at the top of a shaft connecting the seams, there being a second shaft sunk from the surface, which also connects the seams, it is quite possible, if the upper seam lies at a comparatively shallow depth and the lower one is much deeper, that an air column in the upcast shaft would cause most of the air to circulate through the lower seam.

On the other hand, conditions may favor the circulation through the upper mine, owing to a lesser development in that seam providing shorter aircourses and a less resistance to the flow of air, than in the larger development below. Again, the relative size of the air-courses in the two mines, owing to one of the seams being thicker than the other, or to any obstruction in the airways, or to the possible presence of gob fires heating the air current—these will each and all have their effect on the desired distribution of the air between the two mines.

Certain it is, however, that if this fan is capable of producing an air volume of 150,000 cu.ft. per min., say against a 1½- or a 2-in. water gage, there should be experienced no difficulty in ventilating the two mines by means of the same ventilator.

To do this, however, will require practical experience in handling air currents in mines, under varying conditions, such as we have suggested. We cannot endorse the idea of installing a small booster fan in the upper seam, as mentioned by this correspondent. On general principles no fan should be permanently installed underground where it cannot be reached in emergency.

Examination Questions Answered

Miscellaneous Questions

(Answered by Request)

QUESTION—*A sump in a mine is 72 ft. long, 25 ft. wide and 12 ft. deep; it is full of water. How long will it take a 6-in. pump to empty this sump, running at a speed of 100 ft. per min., if the efficiency of the pump is 80 per cent?*

ANSWER—The cubic contents of the sump is $72 \times 25 \times 12 = 21{,}600$ cu.ft. Allowing a water-end efficiency of 80 per cent, the discharge of this pump, running at a speed of 100 ft. per min., is $0.80 \times 100(0.7854 \times 0.5^2) = 15.7$ cu.ft. per min. The time required to empty the sump is, therefore $21{,}600 \div 15.7 = 1{,}375+$ min., or 22 hrs. 55 min.

QUESTION—*Name the different means used for producing ventilation in mines.*

ANSWER—The circulation of air in mines is produced, mechanically, by different types of centrifugal fans; or by disk fans, which act by propelling the air by the force of the inclined blades; and by different forms of steam jets. Air currents are also created by artificially heating the air, by means of a furnace located at or near the bottom of the upcast shaft. Natural ventilation results from the natural heat of the air, producing an air column in a shaft or slope. At other times, use is made of a waterfall in a shaft, or a wind cowl erected at the surface to direct surface winds into the mine.

QUESTION—(*a*) *How many apertures are there in a square inch of the standard safety-lamp gauze?* (*b*) *What is a safety lamp and how is it made or constructed?*

ANSWER—(a) The standard mesh of safety-lamp gauze, in this country, contains 784 openings to the square inch. The mesh is formed by 28 steel wires, No. 28 B.w.g.

(b) A safety lamp, for use in the mine, is one in which the flame is isolated from the air surrounding the lamp, by means of a chimney and all openings to the lamp are protected by wire gauze through which the air must enter and leave the lamp. It is constructed by surmounting the oil vessel of the lamp with a chimney that completely isolates the flame from the outside atmosphere.

The Davy lamp has a chimney wholly of wire gauze. In the Clanny and other types of safety lamps a glass cylinder surrounds the flame, forming the combustion chamber, which is surmounted by a gauze chimney. The chimney and the lamp are connected by brass standards having a cap or shield at the top to which the handle of the lamp is attached.

QUESTION—*What maximum height should there be between a pump and the surface of the water in the sump, the barometer being 30 in?*

ANSWER—A common rule is to allow a maximum height, in feet, equal to 0.9 of the barometric height, in inches. For a barometer reading of 30 in., the suction head of a pump should not exceed $0.9 \times 30 = 27$ ft. Where the suction line is inclined and of considerable length, or contains elbows that obstruct the flow, the suction height must be much less than this amount.

QUESTION—*What danger is there to a mine having a fireclay bottom, when a large quantity of water is allowed to accumulate in the workings?*

ANSWER—Water causes a fireclay bottom to swell and heave, which not only raises the track and reduces the headroom on the roads, making it necessary to brush the roof or lift bottom, but renders the mining of coal more difficult. The soft bottom will often induce a squeeze, to avoid which a greater width of entry and room pillars is required and the cost of yardage for driving crosscuts and breakthroughs is increased.

QUESTION—*How would you determine when the coal dust in a mine requires more moisture in order to render it safe from explosion hazard?*

ANSWER—Experiments on the inflammability of fine coal dust, by the Federal Bureau of Mines, have shown that to remove the danger of the dust being blown into the air by a concussion it must be so wet as to be plastic when molded in the hand. In that condition the dust will contain 30 per cent of its own weight of water. The practical test, therefore, to ascertain if the dust in a mine is a hazard in respect to explosion is to wet it till it becomes plastic in the hand.

QUESTION—*Name two or more methods of applying moisture to coal dust in a mine.*

ANSWER—Probably the most effective method of moistening the dust accumulated on the roads and timbers in a mine is to install a pipe sprinkling or spraying system, and use it to keep the dust wet enough so that it will not be raised and float in the air. Another less effective method is to introduce steam into the intake air current in sufficient quantity to fully saturate the current, which will reduce to some extent the absorption of moisture by the ventilating current and the consequent drying out of the mine. The amount of water thus carried into the mine and deposited will depend on the relative temperatures of the outside and the mine air. Still another method is to sprinkle the roads and working places with water from a watering car, at regular brief intervals.

Coal Consumption by Utilities Stationary: Use of Oil Fuel Gaining

CONSUMPTION of coal by electric utility plants has been around 2,400,000 net tons per month since last March, when it was 2,641,588 tons. It is significant, perhaps, that while the volume of coal consumed by these utilities has remained practically stationary since April, the consumption of fuel oil by the same plants has increased from 848,866 bbl. in March, 843,193 bbl. in April, 853,519 bbl. in May to 918,768 bbl. in June and 1,029,251 bbl. in July, or a gain of 21 per cent in five months for the chief competitor of coal.

COAL CONSUMED BY PUBLIC UTILITY POWER PLANTS, MARCH-JULY, 1921
(In Net Tons)

States	March	May	June	July
Alabama	8,050	13,335	27,798	20,734
Arizona	575	150	0	0
Arkansas	12,324	11,344	9,874	10,298
Colorado	28,654	26,654	22,587	28,018
Connecticut	50,438	48,382	56,829	53,615
Delaware	7,895	6,657	6,173	6,238
District of Columbia	19,572	18,768	18,067	18,948
Florida	1,926	2,003	1,806	1,902
Georgia	6,549	5,943	7,325	6,971
Illinois	334,651	304,535	302,094	306,562
Indiana	158,590	144,864	142,337	144,274
Iowa	75,141	64,381	62,420	63,399
Kansas	30,836	21,441	20,329	18,221
Kentucky	39,950	38,438	38,712	38,725
Louisiana	11,917	9,338	9,818	10,179
Maine	104	198	233	318
Maryland	16,586	18,210	27,789	26,112
Massachusetts	103,130	93,453	104,135	99,426
Michigan	111,136	106,917	114,679	118,915
Minnesota	40,437	23,914	23,884	31,956
Mississippi	10,785	9,312	9,969	9,850
Missouri	95,948	87,260	84,327	79,596
Montana	3,799	3,556	3,500	3,787
Nebraska	35,186	31,808	33,315	35,432
Nevada	176	117	127	130
New Hampshire	2,314	2,682	4,146	3,100
New Jersey	96,130	92,715	89,786	97,273
New Mexico	3,664	2,406	2,186	2,123
New York	360,255	338,960	332,044	345,496
North Carolina	7,493	6,827	7,214	8,722
North Dakota	14,716	12,099	11,792	13,092
Ohio	284,825	244,065	248,698	257,710
Oklahoma	5,172	3,968	3,743	2,904
Oregon	120	65	0	0
Pennsylvania	409,454	384,464	367,976	344,727
Rhode Island	11,546	9,607	8,323	8,447
South Carolina	9,288	6,581	7,545	7,768
South Dakota	6,690	5,542	6,413	7,383
Tennessee	21,136	18,234	19,745	18,884
Texas	20,034	18,458	18,426	19,304
Vermont	181	14	216	580
Virginia	32,932	32,111	36,764	40,540
Washington	3,219	2,542	2,199	2,180
West Virginia	81,675	89,425	89,217	86,721
Wisconsin	58,504	46,334	43,103	49,558
Wyoming	7,902	6,732	6,398	6,523
Totals	2,641,588	2,415,009	2,434,061	2,453,640

New England and the South show increases in fuel-oil consumption. This is especially true in Kansas, Arkansas, Oklahoma, Nebraska and New Mexico. The latter are in or near the Western oil belt and coal men in that section have for several months been experiencing the sharpest kind of competition from the oil trade.

FUEL OIL CONSUMED BY PUBLIC UTILITY POWER PLANTS IN NEW ENGLAND, MARCH-JULY, 1921
(In Barrels)

States	March	April	May	June	July
Connecticut	1,094	993	1,929	3,196	2,734
Maine	1,188	1,327	1,263	2,095	2,250
Massachusetts	29,764	23,039	25,848	25,990	25,731
Rhode Island	48,294	43,763	53,941	91,391	76,123
Vermont	.....	.....	.....	1,100	2,029
Totals	80,340	69,122	82,981	123,772	108,867

FUEL OIL CONSUMED BY PUBLIC UTILITY POWER PLANTS IN THE SOUTH, MARCH-JULY, 1921
(In Barrels)

States	March	April	May	June	July
Alabama	8,630	9,192	8,283	6,293	7,158
Arizona	16,001	22,437	17,009	18,496	14,984
Florida	61,717	55,495	55,879	52,865	51,506
Georgia	24,100	20,082	24,310	22,742	22,416
Kentucky	225	297	290	285	273
Louisiana	39,872	46,652	46,495	41,602	42,833
Mississippi	7,217	9,006	10,786	10,656	10,455
Missouri	7,989	7,289	8,075	24,615	31,600
North Carolina	270	190	140	146	118
Totals	166,021	170,640	171,267	177,700	181,343

The decrease in coal consumption in July as compared with March—188,000 tons—is more than offset by the increase in the amount of fuel oil used—180,000 bbls.—on the basis of 3½ tons of coal as the equivalent of 1 bbl. of oil. This would indicate a lesser degree of fuel efficiency during July than was obtained in March, as the rate of production of electric power during those two months was practically unchanged, amounting to 2,049,480 thousands of kilowatt-hours in March and 2,043,197 in July.

Frelinghuysen's Views on Coal Legislation Unchanged; Newton Bill Too Drastic

SENATOR FRELINGHUYSEN returned to Washington after the congressional recess without having determined upon any change in his policy as to coal legislation. He expects to watch developments closely and be in readiness to call up his coal-stabilization bill at any time likely to be opportune for its passage or when its discussion might tend to correct any trend of the coal situation against the public interest.

Statements that the bill of Representative Newton, of Minnesota, will be given consideration in the near future could not be substantiated at the Committee on Interstate and Foreign Commerce, to which the bill was referred. The Newton bill, a composite of the Calder and the LaFollette bills, is drastically regulatory and members of the committee expressed the opinion that the measure is not being seriously considered.

Manufacturers Endorse W. Va. Operators' Refusal to Deal with Miners' Union

THE National Association of Manufacturers issued a bulletin on Sept. 22 upholding the coal operators of West Virginia in their refusal to deal with the United Mine Workers. After presenting statistics to show that non-union miners in West Virginia receive higher wages than in the Kanawha union field in West Virginia the manufacturers' bulletin says of the activities of the United Mine Workers: "The present effort is not for the raising of wages. It has another and more sinister purpose, the suppression of West Virginia coal output to enable operators of the Middle West to retain Western markets and thus insure the retention of closed shop control of their mines."

Operators of the Middle Western states and officials of the United Mine Workers are quoted to support the claim that "the United Mine Workers had guaranteed to the operators that competition from West Virginia mines able to produce and sell for less would be removed."

Past efforts of the United Mine Workers to establish the closed shop in the principal West Virginia fields, however, have proved unavailing, it is declared. The Middle Western operators are said to have continually complained that the United Mine Workers was not removing West Virginia competition, as it had agreed. "Faced with loss of trade or with bankruptcy the unionized operators have threatened abolition of closed-shop union agreements unless the United Mine Workers can eliminate the competition from West Virginia."

The National Association of Manufacturers then declares that "the United Mine Workers now attempts to forcibly unionize the West Virginia mines in order to raise their cost of operation and save its ebbing control in the mines of the Middle West." The manufacturers also charge that "the United Mine Workers does not observe contracts where made." In support of this statement it quotes John R. Lawson, a union official; Governor Kilby of Alabama and Woodrow Wilson.

It is further alleged that "violence and disregard of the law is condoned by the United Mine Workers." Several specific instances are mentioned in support of this allegation. "Eleven Arkansas members of the United Mine Workers pleaded guilty to various offenses against the state and national laws, one of them having gone so far as to threaten the life of a federal judge if he did not decide as the miner desired. The union paid the fines of all these men and rewarded most of them by elections or appointments to union offices."

National Industrial Traffic League Demands Reduction of Freight Rates

AT a largely attended meeting held in Chicago, Sept. 23, the Executive Committee of the National Industrial Traffic League adopted resolutions demanding a reduction in freight rates as indispensable to a return to normal business conditions. The association has sent out a circular to its membership stating that it is the hope of the executive committee that all commercial organizations and individual members will endorse the action taken by the league and take such steps as they can to bring about public sentiment in favor of these recommendations. It is especially desirable, the circular states, that commercial organizations adopt similar resolutions and transmit them to the officials of the carriers serving their respective communities.

The resolutions were as follows:

"It is a matter of common knowledge that there exists at the present time a very general depression in almost all lines of business. Purchases are restricted to a hand-to-mouth basis. Most manufacturers are running on part time. Many industries are completely closed. Labor throughout the country is idle, and in many communities there is actual suffering as a result of this business depression.

"A study of readjustment processes indicates that the price of practically every commodity has been heavily reduced. Freight rates, which are such a large factor in our industrial fabric, have not been readjusted, but remain at the highest level in history. Manifestly, there can be no return to normal business conditions until the price of transportation bears a proper relation to commodity values. The business of this country has been developed and a wide distribution of commodities encouraged under freight rates that bore a proper relation to the price of the commodities, and until rates are readjusted so as to approximate such a level it is obvious that business confidence cannot be restored.

Expenses Increase More Rapidly Than Revenues

"In 1920 the operating revenues of all railroads in the United States were one billion dollars greater than in 1919, and the operating expenses were one and one-half billion dollars greater. In 1920 the net railway operating income of all roads, i. e., the entire amount available for the payment of interest and dividends, was only sixty-two million dollars as compared with an average of nine hundred million dollars for each of the five preceding years.

"In addition to large increases made in wages and the number of employees during the period of Federal control, so-called national agreements were adopted, which are responsible for a large part of the increase in operating expenses, since they restrict employees in the discharge of their duties and require the employment of skilled labor in the performance of work previously performed by unskilled labor.

"The national agreements are still in effect, and their abrogation is uncertain. On April 14, 1921, the Railroad Labor Board announced that these agreements would be abrogated on July 1; but subsequently the board reversed its decision.

"The failure of the railroads to reduce their operating costs is one of the principal factors in the present economic situation. The carriers are hampered by the policy and slowness of action of the Railroad Labor Board. Any condition which prevents the employer and employee from dealing directly with each other is bad and is a fertile field for dissensions. It is not fair to the carriers nor to the public that the railroad employee should be given preference over other employees performing work of a similar nature in private industries, and until the railway employees are placed upon a corresponding basis with those of private industries it cannot be said that the railroads are efficiently or economically operated.

"The executive committee of the National Industrial Traffic League, after careful consideration of the transportation problem and the present business and economic situation, is of the belief that the return to normal business conditions requires:

"First: Recognition of the fact that efficient and economical operation of the railroads depends primarily on the payment of wages by the railroads no higher than prevail in other lines of industry for similar work.

"Second: A general reduction in freight rates equal at least to a decrease in operating expenses brought about by a readjustment of wages on a just and equitable basis.

"Third: That the carriers should immediately proceed to readjust both wages and rates so that such reductions may take effect simultaneously.

"RESOLVED, therefore, by the executive committee of the National Industrial Traffic League, that it demand of the railway executives that they abrogate immediately the so-called national agreements, made effective during the period of Federal control, and which, in its opinion, expired with the return of the railways to private management; and be it further

"RESOLVED, That it demand of the railway executives that wages of railway employees be adjusted upon the basis of wages paid to similar classes of labor in private employment and simultaneously with such adjustment, a horizontal reduction in rates at least equivalent to the amount of wage reductions be established; and be it further

"RESOLVED, That a copy of these resolution be sent to the Association of Railway Executives, members of the Interstate Commerce Commission, and given to the public through the medium of the press."

Destination of Lake Cargo Coal During Season to End of August

DISTRIBUTION of bituminous Lake cargo coal during the present season and the corresponding periods in 1919 and 1920 is shown in the accompanying table, compiled by the Geological Survey. For comparative purposes, the year 1919 offers the better standard. Shipments during 1921 to Aug. 31 totaled 15,841,000 net tons, of which 78.4 per cent went to American ports and 21.6 per cent to Canadian destinations. Of the total, 12,412,000 tons were forwarded to American points, an increase when compared with the record for 1919 of 133,000 tons, but relatively a smaller proportion than in the earlier year. Shipments to Canadian ports were 3,429,000 tons, an increase over 1919 of 387,000 tons.

DESTINATION OF CARGO COAL DUMPED AT LAKE ERIE PORTS FROM OPENING OF SEASON TO AUG. 31.

	1919		1920		1920	
Destination	Net Tons	Per Cent	Net Tons	Per Cent	Net Tons	Per Cent
American						
Lake Superior ports	6,942,000	45.3	4,228,000	39.7	7,890,000	49.8
Sault Ste. Marie and river points	216,000	1.4	355,000	3 3	202,000	1.3
Lake Huron-Georgian Bay ports	202,000	1.3	118,000	1 1	97,000	0.6
Lake Michigan ports	4,654,000	30.4	2,495,000	23.4	3,887,000	24.6
Port Huron and Detroit River	209,000	1 4	484,000	4 5	313,000	2.0
Lake Erie ports	56,000	0 3	20 000	0.2	23,000	0.1
Total American	12,279,000	80.1	7,700,000	72.2	12,412,000	78.4
Canadian						
Lake Superior ports	1,094,000	7.1	797,000	7.5	1,597,000	10.1
Sault Ste. Marie and river points	496,000	3.2	674,000	6 3	479,000	3.0
Lake Huron-Georgian Bay ports	468,000	3.1	415,000	3.9	567,000	3.6
Port Huron and Detroit River	237,000	1.6	208,000	1.9	226,000	1.4
Lake Erie ports	34,000	0 2	10,000	0 1	62,000	0.4
Lake Ontario and St. Lawrence River	713,000	4 7	859,000	8 1	498,000	3.1
Total Canadian	3,042,000	19 9	2,963,000	27.8	3,429,000	21.6
Grand total	15,321.000	100 0	10,663,000	100.0	15,841,000	100.0

The Weather Vane of Industry

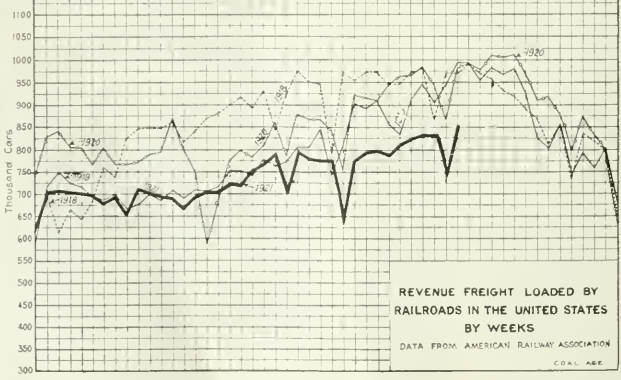
News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

PERHAPS the one most immediately effective measure which the Government could take to ameliorate the unemployment situation, according to the *Guaranty Survey*, a review of business and financial conditions published Sept. 26 by the Guaranty Trust Company of New York, would be the funding of the existing indebtedness of the railroad companies on account of capital expenditures while the roads were under its control. "That would place at the disposal of the roads $500,000,000," the *Survey* continues, "and would materially improve their financial position and hasten the time when they could make much needed expenditures for maintenance, improvements and expansion.

"Some relief is being provided through the recent sale by the Government of railroad equipment trust certificates, but the amount involved is as yet comparatively small, and this does not obviate the necessity for the funding of the indebtedness. To delay that action is to retard our economic recovery and prolong, if not increase, unemployment.

"The best construction that can reasonably be placed on the improvement which has lately been effected in the financial position of the carriers is that their comparatively favorably showing under adverse conditions is a hopeful sign."

During the week which ended on September 17, 853,762 cars were loaded with revenue freight on the railroads of the United States, according to reports by the American Railway Association. This is the largest number loaded during any one week, records show, since the week of Dec. 4, 1920. The total for the week was 105,644 cars greater than that for the previous week when, however, the observance of Labor Day resulted in a falling off in traffic. It was, however, 137,404 cars less than were loaded during the corresponding period last year and 141,229 less than during the corresponding period in 1919.



Steel Mill Operations Improve

Operations of the United States Steel Corporation at the present time are understood to range between 35 and 40 per cent., which is considerable improvement over July, when the mills were turning out only about 25 per cent. of capacity. In addition to increased operations it is reported that new orders are coming to hand in fairly large volume compared with recent months.

$5,000,000 Improvement at Norfolk

The Norfolk Port Commission has advised the City Council that the port development work being planned by the Commission will cost about $5,000,000. Plans have been drawn under the direction of the Commission for pier, warehouse and grain elevator facilities, which will cost upward of $4,000,000, and a small boat terminal also is contemplated.

Philadelphia Textile Mills Hum

Textile industries and affiliated trades in Philadelphia are beginning to hum with activity as a result of increased business, giving employment to thousands of persons and making necessary double shifts in several plants. A survey of conditions, particularly in the sweater and hosiery trades, indicates these are fast recovering and are beginning to enjoy prosperous days. Virtually every one of the scores of knitted outerwear mills in the city is busy, many of them night and day, working on orders that are pouring in.

Big Chilean Order for Westinghouse

The Westinghouse Electric International Co. announced Sept. 28 that it had received final confirmation of the contract to supply the equipment for electrifying the Chilean State Railway between Valparaiso and Santiago and to Los Andes. The contract, which has total value of $7,000,000, was secured in spite of keen competition from German and other European concerns.

Industry Gains in West Virginia

Industrial conditions in West Virginia show a steady improvement in the last two months, according to reports from field agents made public by the Bureau of Labor, Charleston, W. Va. The reports show that many plants, including glass factories and steel mills, have resumed operations after having been idle for months.

Sees End of Business Depression

"Business is getting better and I think we scraped bottom some time ago so far as the business depression is concerned, and from now on business will be better," declared Carl R. Gray, president of the Union Pacific system, in commenting on conditions, at Salt Lake City, Sept. 26.

National Coal Association Adopts Recommendation of Standard Cost Accounting System for Producers

SUCH cogent reasons for the adoption of a standard system of cost accounting in the operating end of the coal trade were advanced at a meeting held on Tuesday, Sept. 24, at the Hotel Gibson in Cincinnati under the auspices of the committee delegated by the National Coal Association to consider the problem that the recommendation of the committee was adopted.

So many persons crowded into the small room on the mezzanine floor at the morning session that larger quarters were obtained for the afternoon sessions. In addition to the accountants and others of various coal firms and associations who had been invited to attend the meeting, some thirty-five secretaries of coal operators' associations from all parts of the country also were present.

Thomas T. Brewster, who has served on the committee since its formation at the meeting of the association held in Chicago in May, 1919, acted as chairman, with W. B. Reed as secretary. Prior to the discussion printed pamphlets setting forth the need of uniform cost accounting were passed about as well as the five forms which have been advocated as a solution to the cost-keeping problems.

Mr. Brewster briefly recounted the history of the committee's work and the effort that had been made to arrive at a comprehensible solution of the problem. He declared that until the necessity of keeping track of costs was thoroughly recognized coal men would plunge on in the dark, to their own loss and to the detriment of the rest of the trade.

Overhead-Expense Account Should Overlook Nothing

He was followed by W. D. McKinney, of Columbus, who went into the matter thoroughly and declared that there were so many matters entering into the "overhead expense" of mines nowadays that nothing should be overlooked in arriving at the actual cost of producing coal. He took occasion to say that some of the operating concerns were not as keen to go into the matter of cost sheets as they might be because of certain uses that had been made of them by officials in Washington. This drew from Mr. Brewster the statement that "What we are after is a system of cost accounting that will give actual operating expenses. We are not concerned with what the Bureau of Economics may do with them nor the deductions which they may draw."

R. W. Gardiner, of Pittsburgh, informed those present that a lot of work would be saved for companies that would base their scale to miners on production and said that cost sheets that would provide a detailed analysis were bound to be of profit to those that kept them. He also pointed out the value of keeping a check upon supplies and said that a cost system would be a means of keeping a check upon many items that escape the attention of most of the producers.

J. H. Alport, formerly connected with the Fuel Administration, said that a uniform system of accounting was in a great sense a paradox, for "the more I know, the less I know about it." He said that he had examined more than 20,000 reports that had been made to the Fuel Administration, and in all of these no operator had reckoned in the depreciation upon his mine or mines the years that he had made nothing.

Why Depleton Should Be Carefully Considered

"In Washington," he said, "You have a bunch of department sharps to deal with and you must follow what they suggest—unless you have something better to offer." Mr. Alport then pointed out that the matter of depletion alone was worthy of careful consideration and illustrated this point by an instance wherein a company had been basing its costs upon 100 years of life for its mine, while the department figured it at forty years. "As an actual fact the mine had but eighteen years to run, and this figures a matter of $52,000 which should be coming back to those people.

"In the Revenue Department they will accept any average which may be paid to them but if you don't know all of the costs that enter into your production, you lose it."

Tom Lewis, secretary of the New River Operators' Association, was the next speaker. He went back to the days of the Fuel Administration and related the mad scramble that there was to fix the price of coal for the various districts, "which the Administration did to the best of its judgment. We found in the New River field that nine-tenths of our mines would have to shut up shop under the prices fixed. A meeting was called and the point considered was how to get out of the muddle.

"The men who did the most complaining were the men who knew the least on the cost of producing coal. We finally believed that our only solution was in getting an expert accountant to go over the whole situation. That cost money and we figured that all concerned would have to pay 3c. to 4c. a ton for it for a number of months on every ton of coal that was mined. Some of them said that they were not going to be robbed. In the end, however, we got at the matter of cost, and with the figures that we obtained we were able to go to Washington, and an increase of 25c. on the ton was granted us as a result."

Less Than 2 Per Cent Income in 1910

Mr. Norris drew the attention of those present to the fact that in 1910 the bituminous coal mines of this country did not pay 2 per cent upon the investment. Producers kept on working, though their profits fell and their costs rose, with the hope that there might be a change in the next month.

The small operator, according to Mr. Norris, is in greatest need of the results obtained by keeping track of costs. "There are many instances," said he, "where the president of an operating company is the general manager, superintendent or storekeeper, but he does not take into consideration that he should have both pay for his labor and return for the money that he has invested. This with other points I pointed out to President Van Hise, who is the dean of economics in the University of Wisconsin, while I was on the Fuel Administration in Washington. 'But, man,' he said to me, 'you are violating every law of economics in making such allowances. You are establishing new principles. Where did you gentlemen ever study economics?'

"'I didn't,' I confessed.

"The professor sagely shook his head and said, 'I thought so.'"

Coal Knowledge Needed in Revenue Department

Mr. Norris advanced the theory that much might be accomplished for the benefit of the coal men if at some time there were men at the head of bureaus in the Revenue Department of the government who were familiar with the problems of the coal operator, "and spoke their language."

Acting upon a suggestion made by Mr. Lewis that the five forms that have been worked out by the cost accounting committee be adopted and approved, Chairman Brewster then took up this matter and appointed a committee composed of Messrs. Alport, Reed and Norris to consider any elaborations or suggestions that might be made. A few minor suggestions cropped out before the morning session adjourned.

During the afternoon session W. L. A. Johnson, of Kansas City, secretary of the Southwestern Operators' Association, asked whether any of those present had delved into the matter of keeping costs on stripping operations. He said that some of the operators in the Southwest were puzzled over the fact that in using their shovels for stripping for a certain period they showed nothing but a loss and then when they struck coal and became producers they usually were profit producers for a proportionate length of time. Mr. Johnson seemed to believe that this would not be under-

stood by those who did not know or who were not familiar with such work.

Someone replied that the monthly cost sheets in such instances would go for little but that the yearly sheets would tell the tale.

The discussion then drifted into the legality of gathering cost sheets and Mr. Brewster explained to the secretaries and others that this matter had been taken up with the legal advisers of the National Coal Association, and that they could see no possible objection to such procedure. Mr. Brewster also quoted from an opinion rendered by Justice Taft a few years ago which would tend to show that the collection of cost sheets would not in any way infringe upon the Sherman Act nor be in restraint of trade.

J. E. McCoy, of Knoxville, secretary of the Appalachian Coal Operators' Association, then detailed the workings of a credit bureau which is maintained by his organization in which tab is kept upon firms and others who are slow pay or no good. In concluding his talk Mr. McCoy—in search of information—requested that those who were meeting with success in the collection of cost sheets hold up their hands. One secretary declared that all but three of the ninety operators that he represented were sending them in, and with him came five others with this report.

Raid Causes Discontinuance of Cost Data

The preponderance of the representation admitted that they were getting no return of cost sheets at all. As an explanation of this it was said that most of the operators stopped sending in the data when the raid was made upon the offices of the National Coal Association in Washington. This with the ruling of a Memphis jurist against collection of trade information had been a deterrent it seemed.

Several persons present were of the opinion that the coal trade should be awakened to the necessity of gathering cost data even though lawsuits result, lest the benefits that had accrued during the period when reports were made be lost.

Adoption of the committee's recommendation upon the changes in the form of the cost sheets brought the meeting to a close.

Mingo Operator Sues to Enjoin U. M. W. A.; Indiana Producers Also Named

OPERATORS in the Thacker and Williamson coal fields of Southern West Virginia, the scene of the Mingo disturbances and all that has followed of trouble and bloodshed in the efforts of the United Mine Workers to unionize this field, on Sept. 23, 1921, brought action in the U. S. District Court to enjoin the United Mine Workers from further efforts to organize their operations. The suit was brought in the name of the Borderland Coal Corporation of Virginia but it is understood that sixty-two coal companies in West Virginia and Pike County, Kentucky, are behind the action.

Besides the union officials and members it is reported that there are named as defendants the Jackson Hill Coal & Coke Co., Rowlands Power Consolidated Colliery Co., and the Lower Vein Coal Co., all producers in Indiana, and others with operations in the Central Competitive Field. The suit charges conspiracy by operators of the Central Competitive Field and the miners' union to eliminate non-union competition.

Wholesale Prices of Foodstuffs Advanced 13.5 Per Cent During August

WHOLESALE prices of many important foodstuffs showed a strong upward tendency during August, according to information gathered by the U. S. Department of Labor through the Bureau of Labor Statistics. Among articles showing decided price advances were butter, cheese, milk, eggs, rice, meats, sugar, fruits and potatoes. Meat animals, including cattle and hogs, also averaged higher in August than in July.

As measured by the bureau's weighted index number, food articles in the aggregate were nearly 13½ per cent higher in August than in the month before. Farm products, including many food items in the raw state, were 2½ per cent higher. In all other groups, except that of cloths and clothing, decreases took place, ranging from 1 per cent in the case of building materials to 4 per cent in the case of metals. Cloths and clothing articles showed no change in the general price level. All commodities, considered as a whole, were approximately 2¾ per cent higher than in July.

Of 327 commodities, or series of quotations, for which comparable data for July and August were obtained, increases were found to have occurred for 99 commodities and decreases for 123 commodities. In 105 cases no change in price took place in the two months.

Nine Industries Employed More Help, Five Less, in August Than in July

FROM data received through the Bureau of Labor Statistics, the U. S. Department of Labor issued Sept. 20 tabulated reports concerning the volume of employment in August, 1921, in representative establishments in thirteen manufacturing industries and in bituminous coal mining.

Comparing the figures of August, 1921, with those of identical establishments for August, 1920, it appears that in six industries there were increases in the number of persons employed, while in eight there were decreases. The largest increase, 114 per cent, is shown in the woolen industry. The great increase reported for the woolen industry for August, 1921, over August, 1920, is due to the recovery from a period of idleness. The most important decreases are 43.1 per cent in iron and steel, 36.1 per cent in car-building and repairing, 35.8 per cent in automobiles, and 33.8 per cent in paper.

Eleven of the fourteen industries show decreases in the total amount of the payroll for August, 1921, as compared with August, 1920, and three show increases. The most important percentage increase, 82.8, appears in woolen. The largest decreases appearing during this period are 68.6 per cent in iron and steel, 47.1 per cent in car building and repairing, 46.9 per cent in paper, and 39.2 per cent in automobiles.

Comparative data for July, 1921, and August, 1921, show that in nine industries there were increases in the number of persons on the payroll in August as compared with July, and in five a decrease. The largest increases—5.5 per cent, 5.3 per cent, 4.9 per cent and 4.8 per cent—are shown in hosiery and underwear, men's ready-made clothing, iron and steel, and boots and shoes, respectively. A decrease of 5.9 per cent appears in automobiles and one of 1.6 per cent in bituminous coal mining.

In comparing August, 1921, with July, 1921, eleven industries show decreases in the amount of money paid to employees and three show decreases. The most important increases are 15.4 per cent in iron and steel, 12.7 per cent in men's ready-made clothing, 12.5 per cent in hosiery and underwear, and 11.9 per cent in bituminous coal mining. A decrease of 3.7 per cent is found in automobiles, 2.2 per cent in cotton manufacturing, and 1.3 per cent in the woolen industry.

In the bituminous coal mining industry a 20-per cent decrease in rates of wages was reported by five mines affecting 41 per cent, 15.4 per cent, 4.8 per cent, 2.6 per cent, and 2.3 per cent of the forces, respectively. The entire force in one mine was cut 10 per cent in wages. Due to more time being worked in the mines, the per capita earnings for August are 13.6 per cent higher than for July.

Must Pay Dependents Though They No Longer Reside in United States.—The Workmen's Compensation Board of Pennsylvania dismissed the appeal of the Idamar Coal Co. in the plea of the Royal Consul General of Italy for dependents of Girolamo Anton Bellomo. The coal company contended that these dependents were not entitled to compensation because they were no longer residents of the United States but of Italy, but the board held that they were entitled to compensation nevertheless.

Unemployment Conference Makes Rapid Progress; Coal Committee Silent; Will Report Oct. 10

By Paul Wooton
Washington Correspondent

"FUNDAMENTALLY sound, financially strong, industrially unimpaired, commercially consistent and politically unafraid, there ought to be work for everybody in the United States who chooses to work, and our condition at home and our place in the world depend on everybody going to work and pursuing it with that patriotism and devotion which make for a fortunate and happy people." With these words President Harding opened the National Conference on Unemployment in Washington last week. The opening sessions were impressive both because of the character of the leadership and the high standing of the fifty-two delegates selected and by reason of the national importance of the subject of the conference.

On Friday, Sept. 30, the work of the general conference had progressed to such an extent that a general summary of conclusions was presented and adjournment taken until Oct. 10, when the final reports of the committees will be offered for consideration. Conclusions of the mining committee are to be presented at that time. Prior to that presentation, no announcement is to be made of the conclusions reached by the committee. It is understood, however, that the committee had little to recommend affecting emergency unemployment and that the recommendations deal almost entirely with suggestions for permanent relief and general stabilization of the industry.

The committee held its first session on Sept. 27, immediately following the general conference meeting that made the committee assignments. The committee, as selected by the conference, consists of John D. Ryan, Samuel A. Lewisohn, W. K. Field, E. M. Poston, John T. Connery, James B. Neale, John Moore, John L. Lewis, John P. White and Miss Mary Van Kleeck. John D. Ryan was chosen chairman of the committee and David L. Wing, its executive secretary.

Sub-Committees on Coal and Metal Mining Formed

After holding sessions on the afternoon of Sept. 27 and the morning of Sept. 28, at which the unemployment data were discussed thoroughly, it was decided, in order to expedite matters, to form two sub-committees. One of the sub-committees has been dealing with coal matters and the other with metal mining. The sub-committees have gone over the various plans put forward for the relief of unemployment and as this is written the conclusions of the committees are in process of formation.

The sub-committee on coal mining has gone over a large volume of data. It has been in almost constant session since its formation. In a formal statement given out by the sub-committee it is said that "the present emergency is connected so intimately with fundamental conditions in the industry that the problem of practical relief measures presents very great difficulties."

Mr. Ryan was unable to remain in Washington and Mr. Poston was made the acting chairman of the committee.

Herbert Hoover, in his opening remarks, summarized the situation in the following words: "There is no economic failure so terrible in its import as that of a country possessing a surplus of every necessity of life in which numbers, willing and anxious to work, are deprived of these necessities. It simply cannot be if our moral and economic system is to survive. It is the duty of this conference to find definite and organized remedy for this emergency and I hope also that you may be able to outline for public consideration such plans as will in the long view tend to mitigate its recurrence. . . .

"We need a determination of what emergency measures should be undertaken to provide employment and to mitigate the suffering that may arise during the next winter, and the method of organization for their application. We need a consideration and a statement of what measures must be taken to restore our commerce and employment to normal or, to put it in another way, what obstacles need to be removed to promote business recovery—the only real and lasting remedy for unemployment is employment.

"It seems to me we can on this occasion well give consideration to and expression of the measures that would tend to prevent the acute reactions of economic tides in the future. A crystallization of much valuable public thought on this matter would have lasting value in education of our people.

"The remedies for these matters must in the largest degree lie outside of the range of legislation. It is not consonant with the spirit of institutions of the American people that a demand should be made upon the public treasury for the solution of every difficulty. The administration has felt that a large degree of solution could be expected through the mobilization of the fine co-operative action of our manufacturers and employers, of our public bodies and local authorities, and that if solution could be found in these directions we would have accomplished even more than the care of our unemployed, that we will have again demonstrated that independence and ability of action amongst our own people that saves our government from that ultimate paternalism that would undermine our whole political system. . . .

"What our people wish is the opportunity to earn their daily bread, and surely in a country with its warehouses bursting with surpluses of food and clothing, with its mines capable of indefinite production of fuel, with sufficient housing for comfort and health, we possess the intelligence to find solution. Without it our whole system is open to serious charges of failure. . . .

"Those economic movements which have presently reached the phase of unemployment, the exact measure of which is yet to be determined by the facts, can be modified and possibly controlled by practical remedies available through co-operative service on the part of those abundantly able and doubtless eager to render it.

"This crisis in some respects is fraught with hardships quite as grave as those which confronted the country during the period of its participation in the Great War. The generous response then made by men and women in all walks of life to appeals for service will be repeated in this emergency if a practical plan is devised for the mobilization of this conquering force of service."

Preliminary Recommendations of General Conference

The preliminary recommendations of the general conference as related to the whole subject of unemployment as an emergency are as follows:

(1) The conference finds that there are variously estimated from 3,500,000 to 5,500,000 unemployed, and there is a much greater number dependent upon them. There has been an improvement, but pending general trade revival this crisis in unemployment cannot be met without definite and positive organization of the country.

(2) The problem of meeting the emergency of unemployment is primarily a community problem. The responsibility for leadership is with the Mayor and should be immediately assumed by him.

(3) The basis of organization should be an emergency committee representing the various elements in the community. This committee should develop and carry through a community plan for meeting the emergency, using existing agencies and local groups as far as practicable. One immediate step should be to co-ordinate and establish efficient public employment agencies and to register all those desiring work. It should coordinate the work of the various charitable institutions. Registration for relief should be entirely separate from that for employment.

(4) The personnel of the employment agencies should be selected with consideration to fitness only and should be directed

to find the right job for the right man and should actively canvass and organize the community for opportunities for employment. The registry for employment should be surrounded with safeguards and should give priority in employment to residents. Employers should give preference to the emergency employment agencies.

(5) The emergency committee should regularly publish the numbers dependent upon them for employment and relief that the community may be apprised of its responsibility. Begging and unco-ordinated solicitation of funds should be prevented.

(6) Private houses, hotels, offices, etc., can contribute to the situation by doing their repairs, cleaning and alterations during the winter instead of waiting until spring, when employment will be more plentiful.

(7) Public construction is better than relief. The municipalities should expand their school, street, sewage, repair work and public buildings to the fullest possible volume compatible with the existing circumstances. That existing circumstances are favorable is indicated by the fact that over $700,000,000 of municipal bonds, the largest amount in history, have been sold in 1921. Of these, $106,000,000 were sold by 333 municipalities in August. Municipalities should give short-time employment the same as other employers.

(8) The Governor should unite all state agencies for support of the Mayors and, as the superior officer, should insist upon the responsibility of city officials; should do everything compatible with circumstances in expedition of construction of roads, state buildings, etc.

(9) The Federal authorities, including the Federal Reserve banks, should expedite the construction of public buildings and public works covered by existing appropriations.

(10) A congressional appropriation for roads, together with state appropriations amounting to many tens of millions of dollars already made in expectation of and dependence on Federal aid, would make available a large amount of employment. The conference under existing circumstances, notwithstanding various opinions as to the character of the legislation and the necessity for economy, recommends congressional action at the present session in order that work may go forward.

(11) The greatest area for immediate relief of unemployment is in the construction industry, which has been artificially restricted during and since the war. We are short more than a million homes; all kinds of building and construction are far behind national necessity. The Senate Committee on Reconstruction and Production, in March of this year, estimated the total construction shortage in the country at between ten and twenty billion dollars. Considering all branches of the construction industries more than two million people could be employed if construction were resumed. Undue cost and malignant combinations have made proper expansion impossible and contributed largely to this unemployment situation. In some places these matters have been cleaned up. In other places they have not and are an affront to public decency. In some places these things have not existed. In others costs have been adjusted. Some materials have been reduced in price as much as can be expected. Where conditions have been righted, construction should proceed, but there is still a need of community action in provision of capital on terms that will encourage home building. Where the costs are still above the other economic levels of the community there should be searching inquiry and action in the situation. We recommend that the Governors summon representative committees, with the co-operation of the Mayors or otherwise as they may determine, to (a) determine facts; (b) to organize community action in securing adjustments in cost, including removal of freight discriminations, and clean-out campaigns against combinations, restrictions of effort, and unsound practices where they exist to the end that building may be fully resumed.

(12) Manufacturers can contribute to relieve the present acute unemployment situation by:

(a) Part-time work, through reduced time or rotation of jobs.

(b) As far as possible, manufacturing for stock.

(c) Taking advantage of the present opportunity to do as much plant construction, repairs and cleaning up as is possible, with the consequent transfer of many employees to other than their regular work.

(d) Reduction of the number of hours of labor per day.

(e) The reduction of the work week to a lower number of days during the present period of industrial depression.

(f) That employees and employers co-operate in putting these recommendations into effect.

A large number of employers have already, in whole or in part, inaugurated the recommendations herein set forth, and for this they are to be commended, and it is earnestly urged upon those employers who have not done so to put same into use, wherever practicable, at the earliest possible opportunity.

(g) Specific methods for solution of our economic problems will be effective only in so far as they are applied in a spirit of patriotic patience on the part of all our people.

During the period of drastic economic readjustment, through which we are now passing, the continued efforts of anyone to profit beyond the requirements of safe business practice or economic consistency should be condemned. One of the important obstacles to a resumption of normal business activity will be removed as prices reach replacement values in terms of efficient producing and distributing cost plus reasonable profit.

We, therefore, strongly urge all manufacturers and wholesalers who may not yet have adopted this policy to do so, but it is essential to the success of these measures when put into effect that retail prices shall promptly and fairly reflect the price adjustment of the producer, manufacturer, and the wholesaler.

When these principles have been recognized and the recommendations complied with we are confident that the public will increase their purchases, thereby increasing the operations of the mills, factories and transportation companies, and consequently reducing the number of unemployed.

Exporters Organize to Force Down Rail Freight Rates on Coal for Export

IN RESPONSE to requests from several coal exporting firms, a meeting was called at the Harvard Club, New York City, on Friday, Sept. 30, at 2 p.m., for the purpose of discussing inland freight rates on export coal. C. Andrade, Jr., was made chairman and Dr. Henry Mace Payne secretary of the meeting. Among the New York companies represented at the meeting were: Gano Moore & Co., Deegans Export Coal Co., New River Consolidated Coal Co., Lookout Coal Co., Astor Collieries Co., Eyre Fuel Co., Lake & Export Corporation, Fort Dearborn Coal Co., Imperial Coal Co., New England Coal & Coke Co., Dexter & Carpenter, Metropolitan Shipping Corporation, Archibald McNeil & Sons Co. and a number of Philadelphia and Baltimore firms by proxy.

It was the sense of the meeting that efforts should be concentrated toward obtaining a $1 per ton reduction in railroad freight rates on coal destined to Europe and South America, no attempt being made to alter existing differentials or affect rates now in operation to New England, Canada, Cuba, the West Indies, Mexico or Panama.

A committee consisting of Messrs. Matlack, Ellicott, Campbell, Payne and Simms was appointed to draft plans for the organization, and after the conference the committee recommended the employment of Mr. Andrade to prepare and submit the case to the Interstate Commerce Commission. The recommendation was carried unanimously. A finance committee composed of Messrs. Matlack, Ellicott and Campbell was then appointed to devise ways and means to carry the plan to execution.

The meeting adjourned to reconvene at 2 p.m., Friday, Oct. 7, at the Harvard Club, New York City.

Senator Smoot Submits 3 Per Cent Sales Tax Amendment: Coal Affected

SENATOR Smoot, of Utah, a member of the Senate Finance Committee, who is dissatisfied with the committee's revised tax bill, submitted amendments in the nature of substitutes on Friday, Sept. 30, including a 3-per cent sales tax which would apply to the coal industry. The tax would be upon every commodity manufactured or produced when sold, leased or licensed for consumption or use without further process of manufacture. The tax would be equivalent to 3 per cent of the price for which the commodity is sold, leased or licensed, and would be paid by the manufacturer or producer.

In a statement explaining the tax, the Senator says that as the tax is imposed only when articles are "for consumption or use without further process of manufacture" the tax will not be cumulative, to meet objections advanced against his original sales tax announced last spring. "For example, coal sold for consumption in a boiler will be taxable but coal sold for the manufacture of coke will not, the coke bearing a tax when sold," explained the Senator. The tax is to be paid monthly, beginning January next, but an exemption on sales up to $6,000 a year is allowed. Computations were made in co-operation with the Census Bureau based on 1919 business, including the estimated production of coal.

Navy Awards Contracts for 375,000 Tons of Coal for Ships and Navy Yards

COMPLETE figures on awards of coal contracts have been announced by the Bureau of Supplies and Accounts of the Navy Department as a result of the bids which were opened on Sept. 21. The largest award was made to Castner, Curran & Bullitt, for delivery of 185,000 gross tons of Pocahontas or New River coal at Hampton Roads or Sewalls Point during the period October, 1921, to March, 1922, at a delivered price of $5.04 per gross ton.

The total awards cover 375,000 tons for use of ships and navy yards. Smaller awards also were made for anthracite, ranging from $11 to $15 for delivery at various points on the Atlantic. Navy officials are pleased with the result of the bids.

The principal awards are as follows:

AWARDS COVERING BITUMINOUS COAL FOR SHIPS—SCHEDULE 8431

Contract and Tonnage	Contractor	Point of Delivery	Mines	Delivered Price
54,845 Class 258 5,000 tons	J. H. Weaver & Co., Phila., Pa.	A–N. Y. Harbor Pier delivery B–N. Y. Harbor Alongside vessel or N. Y.	Ebensburg No. 1	A– $7.00 B– 7.53
Period of delivery January 1, 1922, to March 31, 1922.				
54,845 Class 259 7,000 tons	J. H. Weaver & Co., Phila., Pa.	Phila. A–Pier delivery B–Alongside vessel of Navy Yard (barge delivery D–Delivery to ship's bunkers.	Ebensburg No. 1	A– $6.43 B– 6.59 D– 7.39
Period of delivery October 1, 1921, to March 31, 1922.				
54,846 Class 260 900 tons	Dexter & Carpenter, Inc. New York.	A–F.o.b. naval barges, Balto. for Annapolis. B–Barge delivery Naval Academy, Annapolis.	Pool 1 mines on acceptable list.	A– $6.6359 B– 7.2359 including war tax.
Period of delivery October 1, 1921, to March 31, 1922.				
54,847 Class 261 185,000 tons	Castner, Curran & Bullitt, New York.	A–Pier delivery, Hampton Roads and Sewell's Pt., for storage.	Mines on Navy Acceptable list. Pocahontas and/or New River.	A– $5.04
Period of delivery Oct. 1, 1921, to March 31, 1922.				

AWARDS COVERING BITUMINOUS COAL FOR NAVY YARDS—SCHEDULE 8432

Contract and Tonnage	Contractor	Point of Delivery	Mines	Guaranteed Analysis	Delvd. Price
54 848 Class 262 300 tons	Iron Trade Products Co., Pittsburgh, Pa.	Submarine Base, Conn.	Snyder	B.t.u., 14,344 Ash, 7.19 Sulphur, 1.80 Volatile, 21 00 Moisture, 1.00	$7.55
54,849 Class 263 5,000 tons	Metropolitan Coal Co., Boston, Mass.	Naval Hospital, Chelsea, Mass.	Slab Fork Premier Ocean	B.t.u., 14,500 Ash, 7.00 Sulphur, .70 Volatile, 19.50 Moisture, 3.00	$9.97
54,846 Class 266 1,800 tons	Dexter & Carpenter, New York	Naval Ammunition Depot, Iona Island, N. Y.	Claire	B.t.u., 14,000 Ash, 9.00 Sulphur, 2.00 Volatile, 28.00 Moisture	$6.46
54,850 Class 267 15,000 tons	Whiteley & Foedisch, Phila., Pa.	Navy Yard, Brooklyn, New York.	Bethlehem Nos. 1-2-6 7-8-9-11-12	B.t.u., 14,700 Ash, 7.50 Sulphur, 1.50 Volatile, 28.00 Moisture, 3.00	$6.28
Period of delivery January 1, 1922, to March 31, 1922.					
54,851 Class 268 9,000 tons	Morgantown Coal Co., Morgantown, W.Va.	Navy Supply Depot, South Brooklyn, N. Y.	Echart	B.t.u., 14,000 Ash, 8.00 Sulphur, 2.00 Volatile, 25.00 Moisture, 2.00	$6.41
54,846 Class 271 250 tons	Dexter & Carpenter, New York	Naval Ammunition Depot, Ft. Mifflin, Pa.	Claire	B.t.u., 14,000 Ash, 9.00 Sulphur, 2.00 Vola le, 28.00 Moisture	$5.9354
54,852 Class 272 18,000 tons	Morrisdale Coal Co., Phila., Pa.	Phila.-Ja.-F.a. a. wharf at Navy Yard, 3a-F.o.b. barge under chutes at piers.	Morrisdale Shafts 1 & 3 & Cunard Slope	B.t.u., 14,284 Ash, 7.52 Sulphur, 1.32 Volatile, 19.97 Moisture, 1.00	$5.75 $5.23
54,850 Class 272 36,000 tons	Whiteley & Foedisch, Phila., Pa.	Phila. 2a-F.o.b. hopper bottom cars, Navy Yard	Bethlehem Nos. 1-2-6-7-8-9-11-12	B.t.u., 14,700 Ash, 7.50 Sulphur, 1.50 Volatile, 28.00 Moisture, 3.00	$5.94
54,847 Class 273 30,000 tons.	Castner, Curran Bullitt, Inc., New York.	Navy Yard, Wash., D.C.	Mines on Navy Acceptable list.	.....	$5.42
54,848 Class 274 900 tons	Iron Trade Products Co., Pittsburgh, Pa.	Naval Engineering Experiment Station, Annapolis, Md.	Snyder	B.t.u., 14,344 Ash, 7.19 Sulphur, 1.80 Volatile, 21.00 Moisture, 1.00	$7.36
54,848 Class 275 19,800 tons	Iron Trade Products Co., Pittsburgh, Pa.	Naval Academy, Annapolis, Md.	Kimmel	B.t.u., 14,250 Ash, 8 50 Sulphur, 1.75 Volatile, 23.50 Moisture, 1.80	$6.33
54 847 Class 276 2,000 tons Class 277 18,000 tons Class 278 20,000 tons	Castner, Curran & Bullitt, New York.	276–Norfolk Naval Hospital. 277–Navy Yard 278–N.O.B.	Mines on List	Navy Acceptable	$5.53 $5.53 $5.53
54,878 Class 278½ 16,000 tons	Peabody Coal Co., Chicago	Naval Training Station, Great Lakes, Ill.	Westville No. 24	B.t.u., 12,445 Ash, 1.75 Sulphur, 1.75 Volatile, 35.25	$2.02 f.o.b. mine

AWARDS COVERING ANTHRACITE COAL—SCHEDULE 8433

Contract and Tonnage	Contractor and Mine	Point of Delivery	Mine Price	Freight plus Tax	Total Delivery Price
Class 286 1,400 No. 3 buckwheat 1,000 nut	Weston Dodson & Co., Bethlehem, Pa. (Beaver Brook or East Alden mine) Phila. & Reading. Coal & Iron Co., Phila., Pa. (Mahanoy & Schuylkill Mine)	Naval Home, Phila.	.....	.....	3.95 $11.9434
Class 289 1,200 egg	Ditto	Navy Yard, Wash., D. C.	$8.05 .1134 7.75	$3.78 ..... 3.64	

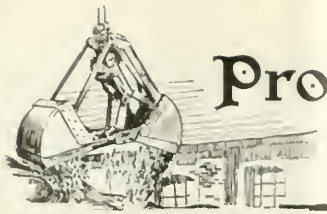
Miners Will Delay Demands Till February Oppose Cuts Now; Want Raise in April

CONCURRENTLY with reports from Washington that Secretary of Commerce Herbert Hoover favors a wage reduction for mine workers, the delegates of the United Mine Workers of America, on Oct. 1, being assembled in Indianapolis, at their biennial international convention, voted to approve the report of Vice-President Murray, wherein he declared that the agreements to be made after March 31 next should be more favorable to the mine workers that any that had preceded them. Furthermore, by pledging the convention to support the Colorado and Washington mine workers, who are now idle and are endeavoring to resist a wage reduction, they signified their approval of the international board in opposing lowering of wage scales.

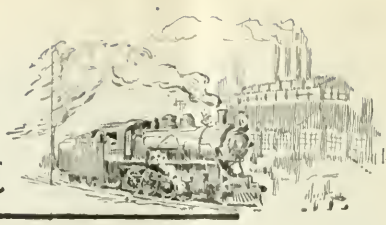
On that same eventful day they voted to approve President Lewis' proposal that the demands of the mine workers should not be published till February, when a report will be made to another convention by the scale committee.

The delegates appointed J. B. Wiggins, of Spriggs, W. Va.; F. C. Clifford, of Clifford, Ill., and E. J. Giles, of Chariton, Iowa, a committee to confer with President Harding as to the safety of C. F. Keeney, president of that district in West Virginia of which the Kanawha, New River, Logan and Mingo regions are a part; Fred Mooney, secretary of that district, and about 136 others These men are in Logan and Williamson jails charged with conspiracy against the peace of the state and with other offenses relating to the march from the Kanawha region into Logan County of some thousands of mine workers and the fighting that resulted. The convention also authorized taking a test case against the Kansas Industrial Court to the Supreme Court, in an attempt to prove its very existence illegal.

On the whole the administration comes out with flying colors, winning against Frank Farrington, of Illinois, in reference to an audit of the expenditures in an unauthorized strike, against Alex Howat, in Kansas, in regard to the irregular strike which he supported in that state, and also in the matter of the delay in a decision on the wage scale. Still there were bad moments. The union voted to disapprove salary increases of approximately 60 per cent which officers of the United Mine Workers had been receiving, and for a while it looked as if the excess might have to be repaid but the motion for the return of the money was killed when a vote was taken.



Production and the Market



Weekly Review

OPTIMISM not all hope has made its appearance in the coal market this week. There is nothing in the coal market itself to justify this state of mind as yet, but other business is looking good and it is other business that gives the coal man the orders. Production of coal, for one thing, is going steadily upward. From 8,000,000 tons to 8,500,000 tons the week of Sept. 24, is the latest jump. Prices are not following suit, however; *Coal Age* index of spot prices of bituminous coal at the mines this week dropped two points—from 90 on Sept. 27 to 88 on Oct. 3. Domestic sizes are moving fairly well and the trade is slashing screenings as a result in order to move them. "No bills" are in plentiful evidence in the Central West and the buyer is playing the market for all he is worth, in possession of full knowledge that on steam coal he still has the long end of it. Mine-run is feeling the pressure on screenings. The next week or two hold no prospect of any but purely minor price changes in the coal used by industry and the railroads.

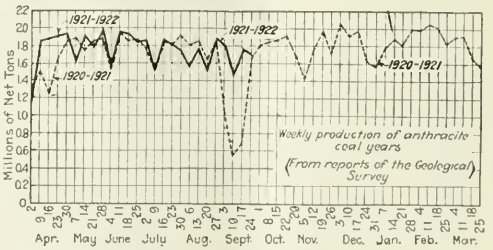
Seasonal Autumn Buying Gathers Momentum

The Pittsburgh district, in particular, reflects the better tone in iron and steel, and the resumption of more than seventy mills in Ohio has helped the feeling there. Seasonal autumn buying of coal is slowly gathering momentum and contracts that were not closed last spring are now being reconsidered. In other words, the buyer clung to the spot market all summer and he may be expected to change over soon.

The tonnage of railroad fuel is increasing, both because of increased traffic and because of increases in storage preparatory to winter. Lake shippers are due for a temporary spurt because the improved upper dock trade has made room for additional cargoes and the fact that reduced tariffs from the mines to lower ports will end Oct. 31. Demands for crop moving and business expansion ordinarily combine at this season to make inroads on the country's financial reserves, but in the last two weeks the fourth reduction has been made in the Federal Reserve's discount rate, which now stands at the lowest level since January, 1920, and money is easier. That may help some buyers of coal to come into the market for winter storage.

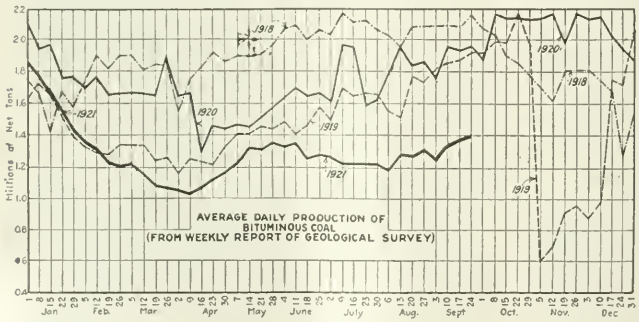
The South is enjoying a good autumn trade in everything but coal, which will surely follow. The progress of cotton has been in the public eye, but other staples have been moving though accompanied by less publicity. Orders for lumber have been picking up and twice during the past month the record of the last three years has been broken by Southern mills. Rice and sugar also have improved their condition.

From Cleveland, Minneapolis, Baltimore, Philadelphia and New York the reports are in much the same optimistic vein—"encouraging industrial resumption; not much increase in current orders but more interest shown in quotations for October delivery."


Millions of Net Tons
1921-1922
1920-1921
1921-1922
1920-1921
Weekly production of anthracite coal years
(From reports of the Geological Survey)
Apr. May June July Aug. Sept Oct. Nov. Dec. Jan. Feb. Mar.

Anthracite production continues strong. Warmer weather has slowed up the distribution of family sizes but orders in hand provide shippers with adequate business for some time to come. Steam sizes are in better seasonal call.

The coke market has strengthened with the improvement in iron and steel. Beehive production is heavier,



Estimates of Production

(NET TONS)

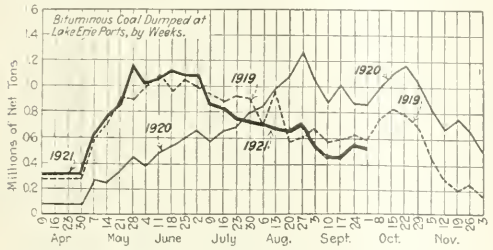
Week Ended	1921	1920
BITUMINOUS COAL		
Sept 10	7,083,000	10,685,000
Sept 17 (*b*)	8,193,000	11,654,000
Sept 24 (*a*)	8,506 000	11,851,000
Daily average	1,418,000	1,969,000
Calendar year	288,454,000	388,586,000
Daily average, calendar year	1,280,000	1,720,000
ANTHRACITE		
Sept. 10	1,508,000	562,000
Sept. 17 (*b*)	1,778,000	718,000
Sept. 24 (*a*)	1,754,000	1,701,000
Calendar year (*a*)	65,699,000	64,038,000
BEEHIVE COKE		
Sept. 17 (*b*)	64,000	403,000
Sept. 24 (*a*)	68,000	402,000
Calendar year	4,032,000	15,695,000

(*a*) Subject to revision. (*b*) Revised from last report.

although far below normal. Byproduct coke is still a deterrent to heavier beehive production but stocks of the former have decreased rapidly with the better call.

BITUMINOUS

Production of bituminous coal continued to improve during the week ended Sept. 24. The total output for the week, according to the Geological Survey, was 8,506,000 net tons, as compared with 8,193,000 in the preceding week. Further improvement is shown in reports for the first two days of the following week, when loadings increased 1,570 cars.



Domestic production is still heavy, although retail distribution is retarded by unseasonable weather and the poor buying power of householders. In view of the comparatively small tonnage in cellars, it is felt that cold weather may develop some strenuous times for the retailer this winter. Retail stocks of prepared sizes are growing topheavy, as evidenced by some cutting of prices at the mines to move prepared coal.

Interests serving the New England market apparently are determined to stop the bargain business that has prevailed there for some time. This attitude is producing firmer prices, although the volume of business closed is smaller, both all-rail and through Hampton Roads. The all-rail movement during the week ended Sept. 24 was 2,894 cars, as compared with 2,530 cars in the week preceding.

BITUMINOUS RECEIPTS IN NEW ENGLAND, JANUARY-JULY, 1921
(In Net Tons)

	Tide	Rail	Total
January	707,000	981,000	1,688,000
February	544,000	721,000	1,265,000
March	594,000	741,000	1,335,000
April	604,000	586,000	1,190,000
May	588,000	650,000	1,238,000
June	759,000	799,000	1,558,000
July	612,000	634,000	1,246,000
Total	4,408,000	5,112,000	9,520,000
Total for 1918			15,879,000
Total for 1919			9,986,000
Total for 1920			11,853,000

Exporting is now practically a memory. During the week ended Sept. 24 there were dumped at Hampton Roads only 27,860 net tons for foreign cargoes and 27,173 for bunkers. Shipments were less than one-tenth of the weekly June av-

Current Quotations—Spot Prices, Bituminous Coal—Net Tons. F. O. B. Mines

	Market Quoted	Aug. 30, 1921	Sept. 20, 1921	Sept. 27, 1921	Oct. 4, 1921†
Low-Volatile, Eastern					
Pocahontas lump	Columbus	$5.30	$4.90	$4.90	*$4.50@$5.00*
Pocahontas mine run	Columbus	3.15	2.75	2.65	**2.65@2.90**
Pocahontas screenings	Columbus	2.40	2.20	2.10	1.90@2.30
Pocahontas lump	Chicago	5.00	4.75	4.75	4.50@5.00
Pocahontas mine run	Chicago	2.75	2.95	2.85	*2.25@3.00*
*Smokeless mine run	Boston	5.15	5.05	4.90	4.75@5.00
Clearfield mine run	Boston	1.80	1.95	1.90	**1.70@2.15**
Cambria mine run	Boston	2.45	2.35	2.35	2.00@2.70
Somerset mine run	Boston	1.75	1.75	1.75	**1.50@2.10**
Pool 1 (Navy Standard)	New York	3.25	3.25	3.25	3.00@3.50
Pool 1 (Navy Standard)	Philadelphia	2.95	3.10	3.10	2.90@3.25
Pool 1 (Navy Standard)	Baltimore	2.50	2.75	2.80	2.75@2.85
Pool 9 (Super. Low Vol.)	New York	2.50	2.40	2.55	*2.25@2.60*
Pool 9 (Super. Low Vol.)	Philadelphia	2.35	2.40	2.40	2.25@2.50
Pool 9 (Super. Low Vol.)	Baltimore	2.25	2.40	2.60	**2.60@2.70**
Pool 10 (H. Gr. Low Vol.)	New York	2.15	2.20	2.30	*2.00@2.25*
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2.05	2.05	2.05	1.90@2.15
Pool 10 (H. Gr. Low Vol.)	Baltimore	2.00	2.15	2.30	**2.40@2.50**
Pool 11 (Low Vol.)	New York	1.90	1.90	1.90	1.75@2.00
Pool 11 (Low Vol.)	Philadelphia	1.80	1.80	1.80	1.75@1.90
Pool 11 (Low Vol.)	Baltimore	1.80	2.00	2.10	**2.15@2.20**
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.90	1.85	1.90	1.75@2.00
Pool 54-64 (Gas and St.)	Philadelphia	1.70	1.70	1.75	1.65@1.85
Pool 54-64 (Gas and St.)	Baltimore	1.60	1.70	1.70	**1.75@2.00**
Pittsburgh sc'd gas	Pittsburgh	2.65	2.65	2.65	2.55@2.75
Pittsburgh mine run (St.)	Pittsburgh	2.25	2.20	2.20	2.20@2.25
Pittsburgh slack (Gas)	Pittsburgh	1.70	2.15	2.15	2.00@2.25
Kanawha lump	Columbus	3.50	3.45	3.35	*3.00@3.50*
Kanawha mine run	Columbus	2.15	2.15	2.00	1.90@2.15
Kanawha screenings	Columbus	1.30	1.20	1.25	*1.10@1.25*
Hocking lump	Columbus	3.20	3.25	3.25	3.00@3.50
Hocking mine run	Columbus	2.15	2.15	2.15	*1.90@2.10*
Hocking screenings	Columbus	1.35	1.20	1.15	*1.00@1.15*
Pitts. No. 8 lump	Cleveland	3.25	3.25	3.25	3.00@3.50
Pitts. No. 8 mine run	Clevelad	$2.30	$2.15	$2.10	*$2.00@$2.15*
Pitts. No. 8 screenings	Cleveland	1.70	1.55	1.50	**1.50@1.55**
Midwest					
Franklin, Ill. lump	Chicago	3.65	3.65	3.80	*3.25@4.05*
Franklin, Ill. mine run	Chicago	2.90	2.90	2.95	*2.00@3.50*
Franklin, Ill. screenings	Chicago	1.95	1.90	1.75	*0.80@2.65*
Central, Ill. lump	Chicago	2.70	2.70	2.70	*2.00@3.00*
Central, Ill. mine run	Chicago	2.40	2.40	2.40	*1.75@2.75*
Central, Ill. screenings	Chicago	1.75	1.60	1.60	*0.60@2.85*
Ind. 4th Vein lump	Chicago	2.95	2.95	2.95	*2.25@3.50*
Ind. 4th Vein mine run	Chicago	2.50	2.40	2.40	**2.30@2.75**
Ind. 4th Vein screenings	Chicago	1.70	1.65	1.60	*1.00@2.15*
Ind. 5th Vein lump	Chicago	2.90	2.90	2.90	*2.15@3.25*
Ind. 5th Vein mine run	Chicago	2.40	2.40	2.40	**2.25@2.75**
Ind. 5th Vein screenings	Chicago	1.75	1.65	1.55	*0.70@2.15*
Standard lump	St. Louis	2.45	2.75	3.15	**3.25**
Standard mine run	St. Louis	1.85	1.95	1.95	*1.65@2.00*
Standard screenings	St. Louis	0.95	0.60	0.50	*0.25@0.40*
West. Ky. lump	Louisville	3.10	2.75	2.90	**2.75@3.25**
West Ky. mine run	Louisville	2.45	2.25	2.25	2.00@2.50
West Ky. screenings	Louisville	1.50	1.25	1.15	0.80@1.50
South and Southwest					
Big Seam lump	Birmingham	3.75	3.75	3.75	3.25@4.25
Big Seam mine run	Birmingham	2.10	2.15	2.15	2.00@2.30
Big Seam (washed)	Birmingham	2.35	2.40	2.40	*2.15@2.40*
S. E. Ky. lump	Louisville	3.65	3.50	3.65	*3.50@3.60*
S. E. Ky. mine run	Louisville	2.30	2.15	2.20	*2.00@2.15*
S. E. Ky. screenings	Louisville	1.55	1.50	1.50	*1.00@1.50*
Kansas lump	Kansas City		5.75	5.75	5.75
Kansas mine run	Kansas City		4.25	4.00	4.00
Kansas screenings	Kansas City		2.50	2.40	2.40

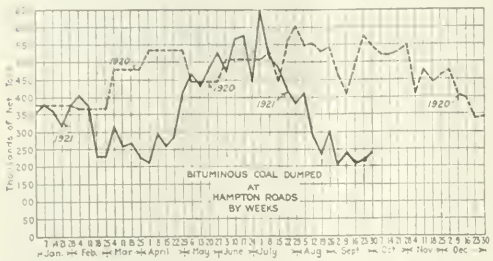
*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	Sept. 20, 1921 Independent	Sept. 20, 1921 Company	Sept. 27, 1921 Independent	Sept. 27, 1921 Company	Oct. 4, 1921† Independent	Oct. 4, 1921† Company
Broken	New York	$2 61		$7.60@$7.75		$7.60@$7.75		$7.60@$7.75
Broken	Philadelphia	2 66	$7.60@$8.20	7.75@ 7.85	$7.60@$8.20	7.75@ 7.85	$7.60@$8.20	7.75@ 7.85
*Broken	Chicago	5 62	12.75	12.65	13.40	12.80	13.40	12.80
Egg	New York	2 61	7.75@ 8.25	7.60@ 7.75	7.75@ 8.25	7.60@ 7.75	*7.75@8.00*	7.60@ 7.75
Egg	Philadelphia	2 66	8.10@ 8.35	7.75@ 7.85	8.10@ 8.35	7.75@ 7.85	8.10@ 8.35	7.75@ 7.85
*Egg	Chicago	5 62	12.80	12.65	13.40	12.80	13.40	12.80
Stove	New York	2 61	8.25@ 8.50	7.90@ 8.10	8.25@ 8.60	7.90@ 8.10	**8.25@ 8.75**	7.90@ 8.10
Stove	Philadelphia	2 66	8.25@ 8.60	8.00@ 8.35	8.25@ 8.60	8.00@ 8.35	**8.25@ 8.75**	8.00@ 8.35
*Stove	Chicago	5 62	13.40	12.90	13.40	12.90	13.40	12.90
Chestnut	New York	2 61	7.75@ 8.25	7.90@ 8.10	8.00@ 8.25	7.90@ 8.10	**8.00@ 8.50**	7.90@ 8.10
Chestnut	Philadelphia	2 66	8.20@ 8.75	8.05@ 8.25	8.20@ 8.75	8.05@ 8.25	8.20@ 8.75	8.05@ 8.25
*Chestnut	Chicago	5 62	13.10	12.90	13.40	12.90	13.40	12.90
Pea	New York	2 47	5.00@ 6.00	6.05@ 6.45	5.00@ 5.75	6.05@ 6 45	*5.00@5.50*	6.05@ 6.45
Pea	Philadelphia	2 38	4.50@ 5.50	6.15@ 6.25	4.50@ 5.50	6.15@ 6.25	4.50@ 5.50	6.15@ 6.25
*Pea	Chicago	5 62	11.10	11.00	12.40	11.15	12.40	11.15
Buckwheat No. 1	New York	2 47	2.75@ 3.50	3.50	2.75@ 3.00	3.50	2.75@ 3.00	3.50
Buckwheat No. 1	Philadelphia	2 38	2.50@ 3.00	3.50	2.50@ 3.00	3.50	2.50@ 3.00	3.50
Rice	New York	2 47	2.00@ 2.50	2.50	1.80@ 2.15	2.50	1.80@ 2.15	2.50
Rice	Philadelphia	2 38	1.75@ 2.00	2.50	1.75@ 2.00	2.50	1.75@ 2.00	2.50
Barley	New York	2 47	1.25@ 1.50	1.50	1.25@ 1.50	1.50	1.25@ 1.50	1.50
Barley	Philadelphia	2 38	1.00@ 1.25	1.50	1.00@ 1.25	1.50	1.00@ 1.25	1.50
Birdseye	New York	2 47		2.50		2.50		2.50

*Prices and freight rates, net tons; quotations f.o.b. cars, Chicago.
†Advances over previous week shown in **heavy type**, declines in *italics*.

erage in overseas movement. Total dumpings for all accounts during the week ended Sept. 29 were 217,223 gross tons, nearly 20,000 increase over the week preceding, showing to what extent the coastwise market is being utilized.



Lake dumpings during the week ended Oct. 1 were 549,051 net tons, as compared with 593,187 in the week preceding.

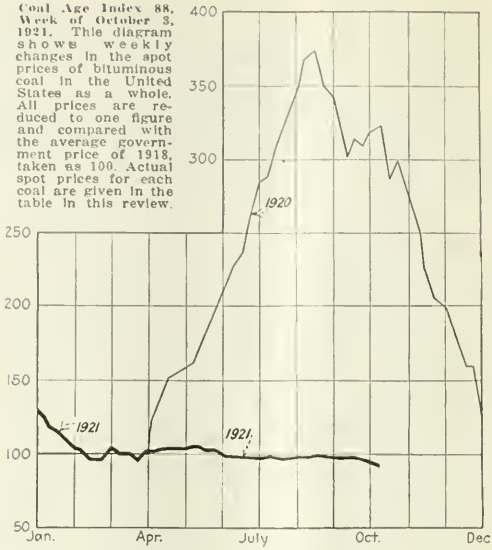
ANTHRACITE

Production of hard coal continues steady. During the week ended Sept. 24 the total output was 1,754,000 net tons. Demand is holding well, in spite of the unseasonably warm weather. Independent quotations on the larger sizes range up to 50c. or more above company circular.

ANTHRACITE RECEIPTS IN NEW ENGLAND, JANUARY-JULY, 1921
(In Net Tons)

	Tide	Rail	Total
January	315,000	644,000	959,000
February	350,000	764,000	1,114,000
March	304,000	899,000	1,203,000
April	306,000	599,000	905,000
May	374,000	667,000	1,041,000
June	387,000	685,000	1,072,000
July	309,000	652,000	961,000
Total	2,345,000	4,910,000	7,255,000
Total 1918	.....	.....	8,231,000
Total 1919	.....	.....	5,658,000
Total 1920	.....	.....	6,072,000

Coal Age Index 88, Week of October 3, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.



COKE

Production of beehive coke again shows a slight increase. The output for the week ended Sept. 24 was 68,000 net tons, 4,000 more than in the preceding week. Connellsville operations are much encouraged by the better line of inquiry that has developed and the market has definitely sought a higher level. Supporting the increased prices is a fairly lively demand, although the competition from byproduct coke is still heavy.

Foreign Market And Export News

Coal Paragraphs from Foreign Lands

GERMANY—Ruhr production during the week ended Sept. 17 was 1,768,718 metric tons, according to a cable to *Coal Age*. Production has been running around this figure for the last three weeks.

SWEDEN—Arrivals of coal at Stockholm were 19,200 tons in the week ended Sept. 17, of which nearly 15,000 tons came from England.

HOLLAND—The following are among the latest quotations: British steam coal, c.i.f. Rotterdam, 18 gulden or 32s. American gas coal, c.i.f. Rotterdam, 22½ gulden or $7.

SPAIN—The Asturian market has advanced a trifle since last quotations. Prices now stand at 100 pesetas for screened, 90 for large and 75@80 for smalls, f.o.b. Gijón.

AUSTRIA—The situation in Upper Silesia continues to react unfavorably on the Austrian coal market according to a review by the *Guaranty Trust Co. of New York*. Austrian firms were formerly large buyers of Polish coal of Silesian origin. The Germans, who are now in possession of the coal fields of this district refuse delivery to Poland. This has resulted in an unwillingness on the part of Poland to export any coal, even though that country is reported to have coal of her own to the extent of 20 per cent above her requirements, and to have helped herself so liberally to Upper Silesian coal during her occupation as to overstock the market.

Hampton Roads Accumulations Reduced; Cargoes Are Scarce

Reduction of stocks at Tide is the outstanding development of the week's coal business here, only approximately 175,000 gross tons being on track. Release of large quantities of distress coal from demurrage, with the consequent lessening of pressure on the market from this source, has not taken effect in price reductions to any marked extent.

The New England and bunker business continues to sustain the market. During September approximately 600,000 tons went to New England, which is only 200,000 below normal.

Much of the bunker business is being handled on contract. Vessel tonnage awaiting cargo was approximately 40,000 tons this week, with a like amount in sight for immediate arrival. Foreign cargoes, however, are rare, with no shipments scheduled except to the West Indies and Mediterranean ports.

Local shippers are concentrating their efforts on coastwise and bunker business, the latter showing signs of steady improvement and the coastwise trade holding its own. Reports of additional revivals in industry in the North are received as a sign of the improvement in business which is becoming the mainstay of the market.

PIER SITUATION

	Week Ended Sept. 22	Week Ended Sept. 29
N. & W. Piers, Lamberts Point:		
Cars on hand	1,217	1,353
Tons on hand	69,024	25,355
Tons dumped for week	93,486	99,741
Tonnage waiting	11,850	25,000
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	1,164	1,386
Tons on hand	83,200	69,300
Tons dumped for week	54,421	76,000
Tonnage waiting	8,200	11,605
C. & O. Piers, Newport News:		
Cars on hand	1,165	1,401
Tons on hand	83,250	70,000
Tons dumped for week	49,290	41,482
Tonnage waiting	2,845	2,300

British Producers Cutting Export Quotations

France Flooded with Low British Offers—England Considers Extension of Export Credits—Controversy Over Interpretation of British Mines Subsidy

Production in the United Kingdom during the week ended Sept. 17 was 4,161,500 gross tons, according to a cable to *Coal Age*. This compares with an output of 3,940,000 tons in the week preceding.

Plans for enlarging the export credit project are under consideration by the Government. Prior to this time these credits have been confined to the countries of Eastern Europe whose financial state was such that it was difficult to do business with them. South America and Far East points are being considered in this plan, which would greatly strengthen British foreign trade.

Exporters are actively canvassing for business and are making more inroads in markets of the French mines. Scandinavian countries have been productive of recent business and price reductions have strengthened the demand.

The Cardiff Mines Department has decided that operators are liable for over 97 per cent of the September wages paid instead of 46 per cent as estimated by producers. Several companies have withdrawn their quotations and there is a possibility of many workings being closed. The Government, according to the statement issued, will only pay about 6d. per day toward the men's September wages and the owners are unwilling to face losses which would follow a continuation of production.

Notwithstanding this, it is felt that to place consumers — especially the French industry—in a favorable position, prices must be still further reduced. Buying of house coal is still slow, owing to the continued mild weather.

The Government has again issued new regulations in regard to industrial coke. The price will be 125 fr. at the works for all classes of consumers, but in the case of blast furnaces, this price will be reduced by about 30@40 fr., in the shape of an equivalent compensation paid by the Government.

Much nervousness still prevails on account of the uncertainty in regard to the question of prices on coal supplied by Germany under the Reparation Act. Certain conclusions of the Financial Conference, last held in Paris, not having been approved by the French Government, it looks as if the question will have to be opened again. No one knows at present whether the arrangements arrived at, and which gave France full satisfaction, will again be agreed upon.

The market is still flooded with low British offers. However, it is likely that the recent sharp rise of British currency on this market will deter some buyers who had been seriously negotiating for the purchase of British coals.

French production for July is about 70,000 metric tons short of the figures for June, while the Saar output increased about 40,000 tons, as shown in the following table:

	France	Saar
Coal and lignite	2,327,976	889,656
Consumed at mines	315,725	119,019
Supplied to mines' coke plants	71,902	15,835
Supplied to briquet works	187,790	2,067
Mine stocks, July 31	1,256,272	1242,165
Mine Stocks, June 30	1,190,035	269,229

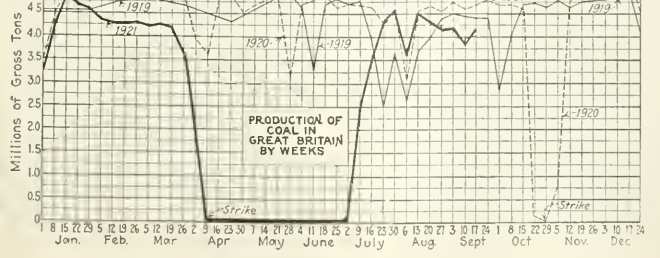
FRENCH IMPORTS IN JULY

From	Metric Tons
Great Britain	49,000
Belgium	198,000
United States	60,000
Germany	1,503,000
Sarre region	7,000
All others	28,000
Total	1,845,000

French Mine Costs Lowered; Reparation Coal Again Under Discussion; Industrial Coke Prices Reduced

Welsh quotations, as cabled to *Coal Age*, on Oct. 3, ranged 250@300 fr., delivered at Marseilles. There are no stocks of American coal at that port.

There are still numerous complaints about the dearth of home-produced coal. Wages at the mines have been lowered by three francs per day, and this was immediately followed by a reduction in prices of ten francs per ton.



Japanese Coal Production

Total production of bituminous coal in the Government mines of Rukicoga, Yamaguchi, Saga and Nagasaki in the southwestern part of Japan were 18,578,000 tons in 1920 as against 19,613,000 in the previous year. Of this total the respective shares were as follows: Rukicoga 14,544,000 tons (15,457,000 in 1919), Yamaguchi 1,186,000 tons (1,206,000 in 1919), Saga 1,617,000 tons (1,852,000 in 1919), and Nagaski 1,231,600 tons (1,098.000 in 1919). During the second part of the year several mines had to be shut down altogether, which is responsible for the smaller output in 1920. At the beginning of 1921 an additional number of Government collieries had to shut down.

Export Clearances, Week Ended Sept. 29

FROM HAMPTON ROADS:

For Brazil:	Tons
Am. SS. Liberty Glo, for Pernambuco	3,470
Br. SS. Tresillian, for Buenos Aires	4,690
For Canada:	
Am. Schr. Mary Manson Gruener, for Bathurst, N. B	943
Nor. SS. Gaute, for Batburst, N. B	2,803
Am. SS. Hilton, for Three Rivers	4,366
Am. SS. Annetta for Cayo Mambi	550
Du. SS. Samarinda, for Sabang, Java	5,110
Am. SS. Kenwood, for St. Georges	1,271

Pier and Bunker Prices, Gross Tons

(Foreign Bunker Quatations by Cable to C al Age)

	Sept. 24	Oct. 1†
PIERS		
Pool 9, New York	$5.75@$5.85	$5.75@$5.85
Pool 10, New York	5.50@ 5.60	5.50@ 5.60
Pool 9, Philadelphia	5.80@ 6.00	5.80@ 6.00
Pool 10, Philadelphia	5.40@ 5.70	5.40@ 5.70
Pool 71, Philadelphia	6.00@ 6.25	6.00@ 6.25
Pool 1, Hamp. Rds	4.90@ 5.00	4.90@ 5.00
Pools 5-6-7 Hamp. Rds	4.40@ 4.50	*4.25@ 4.40*
BUNKERS		
Pool 9, New York	6.10@ 6.20	6.10@ 6.20
Pool 10, New York	5.85@ 5.95	5.85@ 5.95
Pool 9, Philadelphia	6.10@ 6.30	6.10@ 6.30
Pool 10, Philadelphia	5.75@ 6.00	5.75@ 6.00
Pool 1, Hamp. Rds	5.00@ 5.10	5.00@ 5.10
Pool 2, Hamp. Rds	4.80@ 4.90	*4.75@ 4.85*
Welsh, Gibraltar	50s. f.o.b.	*47s. 6d. f.o.b.*
Welsh, Port Said	64s. f.o.b.	*62s. 6d. f.o.b.*
Welsh, Singapore	75s. ex. wharf	*70s. ex. wharf*
Welsh, Rio de Janeiro	75s. f.o.b.	*65s. f.o.b.*
Welsh, Algiers	50s. f.o.b.	*45s. f.o.b.*
Welsh, Malta	60s. f.o.b.	*50s. f.o.b.*
Welsh, Lisbon	57s. 6d. f.o.b.	*57s. 6d. f.o.b*
Welsh, La Plata	70s. f.o.b.	*60s. f.o.b.*
Welsh, Madeira	57s. 6d. f.a.s.	*52s. 6d. f.a.s.*
Welsh, Teneriffe	57s. 6d. f.a.s.	*52s. 6d. f.a.s.*
Welsh, Genoa	58s. t.i.b.	*55s. t.i.b.*
Durham, Newcastle	35s.@ 37s	*35s.@ 37s*
Belgian, Antwerp	110 fr.	*110 fr.*

C.I.F. Prices, American Coal

(In Gross Tons)

	Sept. 24 Low Vol.	Sept. 24 High Vol.	Oct. 1† Low Vol.	Oct. 1† High Vol.
River Plate	$9.90	$10.30	.....	.....
French Atlantic	9.10	9.45	*$8.75*	*$8.50*
United Kingdom	9.10	9.45	*8.80*	*8.60*
West Italy	9.30	9.70	*8.90*	*8.60*
Scandinavia	10.85	11.20	*9.70*	*9.25*
Cuba	6.10	7.40	.....	.....

These quotations are purely nominal and as far as can be learned, no business is being done in these markets.

Current Quotations British Coals f.o.b. Port, Gross Tons

Cardiff	Sept. 24	Oct. 1†
Admiralty Large	31s. 3d.	30s. @ 32s 6d
Steam, Smalls	19s. 3d.	*17s.6d@19s.*
Newcastle:		
Best Steams	29s.	*27s. 3d.*
Best Gas	28s.	*27s@28s.*
Best Bunkers	27s. 6d.	*27s.*

†Advance over previous week shown in heavy type, declines in *italics*.

Reports From the Market Centers

New England

BOSTON

Better Market Tone, but No Real Improvement in Demand—Barge Freights Reduced on Bituminous—Consumers Buy Only Sparingly—Anthracite in Better Request

Bituminous — Representative men in the trade talk somewhat more hopefully of the outlook for steam grades, but this is based chiefly on the fact that fewer low quotations on all-rail coal are heard now than was the case a fortnight ago. To the extent that less "distress" coal is offering at Tidewater there is also a slight improvement in that direction, although the number of recent purchases limits very materially the volume of coal that can now be absorbed even at bargain prices. There has been no such increase in production of manufactured goods to warrant any broader market than would be represented by consumption during the same period.

At points so far inland as the Connecticut River there have been shipments of Hampton Roads coals that were rehandled at Boston, and this will show graphically the expanse of territory over which the Southern coals have spread this season. At Bangor, Maine, for instance, where the minimum Clearfield tariff is $6.82, there have been quotations of $6.15 alongside (gross tons) for Pocahontas and New River. This is an extreme case, but it is easy to see that with mining costs so much less in West Virginia than in most sections of Pennsylvania the average shipper of Cambria, Somerset, and Clearfield coals may as well bow himself out until the situation is radically changed.

In territory that continues to be regarded as strictly an all-rail preserve there is only the same light scattering demand. Numbers of small buyers are entering their orders, the signs of cooler weather having persuaded them there is small hope of lower prices. More and more the operating interests are adopting the policy of a fixed minimum price below which they will not quote and what faith there is in the current market is due to that practice.

Momentary interest was aroused by the announcement of the P. & R. Ry. that effective Oct. 1, temporarily, the rates on bituminous in company barges, Philadelphia to Eastern points, would be reduced 50c., making the new rate to Boston $1.10, instead of $1.60 as formerly. With outside marine freights from Norfolk and Newport News still quotable at 85c.@$1 on barges of 2,000 to 4,000 tons, and Navy acceptable coals offering at $4.75@$5 f.o.b. vessel at the Roads, it is clear that the new rates on Reading barges will hardly result in much increase of tonnage via the Philadelphia piers.

Even at the low range of quotations on Pocahontas and New River, the tonnage absorbed begins to show a decline. Most of the sales are of smaller tonnage than a fortnight ago. Then, too, there has been widespread complaint of preparation, due doubtless to the effort of smokeless operators to concentrate mining in two to three heavy days per week. In other words, many of the larger consumers are a bit weary of being pressed to buy, and are disposed now to go light on purchases.

Anthracite—Domestic sizes are now all in fair request, although egg and pea with several of the shippers are hard to move.

For the first time in the present calendar year retail prices in Boston were advanced 50c. per net ton on sizes from broken to chestnut, making the new figures $15.50 for stove and chestnut and $15.25 for broken and egg. Pea size remains unchanged at $13.

Tidewater—East

NEW YORK

Warm Weather Retards Anthracite Market — Barley Scarce — Bituminous Market Quiet — Trade Conference on Export Situation.

Anthracite — With the exception of stove and chestnut, the demand for anthracite is not as strong as it should be at this time of the year. Stove coal at times is only sold by some shippers when taken in conjunction with other sizes. Chestnut is gaining strength steadily and is in heavy demand by the line trade.

Outside of pea coal, egg is the weakest of the domestic grades. There is plenty available, even the companies finding it the hardest to move. It was reported that considerable was being sent to the storage piles.

Pea coal is accumulating rapidly. Some distressed pea was quoted $4.50@$5, although the average quotations were about 50c. higher. Other independent and company quotations are shown in the Weekly Review.

The steam coals, with the exception of barley, remained quiet. Barley was scarce and the quotations for the independent product remained close to company schedule. The low prices asked for the cheaper grades of bituminous coals was given as one reason for the slow movement of buckwheat, it being stated that some consumers were using these grades instead of anthracite. Rice was not much stronger. Some shippers were refusing orders for these coals for shipments extending a couple of months ahead.

Bituminous — The market seems asleep. There is no activity and nearly everybody acts as if waiting for something to happen. Were it not for the demand along the line it does not appear as if it would be necessary for the mines to work as steadily as they do. There is no large amount of coal here, due to the refusal of shippers to have coal sent to Tidewater unless there is a strong possibility of it being sold at once.

While spot business has not become stronger there have been many inquiries and some small tonnages have been booked for shipment a couple of months ahead. The efforts to introduce bituminous for household consumption in the nearby cities and towns are being continued and some success is reported.

There is a strong belief that consumers will go short of fuel this winter unless they soon begin to stock up. Public utilities are reported as taking in heavy supplies but the industrial user is not heeding the warnings of the railroads and producers.

There has been no change in the export market but hopes are expressed that freight rates can be reduced sufficiently to put the American trade on a competing basis again with English producers.

Quotations for various coals were heard as follows: Ligonier, around $1.70; Miller Vein "B," $2.10; Westmoreland gas 3-in., $2.75@$3; slack, $2@$2.25, and Kentucky cannel, $6@$6.25.

PHILADELPHIA

Anthracite Demand Checked by Warm Weather — Rumors of Stove Price Increase—Steam Improves—Bituminous Demand Light — Railroads Storing — Market Prices Firm.

Anthracite—Unusually warm weather has sapped much of the demand. The changed conditions in the city were soon felt by the shippers and they have lately been hard pressed to take care of production, as dealer after dealer was compelled to hold orders.

The trade has been quite anxious as to prices for October, but as usual the companies have delayed announcing their schedules. While it is believed that no radical changes would be made in company coal, there is, however, a persistent rumor that one of them at least intends to make a considerable advance on stove in order to relieve the pressure which has been on that size all season. The same report has it also that pea coal would be reduced.

It would seem that the time has arrived when a better call for steam coal has set in. Buckwheat is in good demand; in fact independent buckwheat is being sold close to the circular price of $3.50. While rice has improved, it is believed that barley has done even better. There has recently been a great

increase in the installation of improved stoking devices using this size and good shipments to meet the demand have recently been coming into the city.

Bituminous — With Oct. 1 reached and passed with no pronounced improvement, the soft coal people are wondering just when the real demand will set in. Some interests consulted are actually fearful of a sudden demand that will be of no benefit to any one.

The trade is certainly undergoing changes that no one had ever anticipated. We know of producing houses with mines shut down who are buying coal from other producers at a price less than the purchaser could mine it. One thing is certain and that is the strictly brokerage house, with no mining overhead, is the only factor in the trade making any money these days.

Railroads recently have been storing up on high-volatiles in anticipation of a possible rail strike. They claim they do not expect any trouble, but they are taking advantage of conditions to lay by some stock. Most of this coal is being taken at contract prices ranging $2.60@$2.75.

The spot market shows no changes of note, although the good grades gain in firmness from week to week. Most of the trading, at least 80 per cent, is of Pool 9 and 10 fuels.

BUFFALO

No Real Improvement — Some Better Industrial Conditions — Stronger Demand for Iron—Anthracite Slow with Warmer Weather.

Bituminous — Demand does not increase. As a rule, the shippers report September to have been less active than recent months. There are plenty of daily paper notices of this or that plant starting up, but nothing is said of the cause of activity.

It is probable that more iron will be turned out here in the next three months than has been during the last three, but it also appears that stocks have run down pretty badly. Everybody is hopeful, but no one is predicting activity to any great extent right away. Meanwhile the average business man will keep going at such a pace that he will be ready to take advantage of the stir.

It is hard to size up an industry that is so devoid of new points as is the case with coal. The fact is that the report of six months ago would answer in almost every respect for today.

Bituminous prices continue at $3 for Youghiogheny gas lump, $2.75 for Pittsburgh and No. 8, steam lump $2.50 for Allegheny Valley and other mine run, $1.75@$2 for slack, adding $2.36 to Allegheny Valley and $2.51 to other coals for freight.

Anthracite — The unusually warm September has no doubt shut off buying considerably, although the disposition to purchase at all liberally has been lacking since April. The independent operators, who used to get $3 or more premium and will no doubt get it again next winter, are in great part idle now, because they cannot run at a profit. They are selling at about 30c. under the old-line prices and getting a slow trade at that. The regular supply has run down some, but is still fair, and in the absence of the strike of a year ago, shows an increase of production.

Lake—The movement is not what it was a month ago, but it may have been found that the amount already forwarded was too much in excess of last season. Loadings for the week ended Sept. 28 were 100,320 net tons, distributed as follows: Duluth or Superior (shipper's option after sailing), 42,400; Chicago, 21,600; Milwaukee, 16,200; Fort William, 10,500; Racine, 8,000; Hancock, 1,620. Excess tonnage caused by the big rush of grain keeps freight rates easy at $1 to Racine, 75c. to Hancock, 65c.@70c. to Chicago, 60c. to Milwaukee, 50c. to Duluth and Ft. William.

Coke—The market is still somewhat disturbed by conditions in the Connellsville district, but demand has not increased. Asking prices are a trifle more than formerly, being $4.50@$4.75 for 72-hr. foundry, $3.75@$4 for 48-hr. furnaces, $3.25 for stock and $4 for chestnut-size domestic, adding $3.64 for freight.

BALTIMORE

Export Situation Poor — Soft Coal Trading Slightly Increased—Anthracite Movement Declines Further.

Bituminous—The export situation is not only unsatisfactory but it is indicative of the general trend of the market. During September, there was shipped from Baltimore a total of 25,443 tons cargo on five ships and 2,895 tons bunker on four ships. The American flag was missing in this movement, as three of the ships were British, one Japanese, and one, a bark, Brazilian. The coal went to the following countries: Argentina, 12,106 tons; Italy, 5,614 tons; France, 7,207 tons; and Brazil, 506 tons.

In the local market there is a slight stimulation. Prices for best steam coals still hang around $2.50@$2.75, while the best grade gas lump is on the market around $2.35@$2.50. Lower grade coals, both steam and gas, but still of desirable variety, range $2@$2.40. Lowest grade steam and gas is $1.50@$1.75.

Anthracite—The householder is not buying in the quantities which should mark this season, even if there were no shortage of supplies in cellars. When it is considered, however, that the Baltimore district is now short by more than 120,000 tons of normal in cellars and yards for the start of October, the seriousness of the situation can be realized if a hard winter comes on.

September receipts fell off from those of August, instead of increasing. Dealers cannot figure how they will be able to supply demand if everybody wants coal at one time. The fact that money is not free in many homes is likely to lead to one and two ton purchasing, however, and this will have a tendency to stretch buying over the winter months. Even this, however, will not prove a complete panacea for the trouble.

Northwest

DULUTH

Smaller Coals Break in Price — Good Country Movement — Cargo Receipts Lighter—Iron Range Trade Slow.

Increased shipments from the docks together with sharp and somewhat demoralizing breaks in buckwheat and screenings featured the Head-of-the-Lakes market this week. Decreased receipts and absolute inactivity among the large consumers of the Mesaba iron range were also noted. Dockmen, however, predict that any surplus supplies left on the docks next spring will be needed as a stop-gap to a possible shortage and late shipments.

Screenings dropped from $4 to $3.50 and buckwheat from $7.50 to $6. All other coal prices are remaining firm with no indication of a break, and tendencies are toward a strengthening market.

An increase in shipments is most noticeable and September will see the August record of 20,000 cars smashed. Country buyers generally are taking all the coal possible and are showing a disposition to co-operate in the movement to clear the dock congestion. They are handicapped, however, by a lack of funds and a curtailment of bank credits.

Discouraging reports have been heard from sales agents who have toured the iron ranges recently. But few companies are operating and those who are moving ore are buying their coal from the surplus stocks of the companies who have closed down.

Last week twenty-four cargoes arrived here, of which five were anthracite, and twelve are reported on the way, four being hard coal. Docks are being kept open by this shut-off and it is not necessary to tie boats up in the harbor waiting for a chance to unload.

MINNEAPOLIS

Domestic Buying Restricted to Small Lots—Steam Users Secure Bargains—Industrial Consumption Slightly Heavier.

Killing frost has not struck the Twin Cities at this writing, and until it does, there will be no real rush of retail orders. It appears as though the ultimate consumer is as obstinate in his coal buying as in anything else that he will or will not do. He is buying as he sees fit. This has resulted in smaller orders right through and will extend the distribution of tonnage over a broader field. So long as this keeps

up, and the round of deliveries is uninterrupted, it will mean less complaint, perhaps, than when larger loads were sent to one address. And if the mild weather is prolonged long enough, the retailers will get through the rush period with little trouble.

Steam buyers are simply holding back until the last minute and are shopping for cheap coal in every way possible. More than that, they are getting frequent purchases at bargain figures. Between keen competition and some demurrage coal, they are scoring rather often.

So far there has been but a limited pickup in industrial operations. The general tendency is to delay buying of commodities of all kinds, and this means that manufacturing is held back accordingly. It is far from assured that there will be any material increase in manufacturing in the near future. The deflation period in costs has taken away all incentive to buy until it has become imperative. And under the commercial conditions now prevailing, it takes quite a while for buying of commodities to become necessary.

There is not even the incentive of a threatened shortage left to urge early buying. The only lugubrious possibility left is a car shortage, and that is being brought out and dusted off in some quarters. But it will take a considerable increase in rail traffic before this becomes imminent.

MILWAUKEE

Moderately Increasing Demand — Survey Allays Fear of Coal Famine — Municipalities Going Into Coal Business.

Demand shows a moderate increase, but it will take a spell of sharp weather to inject real life into the market. An announcement by the State Division of Markets that no decrease in the price of anthracite can be expected, will, no doubt, have a good influence in stimulating a proper demand and relieving the dock storage situation.

As a result of a survey of the coal situation, state officials announce that there is no danger of a coal famine during the coming winter. The survey developed the fact that the price of anthracite is considered too high by dealers, but that they are powerless to remedy the condition, inasmuch as the price is dictated by Eastern producers. Coal companies at Milwaukee, Racine, Superior and Ashland average 35c. per ton net profit. The larger the concern, according to the survey, the smaller its profit.

The City of Superior, Wis., is offering hard coal at $14.50 for chestnut, and $12.50 for pea size, delivered, the price being $1 under that set by retailers. Soft coal will also be sold by the municipality.

September receipts by Lake thus far aggregate 102,492 tons of anthracite, and 158,892 tons of soft coal, making the season's receipts 747,722 tons of the former, and 2,005,072 tons of the latter.

Inland West

CINCINNATI

More Activity in Domestic Market—Smokeless Shows Wide Range—Retail Prices Vary.

Southeastern Kentucky operators, who have on several occasions been leaders in price cutting, were again active this week, and as a result of increased orders for prepared coal and the figures they named, slack could be bought under $1. Lake buyers are practically out of the market and what movement there is in that direction has been on contract.

Some smokeless dealers have been inclined to follow the Western markets, which were weaker. Spot sales have quite a range but the general price seems to be $4.25@$4.50 for lump, nut $3@$3.50, mine run $2.25 up, and slack $1.25 up.

Slack was about the only grade that changed price in the bituminous market, spot sales being $1@$1.10 and mine quotations $1.15@$1.35; mine run could be had freely at $1.50 for Kentucky and up to $1.75 for West Virginia. Southeastern Kentucky lump and block still holds around $3@$3.50, while West Virginia splint and gas can be had around $2.75, with better grades bringing up to $3.50.

Retail prices are: Smokeless slack $6.75, mine run $7.50, lump $9.50@$10.25; bituminous, lump $7.25, mine run $6 and slack $5.50.

CHICAGO

Retail Yards Full—Domestic Rush Predicted — Steam Trade Gets Bargain Prices.

The opening of the fall season finds the average householder in Chicago practically unsupplied with coal. The retail dealer has his bins full, but should there be a rush for coal, as is bound to come, it will be found that there is not three weeks' supply on hand. This is a fairly radical statement, but it is made only after a very careful investigation. Experience has shown when a retail dealer once gets his yard emptied in the face of a great demand, it is very hard to fill his bins once more.

The steam situation is no different than it is throughout the country; in short, there is so little manufacturing activity that steam coals are a drug on the market. Very close prices on 2-in. screenings and on smaller size screenings have been made this week. Operators in Illinois, especially, who have been storing their screenings all summer, have now reached the point where they have to move these great quantities and competition has been extremely severe. It is a noteworthy fact, however, that a great deal of the coal sold at low prices has proved upon inspection to be freshly mined.

The Chicago trade is once more being swamped with circulars offering smokeless coal at bargain prices. This has brought very little business as the trade has as much coal on hand as it can stand. Some enterprising dealers, however, have leased ground along their sidings and are taking advantage of cheap prices, buying coal at a bargain and storing it on the ground.

CLEVELAND

Conditions Point to Buying Impetus—Retail Trade Gradually Improving—Lake Tonnage Expected to Increase.

It is predicted that by the middle of October a fair degree of industrial buying will begin. This is based upon such considerations as the perceptible improvement in various lines of manufacture, the excessively low stocks at industrial plants, and the nearness of cold weather. Another influence which is expected to give some impetus to buying is the possibility of a railroad strike. Such an eventuality would cause a coal shortage to develop almost overnight because of the lack of surplus stocks in Cleveland.

Industrials are continuing to inquire for coal, but hand-to-mouth buying is the order of the day. One dealer says that some of his customers are running so close to the margin that if a car of coal happens to be twelve hours late in delivery a call is sent out to hurry it up. Slack coal is somewhat weaker. Other grades remain unchanged.

September Lake shipments dropped about 750,000 tons from the August total, the aggregate movement being 2,250,000 tons. An increase is expected to develop this month and the season probably will be ended by Nov. 1.

Receipts of bituminous coal during the week ended Sept. 24 were 1,014 cars, divided: Industrial 686, retail 328; as compared with the total of 1,159 cars the preceding week, a decline of 145 cars.

Retail delivered prices follow: Anthracite egg and grate $14.20, chestnut $14.15, stove $14.20@14.40, Pocahontas shoveled lump $11.25, mine run $9@$9.25; domestic bituminous, West Virginia splint $9.25; No. 8 Pittsburgh $7, cannel lump $11.50; steam coal, No. 6 and No. 8 slack $4.25@$4.50, No. 6 and No. 8 mine run $5.50, No. 8 3-in. lump, $5.75.

ST. LOUIS

Sudden Stiffening in Domestic Demand —Prices Advance — Steam Market at Standstill.

The past week with its talk of a railroad strike and an advance in retail prices has caused a demand for domestic fuel. Carterville is moving fairly well, but many former users are going to cheaper coals. This has favored Mt. Olive and Standard. Business is just slowly approaching what it should be.

Anthracite is quiet. There is no smokeless moving, but coke, both gas and byproduct, is doing well. This fuel is taking the place of Carterville coal to a large extent.

There is so little steam business that it does not count much. No storage

coal is going in to any extent anywhere. A slowing up in equipment is noticeable at certain points.

Coal advanced on Sept. 20 around 25c. Another increase is expected on some grades shortly if Standard and Mt. Olive are raised at the mine, and Standard must advance. Present retail prices are: Carterville, $7.75; Mt. Olive, $6.50; Standard, $5.50.

DETROIT

Hand-to-Mouth Steam Buying—Domestic Movement Better—All Receipts Are Light—Anthracite Demand Stronger.

Bituminous—Offerings of high grade bituminous are not arousing the interest among Detroit buyers that wholesalers believe it is reasonable to expect, in view of the limited volume of buying throughout the greater part of the year. While some have a moderate reserve accumulation others are seemingly proceeding on the assumption that coal will be available in the spot market whenever they find purchases necessary.

Some of the steam plants are buying in small lots and only when bargains are offered. Jobbers say it is unreasonable to expect continuance of the present free movement of coal after winter interferes with transportation facilities.

West Virginia 4-in. lump is quoted $3.25, 2-in. lump at $3, egg at $2.50, mine run at $2, nut and slack at $1.50. Three-inch Ohio lump is $3.25, 2-in. $3, egg, $2.50, mine run $2, nut and slack $1.35. Pittsburgh No. 8 three-quarter lump is $2.40, mine run $2.10, nut and slack $1.65. Smokeless lump and egg is $5.25, mine run $2.90 and nut and slack $1.60.

Anthracite — Orders from domestic consumers are coming to retail dealers very slowly. Yard stocks are at present of fair proportions, but should cold weather bring a rush of buyers, the available supply may disappear speedily.

COLUMBUS

Domestic Is Somewhat Spotty, Although Improved in Cities — Steam Trade Quite—Prices Fairly Steady.

Domestic demand is rather unsteady. Operators and jobbers report a good call for a few days and then a reaction, with business slowing up considerably. Retail trade is fairly good, although weather conditions have been unfavorable. Householders are buying actively, however, and many are asking for the higher grades such as Pocahontas and New River. Hocking and Pomeroy grades are also moving fairly well. Retail prices are firm. Hocking lump retails at $6.50, West Virginia splints at $7.50, Pocahontas at $9.50, and anthracite at $15. Coke is quoted around $11.50 for all sizes.

Steam business continues slow and screenings are a drag on the market. Railroads are not doing much toward buying and the same is true of large steam plants, with the exception of public utilities. Some reserve stocks are still held and this is a disturbing factor. Prices for screenings have been reduced to low levels.

Lake trade is still slow. Some coal is still being shipped although indications point to an early closing of the season. The H. V. docks at Toledo during the week ended Sept. 24 loaded 91,790 tons as compared with 114,944 tons the previous week, making 3,365,471 tons for the season. During the same week the T. & O. C. docks loaded 31,152 tons as compared with 35,605 tons the previous week, making a total of 885,260 tons for the season.

South

BIRMINGHAM

Demand Sluggish for All Grades—Slight Price Changes—Operating Conditions Somewhat Improved.

The trade continues to subsist mostly on hope of better conditions, but when it comes to material improvement little change is to be found in the status of the market. Consumers continue to hold off except to provide for needs as they can forecast them in the immediate future, partly because they have no urgent requirements for large tonnage, and also because the belief prevails in some quarters that there will be a reduction in freight rates later on as a result of the order issued to the railroads by the Alabama Utility Commission to appear and show why reductions should not be made in various transportation charges, including coal. However, coal men are sure that no relief will be afforded in this direction for some time to come.

Buying is all of a spot character and tonnage requirements are comparatively light from the commercial field. Prices are shown in the Weekly Review. The domestic situation is without change, there being little wholesale demand due to the stagnant retail market.

Operations are somewhat improved by the demand from furnaces and coke operations which have been resumed to some extent. Commercial mines and domestic plants, however, are working on short and irregular schedules.

LOUISVILLE

Market Generally Weaker—More Distress Coal Depresses Prices—Slower Domestic Movement.

The past week has brought little but gloom to Kentucky operators and jobbers. Cooler weather has resulted in a much better demand on the retailers, but most of these have fair stocks, and are not buying. Industrial demand is very poor, and all steam grades are weaker.

Efforts made recently to increase prices of prepared sizes to $3.75 for the best grades, were followed by reductions down to $3.50 as the top price. Hazard screenings have slumped to as low as 75c.@80c., and Harlan screenings to $1.25, while mine run from eastern Kentucky, which has been holding well above $2, is quoted down as low as $1.75 for Hazard.

Conditions in the South are looking better, but there has been no material improvement in actual shipments or sales. Cotton mills and cotton-oil plants are expected to soon start buying more freely.

Consumers realize that the coal trade is in the dumps, and this is shown vividly, where when the consumer refuses a price, the salesman says, "Well, make us an offer."

News From the Coal Fields

Northern Appalachian

EASTERN OHIO

Production Declines—Outlook Improves as Iron and Steel Industry Picks Up—Temporary Lake Spurt Seen.

Production amounted to 326,056 tons during the week ended Sept. 24, which is 52.2 per cent of the rated capacity, thus registering a decrease of 16,000 tons under the preceding week. Accumulated figures for the year show an aggregate production of 12,784,171 tons which reveal that the mines have produced nearly 54 per cent of capacity.

Spot prices are firm. The railroads are not taking any less volume of coal, and if anything their requirements are increasing, as reports indicate that somewhere around 35 per cent of the production at the present rate is going to the carriers. More encouraging signs as to industry were in evidence during the week. The iron and steel mills, and especially those in the Mahoning Valley, embracing Niles, Warren, Youngstown, etc., are speeding up. While the majority of coal operators do not expect any unusual favorable developments within the next few months, they are, however, quite sanguine in the opinion that there will be a gradual and steady improvement, predicated upon a similar improvement in all lines of industry.

Lake coal loading is running along at about the same mediocre clip and some cut has been made in stocks on hand. The railroads are averaging less than 9,000 cars of cargo coal daily at the Lake front; dumpings average from 1,600 to 1,800 cars per day. Some dock operators feel that, in view of the recent relief in the congestion at the Upper Lakes, and the further fact that under present tariffs the reduced

rate on cargo coal from the mines to the lower docks expires at midnight on Oct. 31, a spurt in the movement is not unlikely during October.

CONNELLSVILLE

Operators More Anxious to Sell—Furnace Inquiry Light—Foundry Coke Demand Slowly Improving.

Operators are more anxious than formerly to do business, several being desirous of getting ovens started even though little profit is involved, and thus there has been quite a change in sentiment in the past few weeks, since recently the almost universal disposition was to sit still and wait for demand to come back in volume.

In spot furnace coke there has been very little business, but there has been an improvement in the demand for small lots for outside uses, with slightly better prices paid particularly on single carloads, which have not infrequently brought $3.50 to dealers, who closed with operators at $3.35.

In contract furnace coke inquiries recently said to be in the market have disappeared. In one or two cases purchases of byproduct coke were made from steel works, while in others the furnaces involved have probably postponed the contemplated blowing-in.

Demand for foundry coke for prompt shipment has continued to grow steadily and there is now a rather fair movement for a spot market, but the tonnage is small when one considers that there are scarcely any contracts in force so that nearly all the foundry coke consumed has to be bought in the open market.

We quote spot and contract furnace coke at $3.25@$3.50 and spot and prompt foundry at $4.25@$4.75. The *Courier* reports production in the week ended Sept. 24 at 14,400 tons by the furnace ovens, and 29,360 tons by the merchant ovens, a total of 43,760 tons, an increase of 2,390 tons.

PITTSBURGH

Production under One-Third Capacity —Demand Chiefly for Gas Coal—Some Improvement in Industry.

Production has been averaging between 25 and 35 per cent of capacity. The majority of the mines are closed entirely. Competitive prices made by nearby non-union fields is such that there is production in the Pittsburgh district only from specific reasons. There is the local domestic demand, supplied by river and short rail hauls. In gas coal the district has much trade that cannot go elsewhere, by reason of quality. There are some contract shipments in steam coal but the tonnage is small relative to normal, and finally there is still some Lake business.

Operators have been expecting a large increase in demand this fall and are somewhat disappointed at the small improvement that has occurred thus far. There is nothing new in the wage situation and little prospect that miners will make any concessions so as to put the district on a really competitive basis.

The industrial situation has distinctly improved in the past few weeks, but there is little reflection of this in increased demand. Quotable prices are the same as a week ago, being regular market prices on gas coal, but hardly more than asking prices on steam coal.

CENTRAL PENNSYLVANIA

Production Increases — Outlook Improved — Checkoff Injunction Suit Watched with Interest.

During the week ended Sept. 24, production averaged 2,340 cars per day, which is the highest since July 1. Indications point to a further increase. Prices remain unchanged.

Operators are watching with considerable interest the outcome of the injunction suits in the West Virginia field, instituted to restrain the operators from collecting the checkoff from miners. If the injunctions are granted it will bring producers face to face with the issue of stopping the collection of the checkoff, or facing damage suits. In this field, it is a part of the contract with the miner's union to collect the checkoff and failure to collect it will doubtless mean a walkout.

It is evident that if the miners' national convention adjourns without adopting a scale, the district convention on Oct. 18 will follow suit and the scale question will be deferred until some time in February.

UNIONTOWN

Pronounced Improvement in Coke Industry — Coal Market Steadies — Contract Inquiries Increase.

Further indications were given this week in the Connellsville region of return of the coal and coke industry to "normalcy." While the improvement is more pronounced in coke, the coal trade is also showing signs or recovery, a number of the smaller mines being placed on a productive basis.

The coal market improvement has not yet affected spot quotations, the basis remaining at $1.50 for steam and $2 for byproduct, most of the mines being opened having secured contract orders. There are yet no operators who are willing to resume operations upon the hope that the spot market will absorb tonnage produced at advantageous prices.

The coke market has definitely sought a higher level, the base for furnace coke now being $3.50. Supporting the increased prices is a fairly live demand.

Three large Frick plants, Trotter, Continental No. 1 and York Run have resumed operations, shipping raw coal to U. S. Steel subsidiaries. Those plants, together with Leisenring No. 1, are to be placed on a six-day basis. No Frick plants are making coke but a number of ovens were fired at plants of the W. J. Rainey, which after being idle for several weeks because of labor trouble, started mining coal for the company's byproduct plant at Swedeland, Pa. That the company has returned to coke making is considered significant of the returning demand.

ANTHRACITE

Demand Growing—Independents Find Ready Market—Operating Conditions Improve.

Independent operators are moving practically all sizes, and the demand for stove, chestnut and sizes under buckwheat is greater than the supply. There is a good call for other grades but this demand is somewhat intermittent.

As each week passes, operating conditions continue to improve. Of course, the closing of the Glen Alden mines and other smaller companies has had a tendency to decrease the supply, while the demand is increasing.

FAIRMONT AND PANHANDLE

Markets Show No Improvement — Heavier Distress Tonnage—Slack Hard to Move.

Fairmont

Market conditions showed no improvement during the week ended Sept. 24. Even inquiries were rather scarce There was much distress coal offering This was especially true as to slack and unconsigned loads were accumulating rapidly in the northern part of the state.

Northern Panhandle

Aside from the small tonnage shipped to Northern and Inland West markets producers had little business to keep them going. Spot buying was almost at a standstill and slack coal was especially hard to move. The contract market was dormant.

UPPER POTOMAC

Operating Conditions Still Unfavorable—Prices Low and Outlook Poor.

Nearly all the mines remained out of commission during the week ended Sept. 24, owing to their inability to secure orders. With the prevailing non-union and lower mining rates effective in competitive fields, operators were not in position to secure even the small lots of spot business that were offered.

Middle Appalachian

LOW-VOLATILE FIELDS

Smokeless Fields Hard Hit by Tidewater Slump—Western Domestic Market the Main Spot Outlet—Slack Coal in Distress.

New River and the Gulf

Dullness was even more pronounced in the New River field during the week ended Sept. 24 and production did not exceed 40 per cent of capacity. Mines were not working more than two days a week. The surplus of cars was materially reduced as a result of the continued Western movement. With spot

buying curtailed, it was contract orders that kept mines going.

Gulf production averaged only 35 per cent of capacity. Operators were handicapped by a poorer Tidewater demand and prices were about as low as those prevailing throughout September.

Pocahontas and Tug River

Although the Pocahontas output was a little larger than during the earlier part of September, inability to find a market for the tonnage usually sent to Tidewater was hampering production to a great extent. The only spot market was in the West, consisting largely of prepared orders. Slack was off badly and retained its distressed position. Production was largely limited to filling contract orders.

Tug River producers held the output to about 80,000 tons, but there was little spot business available. The best movement was to Western points, which caused a shortage of cars at some mines. There was, of course, no market at Tidewater, and prices remained soft.

HIGH-VOLATILE FIELDS

Logan and Thacker Sales Improve—Warm Weather Halts Domestic Call—Railroad Fuel Loading Increases.

Kanawha

Unconsigned coal flooded the market last week to such an extent that it prevented any improvement in conditions. Unseasonably warm weather had curtailed the demand for prepared sizes and there was a like recession in the call for slack coal.

Logan and Thacker

Logan sales were on a larger scale during the week ended Sept. 24. This additional industrial demand made it possible for more operations to resume work. Prices, although not advancing, showed more firmness than in the past three weeks.

In the Thacker region conditions appeared a little better, although the output was not over 40 per cent of capacity. Open-market buying was still very limited and there was little if any coal shipped East. The best market was in the West, although railroad fuel loading was an important item. Labor troubles failed to interfere in any way with the production, mines having all the men needed.

Northeastern Kentucky

Most of the mines remained shut down. There was a slight increase in domestic demand but this was offset by a sluggish slack market, and the week's output did not reach 40 per cent of capacity.

Virginia

It was impossible to get production above 50 per cent of capacity because of heavy "no market" losses. Producers were just about holding their contract orders, as there was practically no spot business to be had.

Middle West

MIDWEST REVIEW

Domestic Stimulated Slightly—Heavy Competition from Eastern Coals—Steam Market Unsatisfactory—Distress Among Miners.

More seasonable weather has succeeded in stimulating to a very mild extent the demand for domestic coal. However, conditions do not compare at all favorably with the same season in almost any pre-war year. Under ordinary circumstances, this time of the year sees a big domestic demand, which even in dull years cannot be taken care of promptly. This year the natural and usual demand is conspicuous by its absence.

Franklin County operators are holding their domestic coal at $4.05. In doing this they are laying themselves open to very keen competition from West Virginia and Kentucky operators who are selling their coals freely in the Northwest at lower prices. The difference in the cost at the mines just about wipes out the differential in the freight rate between the coals from the two competitive fields. As Eastern coal is generally of a higher grade than the Illinois or Indiana products, it can be very readily seen that the Middle West operators are suffering from this competition.

The steam coal market continues very unsatisfactory. Operators producing coal from the southern Illinois districts which are now favored by the steam buyers, have had to cut their prices on screenings as low as 70c. in order to find a buyer. The rather alarming desire for a strike on the part of some of the railway brotherhoods has made absolutely no difference in the demand for steam coals. Those in a position to buy coal in large quantities feel very strongly that the men cannot afford to call a strike at this time, taking into consideration the fact that there is so much unemployment in the country. Furthermore, purchasing agents are discounting all talk of a strike next spring. They claim the condition of the country is such that everyone, including the United Mine Workers, must take a reduction in wages. They figure that a great many mines have already taken a reduction, and it is only right and fair for the United Mine Workers to shoulder their share of the burden.

Many mines which have been down all summer are still idle while those in operation have been working on an average of only two or three days a week. One interesting angle from the point of the United Mine Workers is the fact that in spite of the high wage scale, the average miner is not being given an opportunity to earn anywhere near as much money as was made last year.

Miners are having great difficulty in making both ends meet in view of the fact that their incomes have been so seriously curtailed. It can be easily understood they are going to put up a serious fight next April in order to maintain their present scale. Actual disturbances on the part of miners, engineered and put over by radicals in the ranks of the United Mine Workers, have been growing less and no serious difficulties are expected in the near future.

SOUTHERN ILLINOIS

Sudden Activity in Domestic—Steam Lagging—Kentucky and Alabama Competition Narrows Market.

There is a diminishing market in the Carterville field for steam coal. How long it can go on is the question. Carterville screenings are well below $1. Cars are just a trifle slow at places, the first touch of the coming shortage.

Coal in storage may be a big winner within nine months, for the most elaborate fight to a finish that has ever happened is likely to be the one that opens up on April 1. The public seem to be in the dark on this issue as yet and when it does dawn on them it will, by its own action, cause a price condition that will perhaps compensate the operator for these summer months of leanness.

The Duquoin and Jackson County situation is somewhat similar in every detail to that of the Carterville field. It is understood that for the first ten days in October the price will not increase on lump and egg. In the Big Muddy field at Murphysboro good working time prevails, although screenings are in the way here, as elsewhere.

Mt. Olive working time averages four days or better. Steam moves mostly on contracts, but open market screenings bring $1. Country prices on domestic are about $3.75, city prices $3.

The Standard field is coming along in places. Some mines have been idle for a week at a time on account of congestion of screenings, which are down to 25c. Railroad tonnage shows up well. Average working time is two to five days. Shipments are pretty well scattered. The southern market of Louisiana, Arkansas, east Texas, Mississippi, west Tennessee, and Kentucky, as well as southeast Missouri is about lost to Illinois coal on account of high rates and higher prices than those of higher quality Kentucky and Alabama coals. This with the oil burners has almost eliminated Illinois from one of its former strongholds.

WESTERN KENTUCKY

Fair Domestic Demand at Steady Prices—Steam Coals in Distress—Business Showing No Material Improvement.

There is some little improvement in demand for prepared coal but the industrial call is weaker if anything, and screenings are selling at ridiculously low prices. This weakness has also resulted in some cutting on mine run.

Pea and slack have moved as low as 50c. This is distress coal, as the general average on screenings is $1.35, based on quantity business moving at 85c.@$2. While the mine run market is quoted at an average of $2.45, based on a range of $2.20@$2.75, some mine run is quoted at $1.95. Competition from southern Indiana, Illinois and eastern Kentucky has forced a lower market.

Operations are at about a two day average. Retailers have fair stocks in hand, and are holding back in buying additional supplies, as many are stocked to cover any normal demand until Jan. 1.

Many industrial concerns are burning only a small percentage of normal requirements, have fair stocks in hand, and are setting levels at which they will buy coal. This is well below the market and figured to catch distress shipments.

INDIANA

Slow Domestic Buying Retards Production—Labor Trouble Has Been Adjusted.

Production as a whole is more than 50 per cent of normal. The public is not yet buying coal in large quantities for winter consumption and until this trade picks up operators agree there will be but little improvement.

Mines in the vicinity of Terre Haute are working two and three days a week. The Bicknell field is working better than any other portion of the district. Trouble in Sullivan County has been adjusted and all the mines affected are at work.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Domestic Prices Advanced — Steam Coals Sluggish—Retail Trade Subsiding.

More coal was produced in Harlan and Bell counties during August and September than in any previous two months in the field's history, but while many mines have a good number of orders for October, the best posted dealers are not so optimistic over prospects as they were ten days ago.

Prices on best domestic coal have been firm and an advance of 25@50c. is being asked by most operators for October. Resultant grades seem to be holding up, but mine run continues to drag and this week has experienced the lowest prices of the year.

West

UTAH

Production on Increase—Retail Trade Sluggish—Prices Unstable.

Production continues around 65 per cent of capacity with a slight tendency to increase. The following figures are given on production: First six months, 1,729,456; first six months last year, 2,863,450 tons. Retail business is unsteady.

Consumers in a great many cases still seem unable to make up their minds to fill their bins for winter use and it is estimated that less than 20 per cent of the winter coal has been ordered so far. The price situation remains unsettled and becomes more bewildering to the public every day, which no doubt accounts for so many consumers withholding their orders.

WASHINGTON

Resumption with Non-Union Labor Reduces Prices—Trading Brisk and Outlook Satisfactory.

Production in the commercial mines is steadily increasing, the output in the past week more than doubling that of the previous seven days. Following the resumption of work in the mines with non-union labor late in August, after most of the mines had been closed for five months or longer by a strike, the operators express entire satisfaction with the progress made to date.

In keeping with the promise made by producers that retail prices would be reduced with the inauguration of a lower wage scale, Seattle prices were recently cut from $1.60@$2.80 per ton.

A brisk demand for Washington coal has been noted following the price cut and the operators are confident they will be able to supply the domestic demand with little possibility of a shortage arising during the winter.

The directors of the **Burns Bros. Coal Co.**, New York, have called a special meeting of stockholders for Oct. 31 to consider a plan to merge the business of the **William Farrell Sons Co.** with their corporation. The new Burns Brothers "B" stock, which is expected to be exchanged for the shares of the Farrell stock, was traded in on the Curb Market recently on a when-issued basis.

News Items From Field and Trade

ALABAMA

Responding to the turn made in the iron market, **The Central Iron and Coal Co.**, operating a blast furnace at Holt, in Tuscaloosa County, has begun preparations to resume manufacture of pig iron. It will also put 40 of its 60 byproduct ovens in commission and reopen the Kellerman mines.

The White Coal & Iron Co., owned by Chicago capitalists, has filed trust deeds for record in DeKalb and Marshall counties covering several thousand acres of mineral lands to secure a bond issue of $1,500,000, which it is reported will be used in development work. W. L. Smith, of Gadsden, is the Alabama representative of the company.

ILLINOIS

The Spoon River Colliery Co. has increased its capital stock from $75,000 to $200,000.

The Illinois Coal and Coke Corporation, which now owns about 25,000 acres of coal land in Jefferson County, is planning for the beginning of work on the development of what is said will be the largest coal mine in the state. This mine will be one of four big units to be constructed by the corporation in developing the coal field which has been acquired in the vicinity of Waltonville. A tract of about 4,000 acres lying north of Waltonville will be the first unit developed. A. J. Nason, head of the company, is president of two other coal companies besides the Illinois Coal and Coke Corporation. They are the Nason Coal Co. and the Nokomis Coal Co.

The Hamilton-Lester Coal Co., Marion, has been organized to operate coal properties. The company is headed by C. F. Hamilton and W. S. Burkhart.

The Wilmington & Franklin Coal Co. of West Frankfort are contemplating development work, consisting of two shafts and two steel tipples.

William B. Jess, president of the Springfield District Coal Mining Co. and head of the Peabody interests around Springfield, has been made a vice-president of the Peabody Coal Co. Mr. Jess will retain his headquarters in Springfield.

The American Atomized Fuel Co. was sued recently by the Hooton Lumber Co. of Terre Haute, Ind. Payment of $372.13 and attachment was asked in the suit filed in Superior Court No. 2. Labor of a number of men were the main items in the account submitted by the plaintiff.

James E. Anderson, Farmington, has been named special investigator of mines and minerals by the governor. Mr. Anderson is a graduate of Edinburgh University in Scotland and is a mining engineer by profession. He succeeds **James Taylor** of Peoria.

KENTUCKY

Henry Crice and Wm. J. Moore have affirmed ownership of the **Square Deal Coal Co.**, Louisville

The Dark Fork Coal Co., of Catlettsburg has amended its charter as held under the Kentucky laws so that an indebtedness of $100,000 can be incurred instead of the original $50,000 allowed.

Two suits have been filed against the **Four In One Coal Co.**, Louisville, which add to several already pending. One of these is by Eli H. Brown, for a balance of $3,500 due on a note of $11,000. The other is by the Ohio River Sand Co., for $360 for rental on property at Thirtieth and Broadway.

Dr. W. B. Jillson, Kentucky Geologist, has arranged to supply maps and materials, showing mineral products of the state, where located, etc., for exhibit in the home of the Kentucky Historical Society, for reference use.

The Secretary of State has granted the **Miami Mutual Coal Co.**, with headquarters at Willard, the right to do business in the state as an outside corporation.

Amended articles of incorporation have been filed by the **Kingston Coal Mining Co.**, Morton's Gap, giving names and addresses of incorporators, and extending the corporation's life to seventy-five years.

L. P. Young, formerly manager of the Scanlon Coal Co., Louisville, which was sold by his father T. L. Young, to Brown & Hannah, Shelby County, has been made Kentucky sales manager for the Harlan Coal Co., Louisville.

The Sunlight Mining Co. has been organized at Sunlight and has filed incorporation articles fixing the capital stock of the company at $300,000. The incorporators are T. W. Crow, J. B. Ramsey and J. B. Boddie.

The Eagle Coal Co. has moved its headquarters from Flat Rock to Barren Fork, in McCreary County.

The Pike-Floyd Coal Co., a subsidiary of the **Pittsburgh Coal Co.**, is making rapid development of its property at Betsy Layne, where a tract of about 12,000 acres is controlled. The erection of a permanent tipple has been started.

MARYLAND

The Miners' Coal Co., Steyer, recently organized with a capital of $500,000, is planning for the development of about 2,000 acres of coal property and will install a

plant to provide a capacity of about 500 tons daily. A list of equipment to be installed is being arranged, including electrical machinery, pumping apparatus, power plant equipment, etc. G. J. Lee is president, and Ira Mercer, treasurer and manager.

MINNESOTA

Dock companies at Duluth-Superior will co-operate to obtain a reduction of the present freight rates and thus decrease the cost of making deliveries of coal throughout the Northwest, according to a decision at a recent conference. Present freight rates were declared to be so high that a handicap is imposed upon the commercial and industrial condition of towns throughout the Northwest that are supplied with coal from the docks.

Charles Benglet, head sales agent for the Northwestern Fuel Co., recently celebrated the thirtieth anniversary of his connection with the company. Letters of congratulation on his long service record were received by him from the main office of his company.

Docks of the **Northwestern Fuel Co.** and the **Carnegie Coal & Dock Co.** are at present the only ones in the Duluth-Superior harbor that are not jammed to the water's edge.

NEW YORK

George B. Johnson, a coal merchant doing business as **Johnson & Co.,** at 90 West St., New York City, pleaded guilty recently in the Federal Court to an indictment charging him with violation of the Interstate Commerce Act in relation to priority shipments of coal to tidewater. Judge William B. Sheppard accepted the plea of the defendant and imposed a fine of $1,500 which Johnson paid.

W. L. Bryant has been appointed receiver for the **Clearfield County Coal Co., Inc.,** of 24 State Street, New York City, by Judge Hough of the Federal Court for the Southern District of New York. A petition in bankruptcy was filed against the company on Sept. 13 by three creditors. It is stated the liabilities are about $100,000 and assets $5,000.

Robert T. Magee, formerly secretary of the Knickerbocker Fuel Co. and manager of the Philadelphia office of that concern, has resigned to become sales manager of the Madeira Hill Co., New England and New York territory. **J. E. DeBergh,** formerly assistant general manager of the Eyre Fuel Co., has resigned to take a position in the New York sales office of the Madeira Hill Co. **C. B. Merkel,** who has been connected with the Knickerbocker Fuel Co., is now in the sales office of the Madeira Hill Co., and will cover the New Jersey territory.

OHIO

Hamilton County coal contracts for the coming year have been awarded to the following Cincinnati firms, **Ulland Coal Co.,** Armory and Memorial Hall, smokeless $6.83; courthouse, bituminous steam $5.17, **Liggett Bros;** County Home, **Reliance Coal and Coke Co.** nut and slack $4.46.

James Albert Green, head of the Matthew Addy Co. of Cincinnati has returned from a six months hunting trip in Canada.

The United Collieries Co. with a capitalization of $100,000 has been incorporated under the laws of Kentucky and will maintain sales offices in Cincinnati with executive offices in Ashland, Ky. The officers are Ben Tate, president, Sidney D. Moss, vice-president, L. C. Byrne, secretary and R. D. Davis, treasurer.

The B. C. Tucker Coal Co. has been chartered with a capital of $100,000 to mine and sell coal. Incorporators are H. D. Palmer, J. S. Riggs, John A. Hadden, R. Froelich and John H. Kapp.

The Hocking Power Co., of Athens, which supplies a large number of mines with current, has announced a reduction in the rate effective Sept. 1. The reduction amounts to approximately 12 per cent.

T. S. Crockett, Columbus, president of the Leckie Coal Co., who was seriously ill for a number of months, has completely recovered and is now able to do his full share of work. For a time he was in a dangerous condition.

The Wolford Coal Co., Coshocton, has been chartered with a capital of $50,000 to mine coal in the Coshocton field. The incorporators are M. S. Wolford, W. Edgar Wolford, John Wolford, J. W. Thomson and Harry L. Balch.

Whitney Warner, vice-president of the Warner Collieries Co., headquarters Cleveland, spent a recent vacation in Massachusetts.

W. R. Woodford, president of the Rail & River Coal Co., Cleveland, spent a week at Charlevoix, Mich., where his family has been vacationing.

Application has been made by Warren B. Ferris for the appointment of a receiver for the **Mt. Cherry Coal Co.,** which operates a large mine at Fredericksburg. The complainant alleges that he holds $9,000 worth of bonds of the company on which the interest has been defaulted.

The Foster-Kling Co., Cleveland, has been chartered with a capital of $150,000 to buy and sell coal among other things. The incorporators are David E. Green, J. A. Haddin, John H. Kopp, Herbert S. Palmer and R. Froelich.

Papers have been filed with the secretary of state increasing the capital of the **Minglewood Coal Co.,** Wooster, from $50,000 to $200,000.

PENNSYLVANIA

The Automatic Reclosing Circuit Breaker Co. of Columbus, O., is opening a Philadelphia office at 1613 Chestnut Street, with H. A. Van Dyke in charge.

The Lecoe & Shiffer Coal Co., Luzerne County, has decreased its capital stock from $40,000 to $20,000.

The Equitable Coal and Coke Co., Allegheny County, has increased the capital stock, $905,000 to $1,205,000.

A list of anthracite coal companies that have suspended operation because of the alleged effect of the enforcement of the Kohler mine cave law is being compiled by the chief of the Department of Mines.

A reduction of rates for coal mining insurance, affecting many hundreds of contracts for insurance of compensation liability, has been announced by the State Insurance Department. The reduction is one of the results of a recent statistical survey made by E. H. Downey and other Pennsylvania rate experts. The new basis for 1922 will be $2.25 for bituminous and $3.25 for anthracite mining. These reductions reflect the improvements made by inspections and scheduled rating of insured mines and the effect of payroll increases during the past five years. The general rates for compensation insurance will be announced during the next few weeks as the experience of the past two years is tabulated.

Six men are in the county jail charged with the theft of explosives from the West Leisenring plant of the **H. C. Frick Coke Co.,** after an investigation that entailed a period of weeks. Some weeks ago the plant was entered. Explosives, estimated to be worth $5,000, were taken and removed to various points.

C. Campbell Beck, son of Dr. W. F. Beck of Altoona, has been elected vice-president and sales manager of the Jefferson Ridge Coal Co., with mines located in the Philipsburg district. He has been identified with the coal business in central Pennsylvania for a number of years.

The Haese Electric Co. Inc., of Punxsutawney, has opened an electric and repair shop at Tyrone, where it is prepared to take care of all armature winding and motor repair work for coal and industrial trade.

Caves recently occurred in North Scranton, ascribed to the operations of the Von Storch Colliery and it is said that they are the result of mining done after the Kohler Law came into operation Aug. 27. In fact the property owners declare the mining was done early in September. Mayor Alex T. Connell has agreed that if possible a suit would be started, with the City of Scranton as an intervenor. A test case is now pending in the courts of Luzerne County, but this action, brought by Harold J. Mahon, a Pittstown lawyer, against the Pennsylvania Coal Co., is regarded by some people as an amicable action and it is charged that it has been selected for its weakness rather than its strength. The petitions of the city and the Scranton Surface Protective Association, asking permission to intervene, were refused by the Luzerne County court. The Big bed, in which occurred this new cave that is to be the cause of this new test case, is 125 ft. deep. The general grievance committee of the Glen Alden Coal Co.'s men on Sept. 14 voted to name a committee of six to confer with W. W. Inglis, president of the Glen Alden Coal Co., in order to induce that corporation to start operations under the protection of the Fowler Act. The men suggest that the idleness of the collieries is really prompted by some other cause than an unwillingness to accept that Fowler Act.

TENNESSEE

The Knoxville offices of the **Harlan Coal Co.** has been moved from the Robbins Building to the Holston National Bank Building.

The Staub Coal Co., Tracy City, Tenn., is planning for the development of over 1,000 acres of coal property and will install a plant to provide for a daily production of approximately 500 tons. E. M. Jones, Chattanooga, consulting engineer, will be in charge of the installation. C. E. Wisner is president.

UTAH

Prominent members of the Utah Federation of Club Women were guests of the **Utah Fuel Co.,** at Castlegate, following the closing of a three-day convention of the Association, at Price. After luncheon they were taken through one of the large mines of the company.

The Lion Coal Co. of Ogden has been awarded a contract for 20,000 tons of egg by the Ogden Board of Education. The bid was $6.11 a ton. Twelve other dealers competed.

Damage estimated at between $15,000 and $20,000 was done by a fire in the storehouse of the **Pleasant Green Coal & Ice Co.** at Magna.

VIRGINIA

The Norfolk office of the **Imperial Coal Corporation,** under the management of J. J. Waldeck, was closed Oct. 1.

The Norfolk office of the **Matlack Coal and Iron Corporation,** of New York was closed Oct. 1. O. E. Wilkins has been in charge of this office.

The Newport News offices of the **Kinsley Steamship Co.,** engaged exclusively in the foreign coal trade, particularly to the Far East, has been closed, the business being transferred to the Norfolk office.

C. B. Koontz, for two years connected with the West Virginia Coal Co., has opened offices for himself as independent custom house broker, Norfolk.

The Norfolk & Western is taking advantage of the lull in dumpings to dredge the slips to coal pier No. 4, making the depth 36 feet.

WASHINGTON, D. C.

Chairman Kenyon of the **Senate Committee on Education and Labor** who with Senator Shortridge, of California, returned to Washington recently from an inspection of conditions in the West Virginia coal fields, stated that the committee had made a thorough investigation, and had "gotten into the bed rock of facts." The committee obtained knowledge of real facts in the West Virginia situation, the solution of which will be of value in applying a remedy to all industrial troubles. Senator Kenyon will lay the facts before an early meeting of the full committee, when decision will be reached as to further hearings.

The American Farm Bureau of Federation is compiling for the Congressional Commission which is investigating conditions and prices in agricultural and related industries, a report showing the prices paid by farmers from 1913 to 1921 on many articles, including coal.

L. W. Wallace, executive secretary of the Federated American Engineering Societies, addressed the Cleveland meeting of the National Association of Cost Accountants on the general subject of elimination of waste. He also addressed the Milwaukee section of the Society of Industrial Engineers on the same subject. He attended the hearing given by the licensing committee of American Engineering Council on Sept. 19 and 20. He returned to Washington Sept. 23.

WEST VIRGINIA

The Masteller Coal Co., of Kiser, has installed an Ironton Locomotive at the Hampshire Mine.

Colonel C. W. Watson, president of the Consolidation Coal Co., who recently returned from Europe, was a visitor in the Fairmont field about Sept. 10.

R. A. Johnson of the Crescent Fuel Co. of Fairmont spent a few days in Parkersburg during the early part of September.

C. W. Sandridge, who is interested in several operations in the neighborhood of Junior, was a recent visitor at Elkins.

One of the largest companies formed in West Virginia in recent months is authorized to deal in coal, timber and mineral lands and to construct roads, tramroads, etc. It will be known as the **Nemaroda Corporation** and is capitalized at $5,000,000. Having an active part in the organization of this company were John M. Akers, Charleston; J. Elliott Hall and N. L. Hall of Columbus, Ohio, J. E. McClay and E. G. Anderson, also of Charleston.

A branch and service station has been established by the **Jeffrey Manufacturing Co.** of Columbus, in the Fairmont Hotel at Fairmont. Ernest Hutton, who represents the company in West Virginia, having charge of this service station. It is planned to keep on hand here sundry supplies and spare parts so that the company can supply the needs of its customers without delay. The new service station will be opened for business about Oct. 1.

The Seminole Gas Coal Co. has installed an Ironton Duplex Locomotive at the new mine at Haywood Junction.

The Electra Engineering and Construction Co. is a new concern which has opened an office in Wheeling. The company is doing a general engineering and contracting business, specializing in electrical equipment for coal mines.

The Brooke County Coal and Coke Co. of Wellsburg, capitalized at $450,000, with H. L. Ramsey, J. R. Elson, W. L. Wilkins, S. S. Hedges, Wellsburg and C. M. Warden of Beech Bottom, as incorporators, has been chartered by the secretary of state.

What is expected to be one of the largest independent coal operations in Monongalia County is being contemplated by the **P. V. and K. Coal Co.**, a Pennsylvania operating company which has just secured a large track of Sewickley coal along Indian Creek in the vicinity of the holdings of the New England Fuel and Transportation Co., and is planning to install mining equipment. The company has acquired 795 acres of what is considered a good grade of steam coal in the Sewickley vein, running an average of six feet to the vein. The consideration was $250,000.

The Deaker Hill Coal Co. of Akron, Ohio, was granted a certificate authorizing its withdrawal from business in this state.

A new railroad along the Little Kanawha River from Gilmer station to Glenville is a possibility and a $100,000 bond issue for the preliminary work will be voted on at an election authorized by the Gilmer County Court.

General Superintendent H. S. Gay, of the Gay Coal and Coke Co., operating in Logan County, has returned to his West Virginia headquarters after a business trip to Baltimore.

West Virginia coal mines were inspected recently by Colonel Ritson, of the British Department of Mines, who is interested in American methods of coal production. He also conferred with Bureau of Mines officials.

Harold P. Tompkins, manager of the Charleston office of the Elk Coal & Coke Co., with his brother, **R. W. Tompkins**, expects to leave for France early in October, to be gone three or four weeks.

Twenty-one persons were killed in mines of West Virginia during August, according to the monthly report issued by **R. M. Lambie**, chief of the state department of mines.

NOVA SCOTIA

Operators state that about 600,000 tons of Nova Scotia coal have been brought up the St. Lawrence this year, or 300,000 tons less than in the years before the war. Both the Grand Trunk and Canadian Pacific railways have practically stored sufficient coal to tide them over the winter months. **The Dominion Coal Co.** continues to bring up Nova Scotia coal in its steamers to supply bunkering requirements and to some extent to store coal at its discharging plants. It is anticipated that deliveries will slow down and that all Nova Scotia coal will be stored in Montreal by Oct. 15, a month earlier than usual.

Traffic News

On account of the great increase in coal business which passes through the yards at Centralia, Ill., the **Chicago, Burlington & Quincy R.R.** is spending approximately $500,000 in improvements on equipment at that place.

The Baltimore & Ohio has applied for the Interstate Commerce Commission for authority to purchase the **Indian Creek & Northern Ry.** in West Virginia. The company asks approval of the purchase by it of the entire capital stock of the Indian Creek company, amounting to 500 shares of the par value of $100 each. According to the application, the Baltimore & Ohio will pay $850,000 for the property.

The commission has authorized the **Minneapolis, St. Paul & Sault Sainte Marie Ry.**, to issue ten million dollars of securities to make delayed payments of current liabilities for fuel and other supplies.

A meeting attended by prominent members of the export trade, was recently held in New York for the purpose of organizing to seek lower freight rates on export coal. Mr. C. Andrade, Jr., will represent the coal men before the International Commerce Commission, which will be asked to allow a reduced rate. Without this, the American producers can hardly expect to compete, in the opinion of the men attending the meeting.

In the complaint of the **Northern West Virginia Coal Operators' Association**, the I. C. C. has denied the petition of the coal operators for modified findings. The commission originally found that the practices of the Director General of Railroads during the period from July 1919 to March 1920 in the distribution of coal cars to mines on the Monongahela Ry., and the Morgantown and Wheeling Ry. were prejudicial to operators of coal mines on those roads. The case has now been held open for further hearing as to the extent of damages suffered by the operators as the result of this prejudice.

In the complaint of the **Cameron Coal Co.**, the commission decides that public convenience and necessity do not require the Illinois Central to permit the Marion and Eastern R.R. to use its tracks from Marion, Ill., to the point where the C. B. & Q. crosses the Illinois Central overhead, two miles west of Marion. It holds that the Marion and Eastern is not a lateral branch line under Paragraph 9 of Section 1 of the Commerce Act.

Obituary

Charles A. Zettelmeyer, president of the Zettelmeyer Coal Co. and vice-president of the Drake Coal Co., both of Cleveland, died recently. Mr. Zettelmeyer was born in Rahway, N. J., 58 years ago and came to Cleveland at the age of 10 years. He started in the coal business 35 years ago and seven years later organized the Zettelmeyer company.

I. C. Mockermann, 55 years old, president of the Polar Wave Ice & Fuel Co., of St. Louis, died suddenly at his home in that city. He had been with this firm since his father organized it in 1903. For the past five years he was president.

Henry J. Kimman, since 1902 manager of the Cleveland plant of the Chicago Pneumatic Tool Co., died recently in Cleveland. He became associated with the Chicago Pneumatic Tool Co. in the consolidation of pneumatic tool interests in 1901, at which time he became manager of the Cleveland plant of the Chicago company and remained in active charge of the plant until his death.

Association Activities

Northern West Virginia Coal Operators' Association

A meeting of far-reaching importance to the coal industry of northern West Virginia was that of the directors of the association at Fairmont on Sept. 22, when among other subjects given consideration was that of the widening of the differential for which Ohio operators have applied. This question was discussed at considerable length and further steps were taken to defend the territory against the effort to zone out West Virginia coal from certain Western markets, as it is claimed will be the result of any increase in differentials. At the meeting of the directors reports as to trade conditions and mining conditions were submitted.

The meeting was held at the Fairmont Country Club, where a luncheon was served the eighteen coal operators and representatives of coal companies in attendance, the following being included:

A. Lisle White, Clarksburg, president of the association; C. F. Jenkins, Fairmont; J. A. Clark, Jr., Fairmont; E. L. Spraker, J. A. Jemkins, Clarksburg; A. Spates Brady, Elkins; William H. Green, Elkins; C. J. Ryan, Hepzibah; A. C. Beeson, Annabelle; J. F. Keeley, Clarksburg; F. P. Dunbar, Pittsburgh; N. M. Montgomery, Tunnelton; Thomas Robey, Fairmont; H. B. Gibson, Frank R. Lyon, Fairmont; W. Clark Dobbie, Fairmont; George S. Brackett, Fairmont, secretary of the association.

Publications Received

Coal-Mine Fatalities in the United States, 1920—Department of the Interior, Bureau of Mines. Technical Paper 288. Pp. 112; 6 x 9 in.; charts and tables. Includes coal mine statistics supplementing those published in Bulletin 115, and a list of permissible explosive, lamps and motors tested prior to Jan. 31, 1921.

Water-Gas Apparatus and the Use of Central District Coal as Generator Fuel—Department of the Interior, Bureau of Mines. Technical Paper 246. Pp. 28; 6 x 9 in.; illustrated; charts and tables. Prepared under a cooperative agreement with the Illinois State Geological Survey and the Engineering Experiment Station of the University of Illinois, through its department of mining engineering.

Petroleum Laws of All America—Department of the Interior, Bureau of Mines. Bulletin 206. Pp. 645; 6 x 9 in. This bulletin includes the petroleum laws of the United States, the several oil producing states, Canada, Mexico and the republics of Central and South America.

Trade Catalogs

Sullivan Dry Vacuum Pumps — Sullivan Machinery Co., Chicago, Ill. Bulletin 78-A. Pp. 12; 6 x 9 in.; illustrated. Describing the Sullivan W-A-16 steam driven and W-G-6J belt driven cylinder vacuum pumps.—Advertiser.

Polyphase Induction Motors, Continuous Rated — Allis-Chalmers Mfg. Co., Milwaukee, Wis. Bulletin 1118. Pp. 12; 8 x 10½ in.; illustrated. Describing the new lines of continuous rated Polyphase induction motors—Advertiser.

Coming Meetings

The National Industrial Traffic League will hold its annual meeting Nov. 9 and 10 at the Sherman Hotel, Chicago, Ill. Executive secretary, J. H. Beck, Conway Building, Chicago, Ill.

Kanawha Coal Operators' Association will meet on Oct. 20 at Charleston, West Va. Secretary, D. C. Kennedy, Kanawha Valley Bank Building, Charleston, West Va.

Harlan County Coal Operators' Association will hold its next meeting on or about Oct. 19 at Harlan, Ky. Secretary, E. R. Clayton, Harlan, Ky.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The twenty-fourth annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

The Coal Mining Institute of America will hold its annual meeting at Pittsburgh, Pa., Dec. 7, 8 and 9. Secretary H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

An Industrial Relations Conference for all industries in the State of Pennsylvania has been arranged for October 24 to 27 at Harrisburg, Pa., by the Commissioner of Labor and Industry, C. D. Connelly.

The sixth annual convention of the **National Association of Purchasing Agents** will be held Oct. 10-13 at Indianapolis, Ind.

American Gas Association. Annual convention Nov. 7 to 12 at Congress and Auditorium Hotels, Chicago, Ill. Secretary, O. H. Fogg, 130 E. 15th St., New York City.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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Better Mining and Marketing

This Issue

Subsidence of the abnormal conditions of production and prices that reached their culmination in 1920 and resumption of competitive conditions have turned the thoughts of the coal industry to ways and means of better mining and marketing. From 1896 to 1920 was a period of rising prices and of intense development in the coal-mining and coal-consuming industry. The next decade at least holds the prospect of business on a gradually declining price level with coal and other industries seeking the fuller and better employment of the huge productive capacities reached during and immediately after the war.

With this thought in mind the editors of *Coal Age* seek by devoting this issue to "Better Mining and Marketing" to concentrate attention on some of the outstanding features of both. Mining and marketing go hand in hand. Better mining means safer, cheaper and more efficient production of coal, that the sales department may have a clean, low-cost product to market. Better marketing means finding the consumer whose needs are best met with that coal, getting the right price on proper terms, delivering it even under adverse conditions of transportation, collecting the money and leaving the buyer in a mood to buy again.

Without a market there would be no coal produced, and sorry indeed would be the plight of the United States even today were there no coal production. The subject is so broad that no one issue of a paper could hope to touch every angle. We are satisfied if we plant the germ of the idea that mining and marketing are interdependent parts of your industry, each indispensable one to the other, and if we create within you the desire to seek broader knowledge of the coal industry.

The New Era in Business

A vast economic laboratory best describes the world today. Looking back a few years you may recall that our political outlook was our ward, business vision was bounded by freight rates, and our knowledge of the accomplishments and problems of our neighbor operator or salesman was nil. Today we think in terms of the world. We readily reason from the day's orders for coal through the railroad's problem and the farmer's predicament to the lack of buying power of foreign peoples, back to the effect of each on the demand and market for coal.

The vast upheaval of the war may be likened to that which in prehistoric times created the Rocky Mountains. High peaks, some of rugged rock, some of softer material, were thrown up, while chasms were opened and new strata upturned and exposed to the elements. Out of the cataclysm of the war our country rises as the richest and strongest nation of the earth. Some peoples have literally been lost in the chasms. The chaos happily is almost ended and the world now faces a long period in which the quiet work of erosion of mountain peaks and filling of valleys proceeds.

In industry and business new heads have risen; some of the old are lost. New industries have come, as the development for peaceful pursuits of the airplane and the manufacture of dyes. As inexorably as the falling, rushing waters erode the mountain tops so are economic processes now operating to level off the peaks in the commercial world. The direct manifestation of the working of this leveling off is, of course, the gradual lowering of prices and the increase in the real worth of money and therefore of wages. In the end there will be reached another and opposite state of unequilibrium and another upheaval, economic or geologic, and the world begins another period or cycle of business, in the words of the economist.

What It Means to Coal

Coal is so fundamental, so basic in its relation to modern civilization, that it must feel the full effect of every play of economic force. Steel may be the barometer of business; coal certainly is the thermometer. The curve of consumption of coal tells but one thing: what has transpired. The demand for coal follows the need for power and heat.

The productive capacity of our soft-coal mines is 40 per cent above normal requirements and nearly 100 per cent above this year's needs. Costs and prices of coal, in common with other basic commodities, will diminish rapidly perhaps for awhile and then gradually for a period of years. Competition in the sale of coal will be as keen in the next decade as it was even in pre-war times. The best coals will sell the easiest; the best salesmen will sell the most coal.

For coal the new era means starting afresh to level off the inequalities in wages, prices and profits resulting from the stresses of the war and the artificial restraints of government. Quality of coal, character of service and, last of all, price will determine who is fittest to survive.

Better Mining

Winning the coal from the ground and putting it on the surface ready for market is mining. The best mining is that which makes the largest percentage of recovery at the least cost in money and in life and limb.

Increasing output and the effectiveness of labor, lessening power losses and wear, tear and decay on plant and equipment, lowering the cost of accidents and improving the quality of the product are some of the features of better mining to which special attention is directed in the pages of this issue. For every set of natural conditions—that is, thickness of coal, character of bed as to partings, impurities and friabil-

ity, kind of roof and floor, and inclination—there must be developed the best system of mining From that point forward the best mining flows from the proper use of machinery and equipment and the square and intelligent handling of labor.

That nearly 60 per cent of the bituminous coal produced in this country is undercut by machines is evidence of the progress that is being made in the use of mechanical equipment underground. But undercutting the coal is but a part of the work of mining. Loading the coal into mine cars after it is shot down from the face requires more energy than cutting, and in mechanical loading we have only begun to make progress. Eugene McAuliffe regards the possibilities of mechanical loading of coal underground as limited only by the reluctance and even active open opposition of union labor. If, as he suggests, the present outlook is for the opposition of union labor to hold back this obvious avenue of advancement for nearly a decade, then here is a tremendous field for intensive development of better mining by intelligent and wise co-ordination of mechanical engineering and human engineering.

Although we can only speculate what the next twenty-five or fifty years will show in safer, surer, quicker, cheaper mining of coal through greater and more intelligent use of mechanical equipment and the application of electricity we can actually see from week to week and year to year positive evidence of progress.

A Definition

Marketing coal is the summation of all the mechanical and commercial processes from the mine mouth to the point of consumption by which the coal is sold and delivered. Getting the signature on an order is but one small part of marketing—the final step. Production even is a part of marketing, in the sense that a marketable product must be had before it can be sold. Mining engineers could quite easily open and develop a large, well-equipped mine with low cost of operation in the lignite fields of North Dakota. Every canon of good mining could be observed, but the concept of good marketing, the production of a marketable product, would be violated and the endeavor be for naught. The phenomenal development of coal production in eastern Kentucky in the last ten years was the outcome of a vision as to market possibilities.

Transportation and storage are two factors inextricably tied up in the problem of marketing of coal, so obvious after the experiences of the past five years and so acutely before the trade today as to require but little comment and no emphasis. Here the problem of the coal producer is the reverse of that of the farmer. Nature prescribes seasonal production of food products and uniform consumption, but, though it permits uniform production of coal it requires seasonal consumption.

Credit is a part of marketing, a part that calls for infinite detail in the collection and study of information and the exercise of judgment. The credit problem may involve only the decision as to whether still another car should be shipped to a small consumer or a retail dealer—a matter perhaps of a few hundred dollars—or it may be a decision with regard to shipments to a railroad already in debt for coal to the extent of a million dollars, but in either instance, and for every gradation between, credit is a marketing problem.

And last but not the least is merchandising—finding customers whose requirements as to tonnage and quality of coal match up with the production at hand and getting the orders and contracts.

Better Marketing

The price of coal is not the governing factor in selling it, and the cost of production is not the determining factor in making the price. Save in the few instances where coal is delivered, accepted and paid for as a result of personal or financial relationship, it is sold on the basis of quality and service. The range in grades, rank and quality of coal is matched only by the varying degrees of service the distributers of coal give their customers. G. B. Gould, whose engineering experience of many years as consultant between buyer and seller of coal, gives his words the weight of authority, says in this issue that the "immaturity of the coal industry can be demonstrated in no better way than by the utter lack of relation between individual coal prices and the relative value of the various coals to the buyer." This lack of relation, he notes, is found in the market for no other basic commodity. Buyers are not discriminating and the coal trade itself is none too well informed. "If the consuming public," he says, "is not well enough informed to discriminate intelligently and accurately in matters of value, why should the producer spend his good time and money to inform himself?" Why prepare coal better if the buyer will not appreciate it?

Here is the big opportunity for better marketing of coal. It is the old, old story, followed by so many other lines of trade, of elevating the consumer's standards to the point where he is highly discriminating. How can this be done, and what follows?

In the first place the buyer must know of the multitude of variations in the quality of coal. His education today has not progressed much beyond the point where he recognizes two kinds of coal, good and bad. It is not always the highest "quality" that is best for a particular user, and this is the saving grace of the producer of lower-grade coal. Finding a use for every coal and a coal for each use is better marketing, but still better is educating a clientele to demand your coal.

Consolidation Coal Advertising

In this connection we would like to bring together and reproduce every one of the advertisements of the Consolidation Coal Co. that have appeared the past year in two popular national weeklies. If you know coal men at all you know that the copy for these ads was conceived and written by advertising experts. It is good copy, written with a faith in its efficacy foreign to the coal trade. But if persistently followed up it will promote interest in quality and service, to be followed by confidence in the product of the advertiser. Such advertising of coal is too new to have power to close sales, but that will follow. To make the prospective buyer believe that he should have a certain brand of coal and a certain measure of service is to create a demand for that coal and that service. And the more discriminating the buyer becomes the better it is for the coal trade.

It is the aim of every distributor of coal to establish his coal in a given market and for specific uses. Everyone is familiar with the concern that has made its name synonymous with quality and perfect service in New York Harbor. Another producing company has

such a firm hold on the gas business in New England that others have not yet been able to break into this market with coal probably equally good for that service. Other instances of firmly-rooted trade could be cited, all those in the old conservative East built up largely through personal selling efforts. The coal distributors in the East with the largest business, whether producers or middlemen, secured their hold on their trade before the day of display advertising as a factor in selling. They have never sold coal any way except through personal contact and have kept up the contact with direct-mail methods.

The Old School vs. the New

There is in every line of endeavor a younger generation with what it likes to call advanced ideas, against which are opposed the conceptions of the older generation—the men who built up the business and who are inclined to believe that what was good enough for them is good enough for their sons. This conflict of minds is going on in the coal trade as well.

Centering in Chicago, in a coal market as fiercely competitive as any in the world and with a tonnage second to none, is a thriving development of a new school in coal. It was there that the statistical trade bureau was first developed and where it still functions the nearest to perfect. It is there that advertising coal has made its furthest advances in this country, and that means anywhere. Some ten years ago two men in Chicago set out to put their coal in a retail yard in every city and hamlet in the dozen states that could be reached with southern Illinois coal. They sought to make the trade name of their coal familiar to every user in this territory. They backed up their salesmen with advertising without stint. As late as 1916 the wiseacres in the trade were shaking their heads over such a wild course and predicting failure and bankruptcy. But the system worked and the company, now greatly expanded, is a great success. That way of selling to retail dealers is now accepted by the Midwest trade as the only way.

Some of the younger generation in the effete East, backed by liberal-minded older men, are looking on the problem of marketing coal as being at bottom a marketing problem and are using all the tools with which to sell that other trades have sharpened to advantage. The exceptions stand out so prominently as but to emphasize the generalizations in this regard.

"Cherchez la Jobber"

A commentator on the marketing of agricultural products recently summed up the position of the middleman and the farmer with this quotation from a North Dakota farmer: "Damn those middlemen! I wish I were one!" The coal jobber is in much the same enviable position. Mr. Cushing, in response to our request for his explanation of the "Why" of the middleman in coal, has given us an admirable paper. You will find it elsewhere in this issue and you should read it. As we have always suspected, the coal jobber—we just can't avoid using the word, it is so convenient—is with us because he makes his own way; he performs a service and collects pay for it.

Many producers hold to the view that it is the jobber who is to blame for whatever ails their business. When prices are so low that you have to reach up to touch bottom, the jobber is responsible; when prices are out of hand, it is the jobber who raised them. No one has proven either theorem as yet. It takes a lot of factors to make a coal market and the middleman in coal is just one of them.

Mr. Cushing concludes that the free-lance wholesaler of coal is the fittest and declares that what is needed is more study and research into the art of marketing as he practices it. We really need a better understanding of the marketing of coal in all its aspects. Maybe Cushing is right and he who buys coal outright and then sells it is the keenest distributor, but that conclusion does not follow. As one of our contributors in this issue says "smartness" has no place in the coal business today.

A thinking jobber recently summed up his position somewhat in these words: "What I do as a jobber is to act as a buyer for the coal consumer. I study the combustion problem at his plant, decide what kind and grade of coal will give him the best service, and then I go out and buy that coal for him. I am working for the consumer. If he hired me, or someone else who knew where to buy the different kinds of coal, and how to buy coal, he would have no use for me as a coal jobber. He would deal directly with the producer. When the coal consumers learn coal, if they ever do, we jobbers will be out of jobs."

What the Maps Show

To those who say that there is no such thing as marketing science in the coal industry we emphatically say that the lack is not in the absence of selling acumen in the coal trade but in that it has never been uncovered. Words without end have been printed about the science of mining coal but almost nothing about marketing it. We produce coal better than we sell it only because we know more in a collective way about mining than about marketing.

A few simple maps accompanying this text serve to illustrate a point. These little pictures show the market territory reached by three large coal-producing companies. The Consolidation Coal Co., for instance, has mines in five fields, has sales offices in thirteen cities and in this country distributes coal over twenty-four states and part of Canada. The territory embraced represents 75 per cent of the bituminous coal consumed in the United States for all uses. The story of how this coal is mined and prepared, what it analyzes and what it is good for, is an open book to anyone. These things have been described in print, but who has ever read how the Consolidation Coal Co. markets is product?

The Central Coal & Coke Co. has mines in four states, has sales offices in six states and sells coal in seventeen states. These simple facts are shown graphically in three small maps. The West Kentucky Coal Co. has mines in one field, eight sales offices and distributes coal in eighteen states. These are but three samples, selected at random, demonstrating the wide areas over which in highly competitive markets individual distributors can and do spread their product. Each overlaps the others. What is good practice in selling the coal of one company may not be wholly good for another. It is a long stretch from Omaha to Los Angeles and the Central Coal & Coke Co. doubtless has found the best way to cover that territory, and it probably is quite different from the way their Missouri coal, with a limited field of usefulness, is distributed. Even the Consolidation Coal Co. must find parallel problems

MARKET TERRITORY REACHED BY THE CONSOLIDATION COAL CO

in its distant markets of the Central West as compared with the more highly developed industrial region of the East.

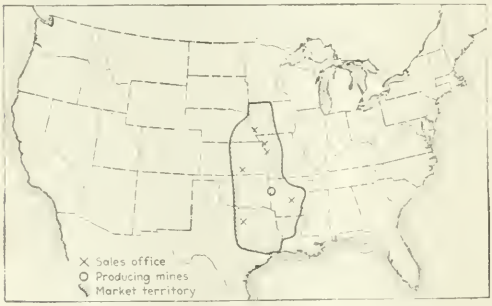
We look forward to the day when the general sales managers will be less self-conscious and as eager and willing to advance their art by interchange of ideas and methods as the engineers have become. When that happens in larger measure than today each will find that he has nothing on the other fellow, that all have certain

MARKET TERRITORY REACHED BY THE CENTRAL COAL & COKE CO. WITH COAL FROM MINES IN WYOMING

fundamentals and that it is in details of method and organization that selling differs as between companies.

Why Better Marketing?

There is a tradition in the coal trade that just so much coal will be bought and burned each year; consequently why make a fuss over trying to sell more? The same argument applies with equal force to mining, but, strange to say, that



MARKET TERRITORY REACHED BY THE CENTRAL COAL & COKE CO. WITH COAL FROM MINES IN ARKANSAS

prevents no one from putting forth maximum effort to improve mining methods. The hazard to life and limb is the only serious problem of the industry, outside of relations with the unions, that is purely on the mining side. The other so-called ills flow from maladjustment in the distribution of coal—that is, are subject to correction through better marketing. Elimination of seasonal production and transportation, for which seasonal freight rates are proposed as an artificial remedy, is an example.

Without the help of seasonal rates, and despite industrial depression, some coal operators have kept their

MARKET TERRITORY REACHED BY THE CENTRAL COAL & COKE CO. WITH COAL FROM MINES IN MISSOURI AND KANSAS

mines in full operation. Their testimony is that superior selling has been responsible for this exceptional performance. Some ascribe their ability to move coal this year to the fact that they did not take advantage of their customers during the period of high prices last year. One sales agent who has kept a number of mines supplied with orders for full operation all year has described his system to us as predicated on the practice of being heavily oversold during the boom years, buying outside to fill orders, and thus coming into a period of reduced buying with sufficient business for his own output.

MARKET TERRITORY REACHED BY THE WEST KENTUCKY COAL CO.

In better marketing, in broader knowledge of finance and business, wider acquaintance with the problems of men in other industries, and more intimate understanding of their own industry, the coal men of the next decade are going to be more representative business citizens of the United States. The day has passed when a coal operator is merely a mine manager, and a wholesaler a mere trader.

Development of Better Selling Methods Dependent Upon Education of Consumer in Coal Values

Lack of Information of Relative Worth of Coals, and Consequently Lack of Discrimination on Consumer's Part, Responsible for Waste and Inadequate Preparation—Trade Misses Opportunities

By G. B. Gould*

EVERY important economic question creates a contest between two schools of thought, the regulators and the advocates of a *laissez-faire* policy. The extreme regulators seem to believe that legislative bodies can amend or repeal economic laws, but Mr. Lenine seems to have successfully demonstrated the fallacy of that extreme.

The extreme advocates of *laissez-faire* insist that legislative regulation of business is nothing but a throwing of monkey wrenches, which retards the beneficent working out of economic progress. American experience with regulation has demonstrated by its successes and failures that there is a middle road which can be safely and profitably followed.

Quack Remedies Numerous, as Usual

The coal trade is one of great public importance, and the war conditions served to focus public attention by accentuating the symptoms of a condition which existed all the time. The result has been the usual offering of patent medicines to cure the symptoms instead of the disease, and in some quarters there is a great cry for "regulation of the coal industry." In this situation it is worth while, perhaps, to give some thought to fundamental conditions. The fever and high blood pressure have subsided. The convulsions, except those artificially created by labor troubles, probably are over for some time, at least in their most violent form. Many who were the loudest in calling for heroic treatment when the fever was running high are now equally sure the disease has disappeared. If the coal trade and American industry are to profit by the lessons of the war, we should give some thought to the patient himself and his history.

If we are to see the situation straight, we must consider the consumer a part of the coal trade. What the consumer does and what he thinks are just as important as what the coal operator or jobber does and thinks. The trouble has been that most of the proposed remedies have been suggested by persons who could see only the producer or the consumer, and all of the medicine was to be taken by one of them.

Introduction of Coal Reduced Power Costs

Let us go back and sketch very briefly the history of coal in America. The discovery of coal, combined with the discoveries which made possible the application of mechanical power to industry, came rather suddenly. An industrial revolution was the result.

No matter how much coal cost, business found that power produced from coal was tremendously cheap as compared with man power in manufacturing. There was literally a scramble to put more coal to work. That was all the consumer thought about. Factories, railroads, steamships multiplied rapidly. Apparently there was an endless supply of cheap coal, and very little was known or thought about the qualities of coal or its economical utilization. Burning coal to make steam seemed like such a simple process. Engineers in the meantime were improving our prime movers. That development began to approach its ultimate economy, and progress slowed up. Competition between steam-propelled factories produced an era of intense study of ways to improve upon the economy of machines and men in using power. The waste of man-power in using mechanical power was found to be appalling, and anything like the final solution of that problem in all its ramifications is not yet.

War Directs Serious Thought to Coal Trade

Just before the war, however, thoughtful attention to the significance of coal quality and economy in the use of coal itself was in its infancy. The better production of coal and its marketing were just beginning to be seriously thought of as important factors in manufacturing cost. The coal trade really was not thought of at all until the war made us conscious of its place in American industry. It was like a man's lungs, which are practically unthought of by their owner until an attack of pneumonia makes their presence and function painfully noticeable.

The coal trade—and this includes the consuming part of it—is twenty years behind every other basic industry in its development. It is only a youngster among full-grown men. And the youngster's final development to maturity is mighty important to the men he works with. If the economic doctor tries to treat him for a disease when the trouble is only immaturity, we will create a disease instead of curing one.

Beginnings of Summer Stocking

Take the matter of seasonal demand for coal. Before the war—before the public became conscious of the need of stabilizing the demand for coal—economic processes had already set in motion by natural development a protective reaction, which was to some extent acting as a stabilizer. The summer months normally were the months of low coal prices. It is possible that, if our freight rates had not already been crystalized by a system of rigid regulation, the railroads would have long since adopted seasonal freight rates to stimulate the movement of coal in the summer. After a coal shortage, of course, the consumer suddenly saw the advisability of summer storage. But in normal times you can hardly expect coal consumers to lay in coal during the summer unless some adequate financial advantage is offered. The element of protection against

*Vice-president of the Fuel Engineering Co. of New York.

a shortage which is not even threatened is not a sufficient inducement. Seasonal freight rates would be a sound constructive step for our legislators and regulators to take. It would be in line with economic law rather than an attempt to short-cut normal economic development.

Price regulation, on the other hand, is comparable to regulating a steam engine by hand instead of using an automatic governor. The price level in an industry like the coal trade, where it is not subject to private arbitrary manipulation by either the producers or consumers, is a most delicate automatic governor—not perfect in its operation, perhaps, but certainly superior to hand regulation by an all-wise bureau.

Arbitrary Limitation Set on Coal Prices

During the war our politicians picked out coal prices to arbitrarily limit. Low coal prices would not hurt the enemy, but plenty of coal at the right place and at the right time would. We tried to limit prices, and then by exhortation and edict increase production. We set up two diametrically opposed forces, and one had to yield. If we had not been such a patriotic and essentially law-abiding people, price fixing would have been more of a fizzle than it was. Payments of higher than government prices, notwithstanding, were notorious, until production equalled demand.

War conditions, too, accentuated a latent interest in coal quality. Again the symptom of a fundamental condition became so obvious that it could not be ignored. The consumer suddenly was awakened to the need of discrimination in buying coal, at a time when discrimination was, for the average buyer, impossible.

The immaturity of the coal industry can be demonstrated in no better way than by the utter lack of relation between individual coal prices and the relative value of the various coals to the buyer. It is like the weather—something that everybody talks about but nobody does anything about. Unlike the weather, though, something can be done to correct it. It is a condition which is gradually being corrected, but there is a long way to go yet.

Demand Lacking for Better Coal Preparation

Everybody knows what a wide variety in both character and quality of coal is produced in the Northern Appalachian fields. Most of these coals have a legitimate market, at a price. Much of our coal would be better prepared if there were any strong economic reason for that better preparation. Take any lot of coal bids made simultaneously anywhere in the New England or the Middle Atlantic States to the same consumer.

If these bids are studied in the light of the relative value of the different coals offered, the prices will be a jumble. In a recent case of twenty-two bids the prices quoted for coals of substantially the same value and of the highest grade ranged from $2.40 to $4.15 a ton at the mine. For the other coals, known to be lower grade, the prices varied from $2.45 to $3.40, the poorest coal of the whole lot being quoted at $3.40.

If this were an isolated case it would prove nothing, but this situation is typical of normal conditions, either before the war or since. Some of this variation, of course, is due to individual differences in the internal conditions of the producing companies, somewhat to the standing of those producers, and to the extent to which their reputation and that of their coals is known. That difference will always exist and is a legitimate factor in price making for any product.

It is not this lack of relation itself but the fact that it exists which is important. Such a condition does not exist in the market for any other basic commodity. Who is to blame for it? It is the result of the evolution of the coal industry, and natural to its present stage of relative youth. The consumer is generally uninformed as to values, and consequently is indiscriminating. If this were not true the producer of an inferior grade at a relatively high price would soon go out of business. The very fact that such a condition exists generally proves that he does get away with it often enough to stay in business.

And the coal trade, taken as a whole, is not any too well informed as to actual values. And why should it be? If the consuming public as a whole is not well enough informed to discriminate intelligently and accurately in matters of value, why should the producer spend his good time and money to inform himself? Why should he spend his good money to prepare his product better, when his customers are not discriminating enough to appreciate it?

Exceptions Prove Industry Is Making Progress

Perhaps, you answer, "Oh, but this is not so." You can name a number of coal producers who have been conspicuously successful by producing uniformly high grade coal, and get consistently prices above the market. "Somebody must appreciate their efforts to produce better than average coal." That is true, too, but here you are offering as an example a very small part of the coal industry, which in turn supplies the smallest and most discriminating section of the buying public. The very fact that there are such exceptional cases shows that the industry as a whole is making progress. The consuming public is, without doubt, becoming gradually better informed and more discriminating, and coal production is being influenced by it. But the fact remains that the coal market today is still dominated by the indiscriminating buyer.

There are some who advocate standardizing coal quality by law. When one considers the infinite variety of factors which in the long run determine both the average level of prices and relative prices, and when one considers the almost infinite variety of coals, such an attempt will, in the opinion of the writer, result merely in another case of economic meddling, or muddling, as you choose.

Adjustment Quickly Follows Public Demand

The individual consumer can become informed and discriminating. As a larger and larger part of the buying public awakens to the importance of it, the coal producer will adjust himself to the more discriminating demand. That is inevitable. Those who have been in a position to observe this development can see a distinct measure of progress during the last fifteen years, in spite of the interruption to it caused by the war.

For a healthy coal trade we need not more regulation but more education, most of it self-education, both in the ranks of those who produce and sell coal and those who buy and use it. Anyone who advances the cause of more reliable information about coal, more widely distributed, promotes the best interests of the coal trade as a whole and those of American industrial success.

Will Reformation of the Coal Industry Proceed From Forces Within or Without?

Control by Mine Labor Affects Mine Costs and Sales as Well as Quality—Progress at Mine Through Labor-Saving Appliances Fails to Keep Pace with That of Coal Consumer

By Eugene McAuliffe*

BIOLOGISTS say that our physical bodies undergo a complete change every seven years. The forces of nature work silently, continuously; we barely sense the change that takes place. In worldly affairs similar changes take place; natural forces work unceasingly for change. The old order goes; a new one takes its place. The coal industry is no exception. Together with all other lines of business endeavor it was caught up and whirled over, under and about in the cataclysm of the world's war.

Prior to the war the industry occupied a relatively modest place in our affairs; coal was plentiful and cheap, a shortage was unknown, transportation charges were low, an 80-per cent coal stood with many consumers in the same social atmosphere as that occupied by the 95-per cent article. Then came famine—lack of transportation, shortage of fuel, banked fires, fuel rationed to thousands, who learned for the first time that King Coal was a star of the first magnitude. Coupled with shortage came mounting wages and transportation costs, labor for handling coal and ashes was scarce and high, and out of all this is coming, slowly, a new and broader conception of the magnitude of the industry. Today the nation's thinkers—its writers—are giving thought to the coal industry; the columns of magazines, never before opened to coal—the *Atlantic Monthly* and *World's Work*, recent examples—contain papers, essays, studies bearing on this now important subject; Atlantis-like it is being treated as a newly discovered continent. The industry is changing; the question is, will it change from forces within or from forces without?

Railroads and Coal Industry Closely Related

There is a very close relation between the railroads and the coal industry; they are, in fact, insolubly related. The railroads have felt the pressure of outside forces for twenty-five years. Will the same forces envelop the coal industry or will it put its own house in order? Keep the fact before you that the old order is constantly shifting.

The Constitution of the United States stood unchallenged for many years; then came amendments, some of which spoke in a minor key, others, like the thirteenth, which abolished slavery, roared out in deep diapason, a voice that overwhelmed the theory of property rights that opposition to slavery was based upon. Then came that other great amendment, the eighteenth, which likewise struck at the reintrenched theory of property rights, and millions invested in distilleries and breweries were compelled to seek new fields of endeavor in a night and the highest court of the land restated the age-old principle that the rights of the individual must yield to the welfare of the many. Another great change, one that came in quietly, was the nineteenth amendment, which enfranchised the womanhood of the nation, and so I again ask: Will the coal industry change itself from inside or will it be changed from without? What should be done to improve the existing status? Get the facts. They must come from an authoritative source.

Public Fed on Misstatements About Coal

The true province of government is to educate, not alone the youth but the mature. If the government will get the true facts regarding any industry before the men in control of that industry these men will move in the right direction. The public is saturated with misstatements regarding coal—a new avalanche of partisan untruths will be spilled out while the new wage contracts are being worked out after Jan. 1. Today the papers are full of the West Virginia situation. Union leaders have hurled tons of high explosives at the men who operate the mines in that section, charging everything from starvation and peonage to murder. The operators in reply assert truthfully that their loyal labor saved the country from freezing during the great strike in November and December, 1919. They show wages to individual miners in these non-union fields as high as $500 per month, and in substance attribute the West Virginia war to the frantic desire of paid union leaders to perpetuate their meal tickets. It does not, however, seem to occur to the West Virginia coal men that the facts once obtained and published would dissipate the fog of crimination and recrimination that obscures and will continue to obscure the atmosphere. To obtain and make known the facts would do the turn as effectively as the presence of U. S. troops.

Mine Labor the Overshadowing Difficulty

This leads to the thought that back of all the difficulties that beset the coal producer and coal consumer is that overshadowing one, mine labor. Outside of a few restricted areas it controls and dominates the coal properties. That control reaches into the very vitals of mine operation, mine costs and sales, together with quality. The installation of mining machinery to reduce costs and improve quality has been fought by union labor from the beginning. For example, shortwall mining machines have been kept out of mines for years because of the failure to agree on a tonnage rate; so it has been with permissible explosives. Seldom are these problems approached in an open-minded manner, but rather with the antipathy shown by English farm laborers to the threshing machine when it came as a successor to the flail.

The coal industry of this country is now ripe for loading machines, but at the present rate of progress it will be twenty years before they come into use. While the

*President, Union Colliery Co., St. Louis, Mo.

consumers of coal have perfected and installed fuel-saving appliances—the automatic stoker, superheater, economizer, the condensing turbine—thus reducing the unit of consumption of coal, mine labor is loading a poorer grade of coal than it did twenty years ago, and poor coal means loss—loss compounded with each movement it undergoes from the mine face to its final resting place in the ash heap. Tests recently made by a large public utility where the delivered cost of coal is $6 per ton showed the following comparison of values:

Percentage Moisture	Percentage of Ash	Delivered Cost	Delivered Value	Loss per Ton
4	10	$6 00	$6 00	
4	12	6 00	5 80	$0 20
4	14	6 00	5 58	42
4	16	6 00	5 32	68
4	18	6 00	5 01	99
4	20	6 00	4 64	1 36

The compelling duty that confronts the coal industry today is to obtain the facts about itself—self-study, introspection, a resolve to use the facts as a guide for business improvement. It must regain the management of the mines it owns and operates, and when regained it must manage them with justice to labor and to society at large, failing in which the history of the American railroads will be repeated in the coal-mining industry.

Knowledge and Persistence Chief Requisites For Successful Marketing of Coal

By Harry F. Nash*

AN OPERATOR and his sales force should know their article thoroughly and then persistently present to the trade, in various ways, the superiority of their product and endeavor to educate the dealer to continually keep after his customers to store coal when it is plentiful, pointing out to them that by so doing they can obtain a better article at a less price.

I believe that the general sales agent of any coal company, and all of his traveling representatives, should spend considerable time at the mines—both inside and outside—in order to familiarize themselves with all conditions pertaining to coal mining as well as preparation. It also is well for the sales force to acquaint themselves with the quality and preparation of the coal sent out by their competitors. In this way they are able to answer the dealer's battery of questions intelligently. Persistence, in my opinion, also has a large part to play in the successful selling of coal.

The salesmen of an operating company should remember that it is "the man behind the counter of the retail office" who largely influences prospective purchasers as to what kind of coal they buy. The retailer should be acquainted with the fact that, in order to make lump coal, the operator must screen his mine-run coal into various sizes, such as lump nut, pea and slack, and that he (the retailer) must do his part in so far as taking his proportion of the smaller sizes that result from screening the lump.

The retailer should then endeavor to sell his customers not lump coal alone but nut and the other sizes as well. He will be doing the domestic consumer a favor by urging that he take some nut coal as well as lump—the nut coal can be burned more advantageously in kitchen ranges and small heaters than can the lump. If a consumer has both a furnace and a cook stove but buys nothing other than lump coal, he must in many cases break up the lumps in order to get the size of coal that will go into the firebox of the cook stove. This makes a great deal of slack and wastage for the consumer, so that a dealer who thoroughly understands that an operator cannot ship him lump coal only can, by instructing his sales force, easily sell his customers the smaller sizes of coal as well as the larger. In our territory we have one town of about 40,000 population where there is more nut coal than lump sold, and this is due solely to the fact that the retail dealers there have educated their customers to burn the smaller sizes of coal. The same thing can also be done in other towns.

The marketing of coal is such a huge subject that pages could be written about it, but I believe the salient requisites for successful marketing can be combined in the words "knowledge" and "persistence."

*Vice-president and general sales agent, Oakdale Coal Co., Denver, Col.

Finds Hard Work and Co-ordination Only Means of Success in Coal Selling

By Calvin Holmes*

OUR MINES in the Kentucky fields have been able to run 100 per cent since Jan. 1, 1921, and we are now on about an 80 to 90 per cent basis in the Tennessee field, in spite of the fact that our Tennessee coal is thin seam and very costly to produce and that we have to get a tremendous price for it even to break even with the present wage scale we are paying the coal diggers.

As for any particular selling argument, I am sure that I really could not pick out any one thing that has led to our being able to obtain orders. So far as my experience goes there is no royal road which can be used by the sales organization of the country to achieve success. I believe that our ability to run has been based upon co-ordination of effort more than anything else.

At our mines the production department carefully watches the preparation and the cleaning of the coal.

In our shipping department we do our best to ship the coal as agreed upon, never shipping an order in advance and never allowing a date on which a car is due to move to get by us without making shipment if it is humanly possible to get the coal out.

Last of all, our road organization and our office follow-up organization have simply worked and worked hard and when they got tired of working started over and worked some more, so we cannot claim any particular argument or efforts that any other selling organization has not either used or tried to use.

*Vice-president in charge of sales, Blue Diamond Coal Sales Co., Cincinnati, Ohio.

National Safety Council.—Owing to the space accorded to the Huntington meeting, it was necessary to delay publication of the account of the National Safety Congress till after the "Better Mining and Marketing Number." Frank H. Kneeland covered the meeting quite carefully and will record what took place in the issue of Oct. 20.

Coal Company Cuts Wages and Men Strike.—On Sept. 16 the Emmons Coal Mining Co., at Marion Center, Indiana County, Pa., put the 1917 scale in force. The miners on Sept. 14 had declined to accept the cut, but reported for work as usual after the cut was made. The company promised steady work if the scale was accepted but on Sept. 23 the men, on presenting themselves at the mines as usual, declared that they would not work for anything less than the standard scale. The mines will, therefore, remain closed till April 1, 1922.

In Selling Coal, Price Is Not the Governing Factor

Independent Wholesaler Thrives Despite Unfavorable Conditions and Public Obloquy — Salaried Salesman Prone to Measure Energy by His Income — Better Marketing Must Be Based on Service

By George H. Cushing*

PRODUCTION methods in coal have been studied until there are only two major methods. Each is good, has its adherents and is improving monthly in detail. However, we know so little about what is the best way to market coal that we have hardly a starting point. And yet it is through the marketing of coal that we make the contact with the public and form public opinion. This makes it the biggest subject before the trade.

I will not indulge in definitions even though I must draw distinctions. There are in the coal trade no scalpers, no brokers and no jobbers. Those terms, which apply accurately to dealings in theater tickets, in stocks and bonds and in many other industries, have no meaning in the coal business. In coal we have the producer and three groups of distributors distinguished from each other only by their methods of collecting their compensation.

The real producer knows that he cannot be in two places at once. He cannot be at the mines and in the market. If he tries both he must sacrifice effectiveness in both directions. Therefore the real producer does not try to market his own coal. He hires someone to do his marketing. That gives us the three groups of distributors—those who hire out on a salary to the producer, those who hire out on a commission and those who buy coal outright and take a chance on getting more than they pay. I call these three distributors the controlled sales force, the agency and the wholesale merchant.

Three Agencies Distribute Equal Tonnage

It is next to impossible to compile any figures which will measure even the relative importance of these three forces to the coal trade. I have tried it. The figures are practically worthless. Such inquiries as I have made—and they have been quite extensive—lead me to believe that each of these organizations distributes about one-third of the coal. On a tonnage basis I believe they stand about equal.

In what follows I want it understood that I am merely reciting facts which I have observed. I am not pleading the cause of any one group. I am merely searching for the truth in the light of those facts which are available. Certainly, I want it understood that this is not association propaganda. The membership of our association comprises all three classes of selling organization and we hope to have more members of each kind. Our association, as a matter of fact, accepts anyone who is a merchant regardless of how he is compensated for his services. The character of the man is the standard of measurement with us. We pay no attention to his method of compensating himself.

Looking at the matter squarely as an abstract problem, I have been struck by these facts:

In 1918, when the coal industry was controlled by the war machinery, the opinion was that the independent wholesaler was a parasite. He was allowed to function only if he could collect a higher price than was being charged by every other coal salesman. Yet never did the independent wholesaler do so much business.

In 1920, when prices were the highest on record, the independent wholesaler was accused of withholding coal from sale for speculative purposes and he was openly accused by the government of indulging in frequent resales of coal for the sole purpose of advancing prices. Yet in 1920 the volume of business done by the independent wholesaler was far greater—with a smaller total tonnage—than it was even in 1918.

Independents Got Most Foreign Trade

In 1920 the coal industry did a big business abroad. Orders were being sought by all three groups of distributors. Many producers have told me—and the figures confirm the statement—that the independent wholesaler got the bulk of the foreign business and the best prices.

This record goes directly contrary to popular beliefs and public ideals. If one judged by what the newspapers and the government officials are always preaching, he would say that "everyone wants to buy direct from the producer, therefore the controlled sales force must do the most business. When the controlled sales force is 'cleaned out' the overflow business must go to the sales agency which directly represents some mines. What business is left probably would go to the independent wholesaler. One would judge that the latter's share would be small."

When one finds that the facts are exactly contrary to this interesting and logical hypothesis he has to stop and revise his theories as to what is the best method of marketing coal.

Obtain 15c. Per Ton Above Government Price

I admit that I was amazed to learn — after having believed to the contrary for years—that the price of coal is not the governing factor in selling it. However, that point was proved beyond a peradventure in 1918 and again in 1920. The mine price in 1918 was advertised broadcast by the government. Everybody knew what it was and that he could get coal at that price at the mines. Dr. Garfield even went so far as to establish public distributing agencies at the offices of which the people could buy coal at the established mine price. In that year, and despite direct government competition the independent merchant did the biggest business in his history and got 15c. a ton more than the government's mine price.

In 1920 the newspapers and government officials advertised to the world their belief that the independent wholesaler was making a profit of $2 a ton or even more. Yet, despite this adverse advertising, he did more business than in 1918. This peculiar success must be explained or we will never get at the best method of mar-

*Managing director, American Wholesale Coal Association.

keting our coal. I am *coming* to believe that the secret of this success lies *in the method compensating* the distributor. If that is the deciding factor in getting a good marketing system, we can well afford to study that matter carefully.

So long as potential production is so much greater than actual demand, the producer of coal is up against the keenest kind of competition. To sell his coal, he must put every ounce of energy into his solicitation of orders.

What system of compensation will give the salesman the most energy and the producer the largest volume of orders?

Salesman Prone to Rely on "Regular Trade"

The controlled sales force gives, of course, the lowest cost of sales. But human nature is inclined to "sleep on a contract." Also the salaried man is likely to measure his energy by his income. If his salary is small, his efforts are likely to be weak. Besides, the controlled sales force is disposed to act today in a way to make sales easy tomorrow. That policy may "hold customers" but it does not expand much. This method of marketing coal tends to make the salesman rely too much on his "regular trade." It fails to give the controlled salesman the necessary resource when part of his safe and sane market fails him. The controlled sales force has, therefore, elemental weaknesses.

The sales agency is in a far stronger position. Its outstanding virtue is the fact that the more business it does, the more money it makes. That inclines to add "punch" to its selling efforts. Also, the higher price it gets for the mine, the more money it makes for itself. That tends to make the sales agency fight for good prices. Another virtue to the producer is that the sales agent is "his man." The ethics of the trade—understood but never expressed—provide that when an agency undertakes the sale of the output of a mine, that mine shall get the first call upon its energies and upon the order which it receives.

If we were considering this question of marketing from the standpoint of the coal man alone, it would, on the face of these returns, be decided that the sales agency was the ideal form. However, the sales agent is, himself, not satisfied with the 8 per cent or the 10 per cent commission when prices are going up. And, the operator is not satisfied to pay the 8 per cent or the 10 per cent as a sure margin to the agency when prices at the market are less than the cost of production at the mines. That is a defect in the system which makes it necessary to revise the terms of the agency agreement if we are to keep the other virtues which are inherent in it.

Independent Coal Man Takes Gambler's Chance

There is something in the frankness and the boldness of the independent merchant in coal which gives him a special appeal to the American people. He buys coal outright at the mine, and then tries to sell it at a profit. Everyone knows that he has a big chance to lose heavily. It is equally well known that he has a gambler's chance to make a handsome profit. Whether he wins or loses must depend solely *upon his individual efforts.*

The fierce struggle to win against heavy odds adds a mysterious something to his appeal to the customer. Certainly it adds a very material something to *the service which he gives the buyer.* From that buyer he is going to get the pennies or the dollars which must measure his profit. He must, somehow, contrive to prove to that customer that he earns that money.

In 1918 the independent wholesaler earned his bit by taking the place of the buyer in the struggling line before the office of the producer and by getting the much-coveted coal. In 1920 he did the same thing and then added a definite service—he fought the government and the railroads to keep them from confiscating his coal. If the coal got away from him after all, he plunged back into the struggling line again and got more.

In normal times he does less spectacular but equally valuable things for the buyer. Always, however, the independent wholesaler must give a service which convinces the buyer that it is worth the money he pays for it. The virtue to the producer in this arrangement is that he sells the coal at the mines. From that minute all uncertainty has gone. He is left free to do his job of producing. Often he even gets his money in advance.

The demerit of the independent wholesaler—viewed from the standpoint of the producer—is that when buying he is inclined to be a "bear" on the market. He is shrewd. He knows the market. He is persuasive, for that is the way he makes his living. He can talk a monkey off a grapevine. If you turn that sort of a glib animal loose upon an unsophisticated operator, the latter is likely to suffer injury to his pocketbook nerve. In fact, the whole objection to the independent merchant is that he is too good as a buyer.

We do not as yet know anything much about good marketing methods. But, on points, it looks as if the controlled sales force has the least to recommend it. The agency—if its commission is revised—is good. The independent merchant has a striking appeal. If that rests on the fact that he gives what the buyer wants and is willing to pay for—service—we are not going to get better marketing methods until we have all taken a post-graduate course in that branch of selling.

Federal Reserve Board's Foreign Trade Index Reflects Advance in Prices

THE Federal Reserve Board's index of the value of August exports and imports of selected commodities at 1913 prices follows. This index is designed to reflect the movement of foreign trade with fluctuations due to price changes eliminated. The list of commodities used includes 29 of the most important exports, the value of which in 1913 formed 56.3 per cent of the total export values, and 25 of the most important imports, the value of which in 1913 formed 47.7 per cent of the total import values. Both exports and imports have been further classified into raw materials, producers' goods and consumers' goods. Index numbers for July are shown for purposes of comparison.

EXPORTS

	Raw Materials 12 Commodities	Producers' Goods 10 Commodities	Consumers' Goods 7 Commodities	Total Exports 29 Commodities
July, 1921.....	111.6	68.3	131.8	112.5
August, 1921...	142.5	68.1	164.1	140.9

IMPORTS

	Raw Materials 10 Commodities	Producers' Goods 12 Commodities	Consumers' Goods 3 Commodities	Total Imports 25 Commodities
July, 1921.....	99.3	126.5	114.9	111.4
August, 1921...	116.7	164.8	126.3	135 7

(Index numbers: monthly average values, 1913 = 100)

THE WAY THE AVERAGE CITIZEN looks at the Mingo situation: There's always something to make coal cost more.—*New York Sun.*

To Make Each Sale Mutually Advantageous to Buyer And Seller Should Be Goal of Coal Distributors

By One of Them

THIS is the moulting season for coal men. The more far-sighted are casting off the thick cuticle of "war years" and are taking a fresh start, for the year 1922 is certain to provide a broad field for thoroughly-equipped distributors. With readjustments continuing to face us and the pressure to restore the old equilibrium between different routes, the wholesaler especially will be obliged to keep closely advised of traffic changes that may have vital effect on established practices of the trade. Much more than in the years prior to 1917 coal will call for resilient and teachable minds, for none is more quick than the trained buyer to discover where is the dependable service and advice he needs, if he is to compete with rivals in the same bailiwick. In a word, the distribution of coal has become a specialized and technical calling which is not mastered in a few months, and the prudently kinetic salesman is the one who everlastingly keeps informed.

Interest of Buyer Must Be Considered

From a broad viewpoint no sale amounts to a copper unless the advantage is mutual—unless there is a service to the buyer as well as to the interest the seller represents. There is less and less room for just "smartness"; and the young man who takes a really long shot for the future will offer market opinions only after mature examination of current conditions and due thought also for his customer's special situation. The old notion that one need only be a "good mixer" lapsed long ago; the beckoning is to those who "take pains" along with their transactive ability and genuinely perform the service for which they are employed. If every member of an organization, from office boy and stenographer to manager and president, could regard himself as "salesman," due regard, of course, being paid by each to his routine duties, it is easy to see how there could be a straightening up; a "heads-up, eyes-front" attitude, all along the line. There is diffidence where there ought to be alert interest.

Customers are born to be catered to, as we all understand, but in his own best interest each can be made to fit into his proper place in the co-operative chain that should bind mine worker and consumer alike, and no intelligent sales manager will be niggardly about items of expense that are at all in proportion to the desired end. Telephones and mileage charges are trifling when there is yearly tonnage to be obtained—and *kept!* There is virtue in continuity.

Not only should the buyer be led to consult his "supply agent" at each significant change in his local situation, but the agent in his turn ought to be unremitting in furnishing bits of pertinent information, and furnishing them *first.* Individual and personal letters, well expressed and judiciously written, are abundantly worth the energy expended. A good stenographer, given the right kind of dictation, is worth more than all the cyclostyle mimeograph impediments that could be bought for several times her annual stipend. They have their uses, but not in selling coal where there is any individual relation with the customer.

Clear, readily accessible and complete records of orders and deliveries are of much value. Never must there be omitted any pertinent detail, for the prompt answer will often mean an order. Tariffs also must be at hand for instant use, for there again is a factor often vital in making sales. And not to be neglected is a certain relationship with representative officials of the carrying lines, based on mutual desire to be of service.

A really painstaking coal man does more than this. He keeps in personal contact with each process and step in mining and shipping, and, further, he keeps in touch with trade served by his competitors. He can never be sure some emergency may not arise when he can be of such assistance to a buyer as may earn for him a lifelong customer. No matter how strong is the vital organization there may always be recalled the dictum of Theodore N. Vail, the record of whose career Albert Bigelow Paine is now putting through the press. It was characteristic of Vail, we are told, to resolve his rivals "into individual units—each a faulty and none too resolute human being; it was a policy he never saw reason to abandon."

Besides these incidental and minor attributes of "marketing" there are certain cardinal and fundamental, if old-fashioned, obligations of integrity that no coal man can ever afford to ignore. If he would serve his customer with a view to continuing that service it would be desirable to tell the truth when he speaks and to be possessed of a lively appreciation of moral values.

When Mr. Hoover tells the world that marketing of coal is unscientific, wasteful and a breeder of calamity isn't this the season for a downright, determined effort to improve methods? The coal trade needs a tonic before the public will share our belief in it as an honorable calling.

Coal-Mine Fatalities Drop During August With Lower Output This Year

REPORTS by the U. S. Bureau of Mines show that 141 men were killed in and about the coal mines of the country during August as compared with 203 killed in the corresponding month in 1920, a decrease of approximately 31 per cent from the fatality record of August of last year. Based upon an estimated output of 42,191,000 net tons in August, 1921, the fatality rate is 3.34 per million tons produced. The rate during August last year was 3.57 and the production of coal was 56,935,000 tons.

The average number of lives lost during August from 1913 to 1920 has been 219. The production of coal has averaged 52,209,000 tons, showing a fatality rate of 4.19 per million tons for the month of August during the past eight years.

During the first eight months of the present year 1,290 men have been killed by accidents at coal mines, against 1,489 killed during the corresponding months of 1920, a decrease of 13 per cent. The output of coal for the same months was 322,060,000 net tons in 1921 and 412,109,000 tons in 1920, a decrease during the present year of 21.9 per cent. These figures represent a fatality rate of 4.01 per million tons mined in 1921 and 3.61 per million tons mined in 1920.

Framing of a Serviceable Form of Binding Contract a Vexing Problem of the Coal Industry

Demand and Energy Charge Clauses of Electric-Power Contracts Suggested as Models Adaptable to Coal Industry—Honest Buyers Protected Against Losses Incurred on Shipments to Unscrupulous Purchasers

By Carl Scholz*
Charleston, W. Va

MANY coal contracts which were entered into in good faith by both sides during the last eighteen months have proved to be mere scraps of paper. The theory of contracts is that both parties thereto are acting in good faith and that mutual advantage will result therefrom. Some contracts, however, are broken the moment it develops that they are not as advantageous as had been expected, or when because of changed conditions they have become a distinct disadvantage. Very few people will make a bad contract twice, and this may be the reason that there are, perhaps, less contracts for coal today than last year. This argues for a revision of the basis of making contracts. The right kind of a contract is a distinct advantage to the mine operator, because it insures a dependable market, as well as to the purchaser, because it furnishes a dependable source of supply. As a whole, the coal contracts of today contain very much the same features that existed a decade and more ago. If the contract is made during a sellers' market, conditions are imposed to which the buyer would not consent if the tables were reversed.

Peculiar Complications Beset Coal Business

The marketing of coal presents complications which exist in very few other lines of business, and on that account it may be practical to search for a manner of contract which will fit the particular conditions existing, because in the end that seller will prevail who makes an equitable and fair contract and carries it out and the bargain-driving sharpster will sooner or later find himself out of business. The coal market is affected by conditions which at times impose a distinct hardship upon the operator who has contracted all or a part of his output, conditions for which he is not responsible and which he cannot obviate, such as car shortage or labor troubles. Similar situations may beset the buyer and the plan suggested herewith may work out in perfect equity to both sides on a coal contract because it has proven fair to the purchaser and consumer in other lines. Reference is made to the form of power contracts entered into between the manufacturers of electrical energy and purchasers thereof. A great many coal companies buy power and are familiar with the form used, but, perhaps, not many have considered that this contract form may be applied to the coal industry.

Charges Divided Into Two Classes

Power contracts provide for two separate charges: the demand charge and the energy charge. The primary, or connected load, charge covers interest on the power plant overhead, depreciation, sales expenses and other fixed charges. This primary charge, once established, represents a part of the monthly bill which is rendered, whether power is consumed or not. The second item, commonly known as the energy charge, covers the current actually furnished. The items entering into this charge are supposedly the cost of fuel, wages and actual operating expenses. In a well-operated and properly-installed power plant, working under normal conditions, the primary charge is about one-half of the total power bill.

The advantages of such a form of contract governing the sale of coal appear obvious, and the plan seems quite feasible in this business. Assuming that both sides to a coal contract desire to make the best possible working arrangement, let us consider the possibilities of a demand charge in coal contracts.

The same items which enter into the operation of a power plant are found in coal mining. Those items of the cost of maintaining a mine in temporary idleness, depreciation of plant and equipment, maintenance of roadways and haulage systems, pumping, taxes, insurance and a multitude of other items are in the aggregate quite large. In fact, they often represent a figure so large that many times the operators of coal mines choose rather to operate the mine at a substantial loss than to leave it idle.

Adapting Power-Contract Features to Coal

It is possible from an accounting and engineering standpoint to evaluate this cost in each case and to fix it at so much per ton for a given full-time capacity. This item, let us say, is found to be 75c. per ton.

Let us further assume that the contract price agreed upon is $4 per ton and that deliveries are to be 10,000 tons per month, which we will further assume is the total output of the mine. The buyer would accordingly pay the first of each month 75c. per ton on 10,000 tons, of $7,500, and as the coal is shipped he is either credited with 75c. a ton and billed at $4, or simply billed for the tonnage at $3.25. If, however, for some reason the buyer elects to have shipped to him but 5,000 tons, or even none at all, the producer is protected in his fixed charges and loses but the profit on the coal not shipped.

It is obvious that such a contract must provide equal protection to the buyer or it is not equitable, and hence not a contract. It must be provided that the buyer can get his 10,000 tons each month, and presumably the shipper must be allowed to furnish other coal of like grade and quality if his supply fails. Provision might be made to protect the consumer, in the event of failure to ship the coal, by the payment of commensurate damages.

Many details remain to be worked out and objections

*Vice-president and general manager, Raleigh-Wyoming Coal Co.

to be overcome, but I believe that the idea is sound and can be worked out to the mutual advantage of both parties to coal contracts.

Many changes have been made in the past in the manner in which other commodities are sold. Lumber, steel and food, for instance, are all shipped draft attached to bill of lading, and in some of the Southwestern states the entire output of many coal mines is sold on this basis. When this practice was inaugurated everyone discouraged the possibility of putting it into effect, but the practice has prevailed for many years, and has proven of advantage to the honest buyers. Under the method of selling coal on open accounts, so many losses were incurred that the operators felt they had to charge those who paid their bills for the losses incurred on shipments made to dishonest or unscrupulous buyers.

The application of this form of coal contract presented itself to me quite forcibly during the winter of 1920-21, when inactivity resulted in the closing of many industrial plants. Some mine operators who had felt secure for several months to come, suddenly found themselves without any contracts, because consumers' businesses were either curtailed or entirely closed down. In one instance, I recall, a coal operator who had 60 per cent of his coal covered by contract with a responsible concern was asked to curtail shipments. He took the position that the coal was sold under a bona fide contract and must therefore be accepted.

The buyer, however, finding that he could not use the coal, asked the operator to sell his contracted quantities on the market and charge the consumer with the difference between the revenue obtained and the contract price, and this was done. The coal operator soon discovered that in throwing this coal on the market, though but about 10 per cent of his output, he promptly established a price for the remaining 90 per cent which he mined, and that the price was lower than he considered the coal to be worth. Unconsciously this operator had entered into an arrangement of "dumping," which is most detrimental in any sales policy.

Times will come again when the operator will be asked to curtail shipments because the contracted quantities are not being absorbed. I would like therefore to advance this idea in selling coal because now is the time when it can be discussed without hurry or passion. Better marketing demands a better form of coal contract. Will this form be an advance?

Purchasing Agents Question Feasibility of Contract Advocated by Carl Scholz

By R. S. Wallace*

COMMENTING on Mr. Scholz's article entitled "Framing of a Serviceable Form of Binding Contract a Vexing Problem in the Coal Industry," I will say that the proposed form of rate does not in my opinion furnish the answer to the "vexing problem." As I understand it, the problem is to make your contracts so that they will, throughout their term, prove satisfactory to both parties.

The price stipulated is not the only essential element of a satisfactory contract. Many other factors enter into such a contract. The fact that a customer has agreed to pay to the operator a fixed sum per month plus an additional sum, based upon the amount of coal supplied to him, will not, in my opinion, make a contract satisfactory to both parties or insure its being carried out. A contract in which the price is stipulated in the manner described by the author may prove just as unsatisfactory to either party as would a contract in which the price is based entirely upon tonnage.

While the character of the coal-mining business may be such as to justify a coal price or rate based upon demand as well as tonnage, it is in fact quite similar to many manufacturing operations, all of which are essentially different from the public-utility business, in that none of them is a natural monopoly. They are not like the public utilities, confined to a definite territory.

The coal mine ordinarily has no physical connection with its customer. The customer's demand on the coal mine is within control of the operator, while his demand upon the public utility is entirely within his own control and requires only the closing of a switch to make it effective. The utility is a regulated monopoly which is required by law to furnish service to all within its prescribed territory, without discrimination, at the legal rate. The coal operator is free to deal with whom he pleases, at prices that may be mutually satisfactory regardless of prices or conditions controlling his transactions with others. While the coal business remains competitive, the operator's prices, rates, terms, etc., will be largely governed by those of his competitor. I cannot see that the "demand rate" as the basis of a coal contract will be of any considerable assistance in making coal contracts mutually satisfactory.

* * *

Graham Davies, purchasing agent of the Louisville Gas & Electric Co., Louisville, Ky., believes that "from the coal operators' standpoint the form of contract proposed by Mr. Scholz would be very advantageous but if contracts under the old form were not complied with and were considered, as he says, "mere scraps of paper" when it was to his advantage to repudiate it, we do not believe that even this new form would be lived up to by either party.

"Of course, legal proceedings might be resorted to, but were this done there would be as much probability of the old form of contract being upheld as this proposed form. We do not believe that many operators would take a breach of this contract into court owing to the effect such actions would have upon their business in future."

* * *

A New England Buyer of gas coal writes this opinion of coal contracts:

"It is very easy to comment, also very easy to criticise, but from the writer's experience in past years with both buyers' and sellers' markets, conditions seem to be the factor that governs, and it is the writer's opinion it would be next to impossible to draw up a contract that could not be broken, provided one of the parties were inclined to break it.

"The writer's judgment would be to deal with the best people to be found and then it matters very little what you have for a contract. To be frank with you, I have very little faith in contracts with the majority of coal shippers. I formed this opinion from the experience I had during the war period, but if some contract could be drawn up that would bind both the seller and the buyer alike, and we were sure it would hold, it certainly would be a fine thing, but, as stated above, I have some doubts."

*Vice-president and general manager, Central Illinois Light Co., Peoria, Ill.

Accurate Information on Coal-Production Costs of Prime Importance to Operating Department*

Expensive Mining Division a Fruitful Field for Cost Cuts—Sales Department Must Know Price Required to Avoid Loss—Finance Reports Indicate Use Made of Data by Foregoing Sections

By R. W. Gardiner†

UP UNTIL a few years ago the accounting systems of the majority of the coal operators of this country were extremely crude, and in many cases practically worthless. Very few of the smaller operators knew what it cost them to produce coal. They did not know whether they were making money or losing money until the end of the year, and then only by the increase or decrease in assets over liabilities. Unfortunately, in a great number of instances the liabilities were greater than the assets, and as a result a large proportion of the coal companies of this country have gone through some form of financial reorganization. Up to about 1916 the majority of them were practically in the hands of their bankers. They had to have money to meet payrolls, and in order to get money they had to sell coal. As a result, the buyer in many cases got the coal at his own price and on his own terms.

Another idea prevalent among the operators in those days was that it was cheaper to run at any price than to shut down. It unquestionably is true that there is a certain amount of expense in connection with closing down a mine. This expense depends largely on the amount of pumping that has to be done, the amount of ventilation, physical conditions such as bad roof, the supports of which must be looked after constantly, and similar items. If this expense of closing down the mine temporarily, which has been estimated to vary from 10c. to 40c. per ton on the average daily output, is greater than the loss per ton incurred by running and selling at a low price, then it is less costly to run than to close down. The class of operators referred to above, however, had no means of knowing which was the less expensive course to pursue. They did not know what their goods cost them and in quite a number of cases they could not even make an estimate. There have been operators whose only method of figuring cost was to take the mining rate, add 50 per cent to it and call the result cost. This method, of course, was ridiculous then, and is still more so now, but, fortunately, I do not believe that any operator today is so shortsighted as to follow such a method.

Departmental Uses of Cost Data

In the management of a coal-producing business there are three departments which need and should use the information supplied by a proper accounting system, and the needs and uses of the two departments of lesser importance must give way to the needs and uses of the one of prime importance. To my mind the department of prime importance is the operating department. An operating department which does not have the proper information is absolutely at sea. The head of the operating department may know that his product is costing too much money but he cannot put his finger on the leak. The only way that he can gather any information is through conversation with his foremen, or possibly the mine superintendent.

These men are nearly all practical men, and as a result of their training and experience are prone to discredit figures and to rely on personal observation when they have to make decisions. Moreover, superintendents and foremen are not alone in taking this view. Many operators in this country are practical men who have come up from the ranks and who know the operating game from start to finish. It is always hard to convince such men that figures are more reliable than their own judgments. There have been many instances when practical men have positively refused to believe figures which were presented to them, although the figures were susceptible of proof. But, as stated before, conditions have changed and the operating men of today are depending more and more on statistics to guide them, with beneficial results not only to themselves but to the whole industry.

Sales Department Must Be Apprised of Costs

The second department that needs the information which is supplied by a proper accounting and cost system is the sales department. No matter how efficient the operating department may be, all its good work will be for naught if the sales department does not know the price that it must obtain for coal in order to avoid a loss. It is true that coal is a commodity the price of which is governed by the law of supply and demand to a greater extent than almost any other commodity.

When industry needs coal it will have coal regardless of price, and when it does not need coal it will not purchase, no matter how low the price or how advantageous the terms. When the supply is largely in excess of demand, prices are bound to drop. There is, however, a wall which should prevent prices from going too low, and that wall is the knowledge of the cost of production. In fixing sales prices the sales department may sometimes, as mentioned above, make a low price even though they may lose a little money, on the ground that it is cheaper to sell at a small loss than to shut down. But such prices ought to be made with a full knowledge of what the actual loss is. To make them on any other basis is pure guess work and may lead to serious consequences.

The third department which needs the assistance of a proper accounting system is the financial department. However, this department does not need the information as promptly as the other two, and the old method of ascertaining the financial status of the business at intervals, sometimes of a year, answered the purpose satisfactorily.

*From an article based upon a paper read before the Pittsburgh Chapter of the National Association of Cost Accountants. Copyrighted by National Association of Cost Accountants.

†Commissioner, Pittsburgh Coal Producers' Association, Pittsburgh, Pa.

Entirely too much stress has been laid on the importance of the purely financial uses of accounting systems. It is a very nice thing for the treasurer to prepare statements for the directors and stockholders showing the entire operation of the company, and how much money they have made, but this does not help to make more. The operating department, by reducing costs when it knows what the items are, can save. The sales department, by refusing to make prices which are too low, can save. It is these two departments combined that can enable the financial department to make statements which will meet with the approval of the directors and stockholders.

Payroll Expenditures First to Be Analyzed

To get down to details, the first analysis of expenditures that must be made is the payroll. Here the accountant is confronted with a stumbling block, in the form of traditional practice. Years ago, probably because inside men and outside men drew different rates of pay, the only subdivision of labor was between inside labor and outside labor. In the light of modern accounting methods this practice appears rather ridiculous. A coal-mining operation is very much like any manufacturing business, with the exception that the operator must buy all of his raw material at one time, whereas the ordinary manufacturer can buy his raw material as he needs it, and can renew his stocks from time to time.

The principles of accounting for mining are exactly the same as in any other business, and the distribution of labor in mining should be arranged along exactly the same lines as the distribution of labor in a manufacturing plant. Operators must abandon the idea that the place where a man works has any bearing on the account to which his salary should be charged. The purpose for which the man is employed and the effect of his work on the general operation of the business should be the determining factors in the distribution of his pay.

Mine Workers Comprise Main Labor Division

The first main division of labor in a mining plant, as in any other plant, is direct or productive labor. In mining operations the direct laborer is the man at the face, who is paid on a tonnage basis. He is the real producer in the mine and all other labor is incidental to his work. Consequently the first division of labor is mining. The second main division of labor, which is called indirect labor, is that which is necessary to enable the direct laborer to do his work. The operator can have as many subdivisions of his indirect labor as he sees fit. For example, he may subdivide it into timbering, track laying, drainage, ventilation, haulage, hoisting, dumping, tallying, preparation, and into as many other subdivisions as he wants.

The third main division of labor is that engaged in maintenance and repair work. This division is composed of the men who maintain the mine in working condition. Under this heading should be included development work, and to a great extent yardage and dead work. In some mines, of course, a large proportion of yardage and dead work is incidental to mining—that is, if there is a thin vein and the miner is required to take down a certain amount of roof, that labor constitutes part of the mining cost. But where yardage or dead work is done in connection with development work, it should not be included in the mining cost, but should be a part of the third division of labor, maintenance and repairs.‡

In considering the use of figures from a distribution of labor§ such as outlined, it readily will be seen that the superintendent or head of the operating department has no control over the cost per ton of the first division of labor, mining cost, because the miners are paid at a certain specified rate per ton which remains the same irrespective of the quantity mined. However, he has a very decided control over the second and third divisions.

The second division, or indirect labor, is the item where in most business concerns the greatest leaks occur. In this respect the coal-mining industry is not an exception. The total of this division does not bear a direct relation to the amount of production. It varies to some extent with production, because the more direct labor you have, the more indirect labor must necessarily be done. But in some operations an increase of 25 per cent can be made in the production without any appreciable difference in the cost of indirect labor. The indirect laborer must be ready to do his work when the coal comes up, and if sufficient coal is not coming up he waits until the coal is ready to move. This condition applies to practically all of the men grouped under indirect labor.

Do Higher Wages Lessen Efficiency?

If the contention of many well-known statisticians that increases in wages frequently result in lessened efficiency on the part of the men—because they either do not work as hard or they do not work as steadily—is true, then the direct labor, which is paid on a tonnage basis, will not reflect this feature, but the indirect labor unquestionably will. Irregular work on the part of direct labor is shown by an increase in the tonnage cost of indirect labor, because indirect labor, which is paid by the day, must be on the job at all times ready to do its work.

Irregular work on the part of the direct labor means the production of a smaller number of tons per day. If production is reduced and the indirect labor cost remains the same per day, the cost per ton will necessarily increase. Inefficiency on the part of indirect labor will also cause an increase in the cost of this item per day, because it takes more inefficient men to do the same amount of work. The superintendent when he gets his payroll analysis on this basis is at once put on notice when his costs are getting too high.

There are several other forms of labor which appear on the payroll and which are more or less fixed; in fact, they practically do not fluctuate at all with production. These items are the salaries of the mine superintendent, the mine office and the power department. These items are really indirect labor, but they should be kept separate because they cannot be controlled. It is advisable to know what it costs to produce power, and for this reason the labor cost of power employees should be grouped separately.

‡The following statement in regard to dead work appears in the uniform cost system of the National Coal Association: "As every mine presents physical conditions peculiar to itself, no two mines being alike, and as the physical conditions fluctuate as the work progresses, in order to work out comparable statements and records, dead work should be classified in accordance with its nature, such as yardage, premium for narrow work, shooting rock, lifting bottom, taking down top, stowing and dumping gob, cleaning up falls and retimbering after them, handling squeezes, mine fires, or any other work imposed by adverse physical conditions."

§The system of the National Coal Association is supplemented by a suggested form for distribution of mine labor in conformity with the principles advanced in the system.

Efficient Sales-Record System Enables Small Force to Keep Track of Large Clientele and Heavy Tonnage

Good Workable Scheme of Sales Records Is Factor in Effective Marketing, Eliminating the Mistakes That Anger Customers — Specimen Cards That Feature a Plan Now in Successful Operation

NOT the least important of the work of a coal company is the method of keeping records in the sales office, though the routine is often something that, being uninteresting to many officials, has not reached a very high state of development. The system described here is that developed by H. W. Henry, vice-president of Peale, Peacock & Kerr, and is used to handle the distribution of between 3,500,000 and 4,000,000 tons of coal per year to 750 accounts from about thirty mines in central Pennsylvania. This description covers only the records of the sales office in New York and, it is believed, will be of interest because of its simplicity. A good system of sales records, simple in operation, is a factor in good marketing, for a few mistakes through faulty records will go far toward rousing the wrath of a customer.

The first record, of course, is the contract, or if spot sale, the order. The acknowledgment is made on a standard form, on half letter size, with the name of shipper, date line and, if a shipment on contract, the words "subject to the terms and conditions of our contract with you, we acknowledge receipt of your" order to ship so many cars of coal. A serial file number, assigned to every customer, no matter how small, is placed on the acknowledgment of the order and on every record and item of correspondence pertaining to that customer.

The same clerk acknowledging the order makes out in duplicate an order slip giving full particulars for the guidance of the shipping and billing clerks at the headquarters distribution office at St. Benedict, Pa., in the mining region, to which the original is mailed, the carbon being kept in the New York office. The order slip, which is on a "4 x 6" form is reproduced here:

Order No. ..... Date.. .19....
Consignee .....
Destination .....
Route No. ..... Freight Prepaid—Collect
Make no shipments on this order after .....
{ Combined weight of car and lading }
{ must not exceed.....pounds }
Quantity .....
Quality .....Consignees unload through bottoms—over side of car
Price $.....per gross ton F.O.B. car at mines.....
Copies of this order mailed to
Invoice to .....
.....
File No. .....

PEALE, PEACOCK & KERR

Immediately the car or cars on each order are shipped from the mine a postal card notice is sent the consignee

Consignees Unload { On trestle / Over side of car } Consignee
Quality Notify
Contract / For } Effective / Expires
File No. Freight { Prepaid / Collect }

Destination Route
Invoice to Account
Price

Year	Month	Ship	1	2	3	4	5	6	7	8	9	10	11	12	26	27	28	29	30	31	Ordered	Shipped	Over	Short	Remarks
	April																								
	May																								
	June																								
	July																								
	August																								
	September																								
	October																								
	November																								
	December																								
	January																								
	February																								
	March																								
Our Order No.																									
Buyers' Reference																									

DAILY RECORD OF SHIPMENTS THAT CONSTITUTES A MONTHLY AND YEARLY RECORD

This form, used in the New York office of Peale, Peacock & Kerr, provides a complete record of shipments day by day against orders and contracts, by which the distribution office can draw on a moment's notice a summary of transactions to date. The data are posted on this sheet from orders and contracts as received and from daily mine reports of cars billed.

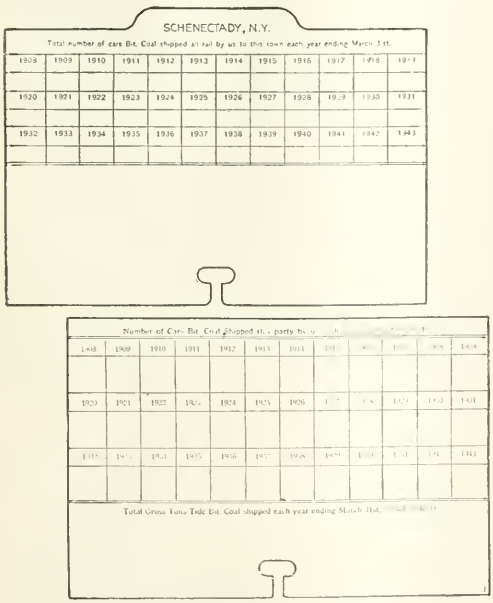
on which under the date is the line "shipped for your account following cars of bituminous coal," together with notation of date of shipment, car numbers and initials and consignee and destination, with a final note stating that the coal will be invoiced under date on which it passes the railroad scales.

At the end of each day the distribution office makes out a report for each mine showing for that day the following information on each car loaded and billed: Waybill, car initial and number, railroad scale weight (when available that day) and consignee and destination. The reports are mailed to the New York office and are the basis for the shipment-ledger records at headquarters.

In this record Mr. Henry has provided a compact, comprehensive picture of the business for one year with each customer. The outline of the form on which the year's record of orders and shipments is kept is reproduced here in reduced form. The sheet as it is used measures 11 x 14.5 in. with 2.5 in. for binding in loose-leaf holders.

From the daily mine reports are posted the shipments in units of cars on the line and under the column corresponding respectively to the month and date of shipment. The space allowed for each day's record ($\frac{1}{4}$ x $\frac{1}{2}$ in.) is sufficient to permit showing by pencils of different color the shipments from several mines to the same consignee on the same day.

At the end of each month the total number of cars shipped is obtained by adding horizontally across the page. This total can be compared with the number of cars ordered and the number over or under is noted in the columns provided for this purpose. Month by month these figures of orders and shipments are carried forward down the sheet and at the end of the coal year the record is complete. These sheets are filed each year in permanent binders. Thus in this office there is a detailed record of all business ever done with any customer.



INDIVIDUAL AND TOWN CARDS

Fac-similes of cards on which yearly records are kept of the number of cars of coal shipped to individual customers and to all customers in each town.

On a set of 4 x 6 filing cards, one for each consignee, is posted at the end of the year the total cars shipped. The card shows the same information for every year from the date of the first shipment to each customer. These cards are filed by states and towns and the "town card" provides a record for total shipments in cars to each town or community by years. Fac-similes of the individual and town cards are reproduced in the preceding column.

The card for the individual contains the following data on one side:

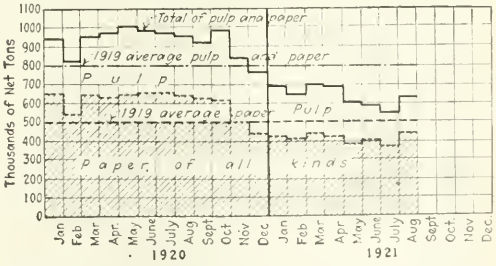
Name and address of customer
Location of Plant
Annual Requirements
Storage Capacity
Delivery via
Consignees unload on trestle—over side of car
Restrictions as to kind or size of cars
Remarks

These cards and their summaries of business constitute a valuable record and one that permits a small office force to keep in touch with many customers and a large tonnage.

Paper Industry a Large Consumer of Coal

FOR every ton of paper manufactured from pulp there is consumed one ton of bituminous coal and likewise for each ton of pulp produced one ton of steam coal is burned. Thus combined pulp and paper production gives a measure of coal consumed in the production of paper.

The accompanying diagram shows the monthly production of pulp and paper in the United States, as reported by the Federal Trade Commission, for 1920 and 1921 to August, compared with the monthly averages of 1919. In May and again in October, 1920, the consumption of coal in this industry approximated 1,000,000 tons. The average for 1919 was 800,000 tons per month, or about 185,000 tons per week, and in 1920, 931,000 tons per month, or 215,000 tons per week. A part of the drop in coal production this year is accounted for by the drop in the total requirements of the paper industry, for July, 1921, was but little more than one-half the peak in 1920. The latest data, that for August, indicates an upward turn.



PAPER AND PULP PRODUCED IN THE UNITED STATES

Each ton of pulp and paper represents the consumption of one ton of steam coal.

WHAT THE COUNTRY NEEDS from the miners and operators is more underground operation and fewer field operations.—*Little Rock Arkansas Gazette.*

Selling Coal to Industrial Consumers Requires Educated Salesmen of Highest Type

Entirely Different Methods Pursued with Retail Dealers—Letters with Personal Touch Prove Useful Adjuncts—Many Operators Maintain Their Own Selling Organizations in Preference to Marketing Through Jobbers

By Haven A. Requa*

A GREAT many operators who formerly sold their output through jobbers have come to the conclusion that their best interest is served by maintaining their own sales organizations. Roughly speaking, an operator producing twenty cars per day can afford to hire a man to look after the sales. Larger tonnages, of course, require larger sales forces. Operators who have tried both ways decided that they obtain much better results when selling their own coal. On a weak market the tendency to cut prices is not so great, for very often a wholesaler shades his price more than is necessary. Recent history shows that more and more operators are selling their own product, in the belief that they can serve their own interests better than anyone else. Then, of course, there is an unmistakable tendency of the public to eliminate the middleman and deal direct with the producer.

Tactics Vary With Different Lines of Trade

Selling domestic coal and selling steam coal require entirely different tactics. The salesman on the road who has worked up a nice trade with the retail dealers is seldom a great success as a salesman of steam coal, and, on the other hand, the man who is extraordinarily successful with the steam trade is often a complete failure when it comes to soliciting orders for the domestic sizes. The reason for this is found in the difference between the mentality of the average purchasing agent for a factory and the average retail coal dealer.

The industrial purchasing agent is a very busy man whose purpose is to make a saving for his company, and in order to sell him it is necessary to show him quickly where your particular coal will produce more heat for a cent than the coal of your competitor. The retail dealer, however, is generally an easy-going and friendly individual with plenty of time to talk with a visiting salesman and who has to be worked up just right before he will place an order. Should he be approached quickly, he would, nine times out of ten, refuse to book an order. The purchasing agent would throw any salesman out of his office who displayed a tendency to sit down and talk politics half an hour or so before getting down to business.

Some coals are particularly adapted for domestic use, while others can be marketed only for industrial purposes. More salesmen are required to move a given tonnage of domestic coal than of steam coal. As a rule, though, a good domestic coal is more profitable to produce and sell than is industrial fuel. Selling domestic coal under such circumstances as existed during the past summer is a complicated and trying process. A good conscientious salesman, if he is equipped with an automobile, can average about six medium-sized towns per day. After calling on all of his prospects and his customers, he sends a report every night to his home office. If these reports, covering his daily activities, are made out in a thorough manner, they are invaluable to the sales manager and his office.

Well organized distributors of domestic coal have elaborate and efficient "follow-up" systems. After a salesman calls on a dealer for the first time and the record of the call has been forwarded to the home office, the dealer receives a typewritten letter mentioning the salesman's call and, incidentally, one or two pertinent facts relative to the coal sold by the firm. These letters appear to be typewritten, but as a matter of fact they are printed in quantities with spaces left for the address, in such a way as to have every appearance of being personal letters. Great care must be taken to make these letters appear individual, for if a retailer knows he is receiving a routine circular, the value of the appeal is lost.

After the first letter has been sent, the dealer's name is filed so that it will came up automatically for another letter after two weeks. The second follow-up letter ther goes out. This letter should be less than a page and should discuss the quality of the coal. A week later, if no reply has been received from the dealer, a third letter should be sent. This letter can be on preparation, and ought to carry considerable detailed information. After another two weeks the fourth "personal" letter will go out, this time dwelling on the "service" angle. If it is deemed wise, other letters can follow, all containing facts about the coal which will prove of interest to the dealer.

Salesman's Task Made Easy by Letters

In the meantime the salesman has, in all probability, made a second personal call, and he generally will find that the way is made easy for an order if one has not already been mailed in to the home office direct by the dealer. The retail dealer generally is interested in letters of this type because they give him information for which he pays nothing and which prove valuable to him in his contact with buyers. Where an accurate record of this kind of "follow-up" work has been made, it has been found that the effort more than justified the expense, as one competent stenographer can easily handle the routine work.

Circular letters, of course, are a help although, unless they quote attractive prices, but few orders result and their primary value will be as advertising. Circular letters, if consistently used, give salesmen a certain standing with the trade, often serving as an introduction to the trade. Letters can be used in another way. A letter to a dealer who has bought his first carload of your coal on the date he is due to receive his coal from the railroad, inquiring if the coal is satisfactory and soliciting another order, nearly always brings good results. It pleases the dealer to know you are in-

*Sales manager, Columbus Mining Co., Chicago, Ill.

terested in him and want to keep his business. Letters of this nature can also be printed in bulk and used when needed. It has been found in this, too, that a second or even a third letter is worth while sending. It naturally pleases a dealer to know that his business is sought. Letters are playing a more important part in the sale of coal than ever before.

Selling coal for industrial purposes is almost a profession in itself. In the good old days the chief requirements of a good salesman of steam coal were primarily a likable disposition, a well-developed gift of gab, a limited knowledge of coal and some information on competitors. Some years ago, according to a current story, an enterprising young capitalist had invested a fortune in new developments in Illinois. To speed up sales and to stimulate his salesmen, this young man decided to call on the steam trade himself. His first call was on an up-to-date and keen buyer for one of the packers. The aggressive young mine owner was asked many questions which were more or less satisfactorily answered. Finally the purchasing agent asked how many B.t.u.'s there were in the coal. The young man got indignant, pounded the table, and answered, "I'll have you understand there are no impurities whatsoever in my coal." Those were the good old days, when coal was bought very largely on the basis of whether or not it pleased the boys in the fire room.

Combustion Experts Sell to Large Consumers

Now all is changed. The men who are selling coal to the big buyers are the specialists who have a knowledge of chemistry, combustion and engineering, and, talking the language of the purchasing agents, can demonstrate that their coal delivers more heat units for a cent than that of their rivals. These specialists are only good in getting business from the big buyers, and in large quantities. Send a man like this to a small creamery or factory and he probably would be useless, as this type of buyer would look upon him as a highbrow, or, worse still, as a theorist. As a general rule the big buyer is looking for advice, and is glad to listen to anybody if he thinks he is going to learn something in regard to reducing his costs. Not so with this other type, who resents suggestions and believes he is an authority on all coal. This type of small buyer of steam coal will respond to the same tactics as the retailer. The steam coal experts, or, as they are now designated, "combustion engineers," have come to stay, and more and more the larger companies employ them regularly. Some companies producing byproduct coal go even further and have salaried gas engineers who travel about the country giving advice and the benefit of their experience—both valuable—to the customers of the firm.

During the spring and summer months of this year there developed an epidemic of refusing cars of coal. Both the retailers and steam users did it at every possible turn. If a car of coal was the slightest bit off, either on account of faulty preparation or poor quality, the producer promptly heard about it in no uncertain terms. This "refusal" evil, after getting a good start early in the spring, grew to such alarming proportions that by midsummer it had engaged the attention of a number of operators' associations and others interested in marketing coal. Nothing of much benefit to the trade was accomplished. The only successful way to combat an abuse like this lies in avoiding it by carefully picking your customers. If a man has the reputation for being arbitrary and for making unjust deductions, it is far better not to sell him coal.

When a car of coal is refused by a reliable concern it generally means that the coal is at fault in some way, and the best way to settle the matter is to make an adjustment. If a salesman is delegated to go and inspect the car, very frequently he will take the side of his customer and demand from the house a larger reduction in price than necessary. This is only natural, as a salesman is generally anxious to retain the good will of his customer. The sales manager, on the other hand, generally leans to the other extreme and wants to make a reduction so small that it does not actually cover the loss and inconvenience the customer has been put to. Be sure your customer is on the square, then be liberal with him. Satisfied customers are an asset no company can afford to overlook.

Industrial Depression Provides Training

This year has certainly been a hard one, especially for those connected in any way with the coal industry; but in spite of this, perhaps our present misfortunes are going to prove to be of lasting benefit to us. For one thing, they have put us all in fine shape to tackle our sales problems once business gets back to normal. All the fat gained through the easy selling of coal during war years has been worked off and once more we are trained down and in fine condition to tackle with confidence and enthusiasm even the hardest sales problem. Competition is healthy when it isn't carried to extremes, and competition makes us go out of our way to be of real service to the public. Serving the public is about the most important thing we have to do, and we are better fitted for this work now than we ever were before. This "Serving the Public" idea may sound vague and impractical and perhaps a bit philanthropic but put yourself in the other man's shoes and see how it works out. Are you going to buy coal from the firm that just sells you coal, or are you going to buy from the firm which takes an intelligent interest in you and your problems, and always tries to accommodate? And what's that but service?

Retail Prices of Food Recede in Nine Large Cities, Gain in Richmond

CHANGES in the retail cost of food in September, in 10 principal cities of the United States, are shown in compilations by the U. S. Department of Labor, through the Bureau of Labor Statistics.

During the month from Aug. 15 to Sept. 15, 1921, there was a decrease in all but one of these cities. In Richmond there was an increase of 2 per cent. In Baltimore and Chicago there was a decrease of 3 per cent; in Manchester, 2 per cent; in Bridgeport Butte, New York and Providence, 1 per cent. In Peoria and Washington, D. C., there was a decrease of four-tenths of 1 per cent.

For the year period Sept. 15, 1920, to Sept. 15, 1921, there was a decrease of 27 per cent in Butte, 26 per cent in Baltimore, 25 per cent in Chicago, Manchester and Peoria; 23 per cent in Bridgeport, New York and Providence; 22 per cent in Richmond, and 21 per cent in Washington, D. C.

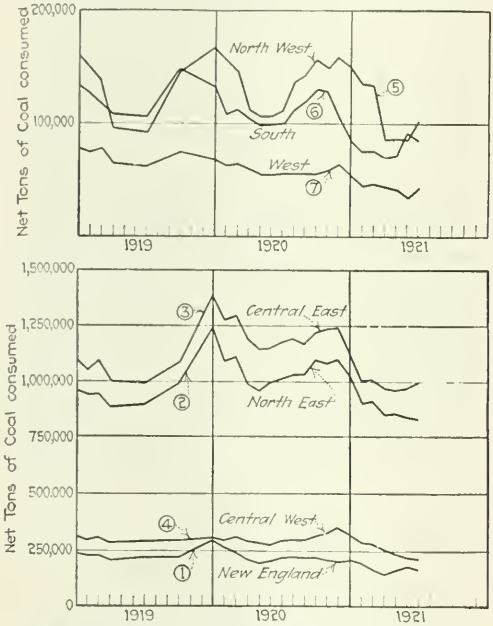
As compared with the average cost in the year 1913 the retail cost of food on Sept. 15, 1921, showed an increase of 67 per cent in Richmond; 65 per cent in Washington, D. C.; 63 per cent in Providence; 58 per cent in Manchester; 57 per cent in New York; 55 per cent in Chicago, and 54 per cent in Baltimore. Prices were not obtained from Bridgeport, Butte or Peoria in 1913, hence no comparison for the 8-year period can be given for these cities.

Coal Custom of Public Utilities Sought When Spot Market Is Low

PUBLIC utilities are the most regular customers of the coal shipper of any of the important users. This is true because, considering the business as a whole, the largest part of their power output is used for lighting and traction, uses that are more constant than the power load of industrial plants. When business is dull, manufacturing ceases, but the houses and streets must be lighted and street cars must operate.

It has been the unfortunate experience of the utilities to be undesirable and unpopular when the spot market is high, as in 1917 and again in 1920, but in 1919 the coal distributor courted the business of the utility and again this year he seeks it.

Limitations on revenue imposed by regulations prevent the utilities from paying the highest prices and their troubles are great during periods of car shortage



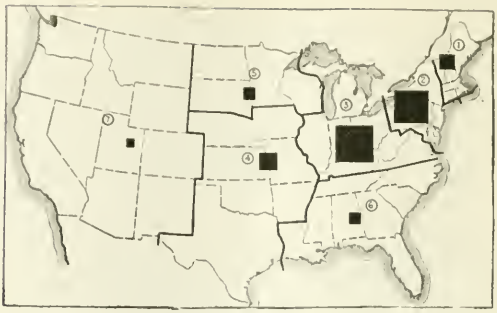
CONSUMPTION OF COAL BY PUBLIC UTILITIES BY MONTHS, BY GROUPS OF STATES

The numbers correspond to the groups shown on the accompanying map. Note that the vertical scale of the lower diagram is five times that of the upper and that the quantities in these subdivisions are much smaller than in the groups shown in the upper diagram.

and curtailed deliveries on contracts. Like railroad business, however, this class of trade is sought by large producers because of its dependability, even though it is not always the source of greatest profit. The accompanying map, showing the distribution of consumption of coal by utilities and the relative importance of this class of user in the East, is based on data published by the Geological Survey.

Another diagram compares the total production of bituminous coal, month by month, with coal consumed by electric utilities. This diagram clearly shows the comparative stability of utility coal consumption and the proportion it represents to all soft coal produced.

The curves for the large industrial areas of the

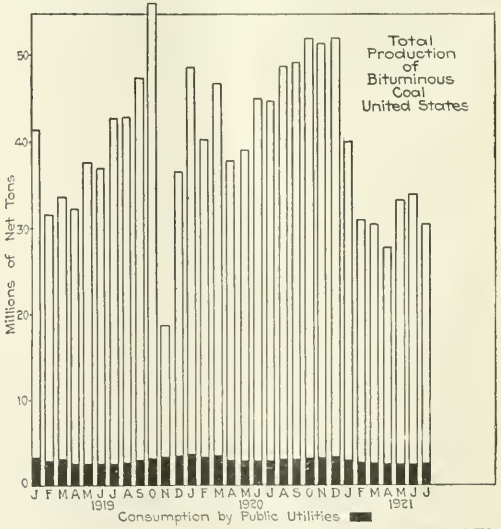


RELATIVE CONSUMPTION OF COAL BY PUBLIC UTILITIES IN DIFFERENT PARTS OF THE COUNTRY

Each of the solid black squares is proportional to the quantity of coal burned by central power plants in the corresponding subdivision of the United States, based on the figures for 1920.

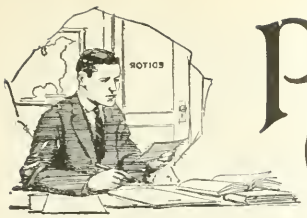
Central and Northeastern United States bring out two things about the power demand and hence the consumption of coal by this class of users. These curves show a general bulge upward representing the boom in business in 1920 preceded by the post-armistice slump of 1919 and followed by the world wide depression of 1921. The curve is modified, however, by the seasonal factor, that part of the curves covering the winter of 1919-20 picturing this more clearly than that covering the winter of 1920-21. The decline in business began to be felt in December, 1920, and the decrease in demand for power for industrials more than overcame the usual winter peak in the lighting and traction load.

The curves for the Central West and New England disclose somewhat the same tendencies. Despite varying competition of fuel oil and water power, the West shows a curve more nearly straight than any other section. The Northwest and the South present the best examples of purely seasonal fluctuation.


Total Production of Bituminous Coal United States
Millions of Net Tons
50
40
30
20
10
0
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J
1919
1920
1921
Consumption by Public Utilities

TOTAL PRODUCTION OF BITUMINOUS COAL COMPARED WITH CONSUMPTION OF COAL BY PUBLIC UTILITIES, BY MONTHS, 1919-1921

Although representing but an average of from 6 to 8 per cent of the total consumption of soft coal, the rate of use from month to month is remarkably constant, as compared with the fluctuations in both total consumption and production, as shown in this diagram.



Problems of Operating Men

Edited by James T. Beard

Concentration Essential to Better Mining

Economic Extraction of Coal Depends Primarily Upon Method Employed—Effective Disposition of Producing Factors Likewise Important

THE principle of economy of time and labor is universally recognized as being essential to the successful operation of any business or industry. The principle involves the choice of a scientific method of working, in order to be most effective in production. Conservatism in management will avail little if this principle is ignored.

In the mining of coal, the most essential and characteristic feature of a scientific method of working, is the concentration of the largest number of producing factors. I am referring now to the men and the machinery employed in mining, transporting and loading the coal. These must be disposed in a manner to make their work most effective.

Where concentration is carried out intelligently there results increased production at a less cost of operation, even though the method of working is not the best adapted to the physical conditions in the particular field. On the other hand, the adoption of a good method of working will bring poor results when the producing factors are widely scattered about the mine.

Planning and Developing a Mine for Efficient Production

In considering the most effective production of coal, my first thought is to plan and develop the mine in a manner that will permit of working the largest number of men and machines in a minimum space, consistent with the full productive efficiency of each of these elements, and having due regard to the physical conditions surrounding the work. Expressed in a few words, this means the operation of a continuous working face as far as that is practicable.

The system of coal extraction most commonly practised in the United States is that known as the room-and-pillar system. The development is generally on the advancing plan. This system of mining does not present conditions that are ideal for the most effective concentration of the work, however.

While it is not my purpose to discuss the relative merits and demerits of the different systems of mining, I want to say that the longwall advancing method so largely employed in England and on the Continent, lends itself naturally to the most effective concentration of work, and is particularly advantageous in reducing the cost of operation to a minimum.

Where a mine is being worked on the room-and-pillar system, the principle of concentration can be applied to a limited extent, however, and will have an economic value. This is best accomplished when the coal is worked on the retreating plan, in which the headings are driven to the boundary, or any desired limit, before any rooms are turned.

Advancing System Not Efficient

At present, the almost universal practice is to open and drive rooms as rapidly as the developing entries advance. Under those conditions, unless the entries are double-shifted, the development in the rooms will be too rapid for the development of the entries, and the result will be a limited producing area. In such a case, it will be necessary to distribute the several factors, machines and men, over a more or less widely separated area.

This condition is particularly observable in the working of low seams of coal. It becomes then a matter of economy to extract the pillars in the rooms as quickly as the latter are finished; and the entry practically ceases to be a producer of any consequence when it has once reached its boundary or limit.

The rooms being worked out on the advancing plan, there only remain the room stumps, the chain pillar and the barrier pillar to be extracted when the boundary is reached. It will generally be necessary to take these out with a pick. In that work but a limited number of men can be employed, under the most favorable conditions.

Concentration in Retreating Plan

In the retreating system, on the other hand, the process is reversed. No rooms are developed until the entries reach the boundary or limit. Then, any desired number of rooms can be turned at once, which affords a greater concentration of men and machinery. The possibility of a squeeze is practically eliminated, ventilation is better and more easily maintained and the expense of operation generally reduced, while greater safety is secured.

My experience is that the longwall-retreating method of mining, or some modification of that method in the form of a panel system in which the coal is worked out on the retreating plan, affords the best means for the concentration of the work, a maximum degree of safety and reduces the cost of operation to a minimum. This, of course, assumes that the natural conditions are favorable to the plan adopted.

The practical economic features of a retreating method of coal extraction is generally conceded by authorities on coal mining. While most operators believe this to be true, they still continue the more wasteful and expensive methods, because of the demand for quick returns on the investment. Let me close by saying that more economic coal extraction can be established only by adopting a method that will permit of the greatest saving of time and labor.

Maple Ridge, Pa. I. C. Parfitt.

Situation Today in Mining Coal

Primitive methods of mining coal with pick and shovel—Coal, the chief source of energy—Improved methods demanded by present serious industrial depression—Larger pillars advocated in mining.

IN THE early history of coal mining little thought was given to the necessity for improved methods. The coal was taken out with a pick and loaded into the cars with a shovel. Today, these primitive methods have given place to different types of cutting machines and much of our coal is loaded by mechanical loaders.

No one ever thinks now of mining coal by what was then known as the "bell-pit" system. For many reasons, but chiefly because of the greater depth to which we must go to reach the coal, such a system has long since been abandoned as impracticable.

Improved Methods Required

In order to provide for the greater cost of shaft sinking and the expensive mechanical equipment now employed, to say nothing of the higher cost of labor, if we are to realize on the investment in a coal proposition today, it is necessary to adopt improved methods, both in the mine and on the surface. This demand is greater now than ever.

When we consider that coal is the chief source of energy and, indeed, the main factor in the industrial life of a nation the necessity is more than ever apparent of finding means and methods by which to conserve this energy and use it to the best advantage.

This means that our coal must be put into the hands of the consumer, or delivered at the place of consumption, in the best possible condition and of good quality. Such are the conditions prevailing in the industry today, however, that producers have been prone to disregard these essential factors and there has resulted a large waste in the production of coal.

At present we are facing a serious industrial depression. Every one, from the miner to the operator, dealer and consumer, is affected. The situation demands not only retrenchment but the giving of careful thought to the means and methods employed in the production and use of coal.

Advantages Derived from Leaving Larger Pillars

Speaking in reference to mining, attention has been drawn many times, in *Coal Age*, to the fact that greater efficiency is made possible by planning the work underground so as to provide larger pillars, whereby a greater length of working face is presented and there is less risk of the roof pressure crushing the coal and rendering the work of mining unsafe.

In the adoption of such a plan, a larger territory can be reached from a single shaft and the life of the mine is extended. The cost of production is decreased by reason of more efficient facilities for ventilation, drainage, haulage and timbering. There is also a greater concentration of the work in the mine, which is a large factor in successful operation.

It is not necessary to more than refer, here, to these items in successful mining, as they have been fully explained and discussed by different writers in *Coal Age*. It is enough to say that the present situation calls for their careful consideration and adoption wherever conditions will permit. In a previous letter, *Coal Age*, Aug. 25, p. 301, I have explained these conditions more fully.

Linton, Ind. W. H. Luxton.

More Lump, Less Screenings

Producing large coal a big problem—Actual experience of greater value than assumed opinions—Charging and tamping holes in blasting.

DEMAND for lump and the larger sizes of coal is now and always has been one of the coal operators' big problems. It is taken for granted that any suggestion tending to decrease the amount of screenings, in the output of mines, will be gladly welcomed by the producer.

In arguing this question, it may be assumed that every effort has been made to work all rooms on the face of the coal, wherever this was practicable; also, that the coal is properly mined by being undercut, topcut, center cut or sheared. The production of large coal, in any particular mine, then depends on the practice prevailing in that mine in respect to the blasting, loading and transportation of the coal.

Opinions, however practical, are never of the same value as the actual experience of men in the work of mining coal. For this reason, I propose now to recite, more or less briefly, the experience of one of the largest producers of domestic coal in this country.

Close Inspection Unavailing To Reduce Amount of Screenings

Without mentioning the name of the mine or its location, let me say that the closest inspection of the working faces had always been maintained in that mine, for the purpose of seeing that every shot was properly mined and the place made safe before the blast was fired. In addition to this, special efforts were made to secure the honest co-operation of the miners in loading clean coal.

Notwithstanding, however, there was still an oversupply of the smaller sizes of coal, and the tonnage of lump fell short of the demand. In view of these conditions it was then decided to secure the advice of manufacturers of explosives, all of whom claimed to be able to increase the lump tonnage in a mine.

As a result of the correspondence that followed different manufacturers sent their experts to the mine to investigate the conditions and advise regarding the weight and kind of explosive to be used and the manner of shooting the coal. These explosive experts, of course, came at different times and worked separately, each demonstrating the kind of explosives manufactured by his firm.

Demonstrating Proper Use of Powder Brings Results

Previous to the coming of the experts, it had been the practice of our miners to use road dirt and coal slack for the stemming when tamping their holes. All three of the experts who came to the mine, however, would use nothing but clay for stemming and this had to be about the consistency of putty. They all tamped the charge to the mouth of the hole with clay, and the result was they could always tell just what a shot would do before it was fired.

We employed only thoroughly competent miners and, at times, it was amusing to watch these old-timers when an expert tried to show them how they should shoot their coal. But it did not take long to make us one and all understand that we had much to learn.

While each expert used a different explosive, the results were in every instance the same. Each used the same care in preparing the shot, and a big pile of lump coal would be shaken loose and not scattered along the road, 20 or 30 ft. back from the face.

We observed, as was explained by the experts, that the clay when well tamped held the explosive charge right where it was wanted. The result was that the coal was not shattered or broken into fine fragments and dust. Neither was a shot left standing to be dug out with a pick, which every miner knows is the hardest work done in a coal mine and produces much fine coal.

The same practice was tried, a little later, at a new mine where the coal was being shot off the solid. Here also it was found that the best results were obtained in using the clay stemming to tamp the hole, which became the general practice in both mines.

The results in blasting proved so good that the company lost no time in having clay delivered to every third room, where it would be handy for the use of the men. On their part, the miners were so well pleased with the results of this change that they would not shoot a hole without first tamping it with clay. Everyone observed that, not only was the amount of lump coal greatly increased, but there were no blownout shots and the labor of mining the coal was far less than previously.

George Edwards.

Pikeville, Ky.

Thoughts on Locomotive Haulage

Practical suggestions in regard to providing surplus of power on a 2-mile haul in a mine having an output of 2,500 tons per day and using electric coal cutters.

IT WAS with keen interest that I read the reply given to a correspondent who asked for the correct answer to an examination question on electric mine-locomotive haulage. My opinion is that while the question is a difficult one, it calls only for such knowledge as a mine inspector should possess.

My belief is that any man who aspires to the responsible position of state mine inspector should have acquired, in his mining experience, a knowledge of electric-power transmission and locomotive haulage that would enable him to answer this question in a practical way. Perhaps, he would rely more on his practical judgment and constructive ingenuity than on the technical formulas required to solve such a problem.

Helpful Suggestions

Although the readers of *Coal Age* have not been invited to discuss or criticise the answer given by the editor, it being a question of general interest I may be pardoned for offering a few practical comments and suggestions. Appreciating as I do the helpful spirit that prompted the editor to work out the solution to this problem, in detail, I hope that what I have to say will be understood as offered with a desire to be likewise helpful.

In the first place, I wish to say that the diagram of power transmission, on a 2-mile haul in a mine, as given in the reply to this inquiry, is concise, modern and first-class in every respect, showing the necessary transformers and converters required to effect the greatest saving.

It would seem that, while careful attention has been given to every detail regarding the necessary power for haulage and transmission into the mines, the reply appears to overlook

the power required to operate the mining machines for cutting the coal. Assuming that all of the 2,500 tons output of coal is cut by machines, I find that the power required to run these machines is even greater than that consumed in the haulage.

For example, assuming a daily average of 200 tons of coal cut by each machine, we will say an output of 2,500 tons a day will require 13 machines to cut the coal. Several makes of electric, chain machines are rated at 30 hp.

Although it would seldom, if ever, occur that all of these machines are operating at full capacity at one time, it will be well to estimate on the maximum condition. In that case, the power required to run the thirteen machines would be $13 \times 30 \times 0.746 = 300$ kw.

Now, the editorial reply has estimated that a maximum condition, in haulage, will require a 200-kw. generator in the powerhouse, which is correct. It is stated, however, that by using a No. 6 wire for Feeder B there will be a surplus of 18.861 kw. (25 hp.) available for the machines.

It is possible that this reply assumed that practically all of the coal will be cut at night, leaving the loaders free to break up and load their coal in the dayshift, which is the only reasonable explanation of why the power for the machines was not calculated.

Power Required for Machines

Assuming that the coal is to be cut during the day, however, allow me to suggest that a 300-kw. generator should be installed as a separate unit in the powerhouse and operated exclusively for supplying power to the mining machines. This power should be transmitted to some central point in the mine, say a distance of 10,000 ft., and there transformed to a working pressure suitable for AC machines.

Again, assuming the same voltage (2,300 volts) and a wire return, the size of wire required for this transmission will be, for a 10 per cent line drop ($0.10 \times 2{,}300 = 230$ volts) and a current of $300{,}000 \div 2{,}300 = 130$ amp.,

$$A = \frac{21.6 \times 10{,}000 \times 130}{230} =$$

122,000 *circ.mils.*

which is a 00 wire B and S gage.

Before closing, allow me to refer to one or two other points relating to safety and efficiency in working and which seem worthy of consideration from a practical standpoint. These concern the use of a 500-volt circuit in this low seam (4½ ft. thick), and 30-lb. rails for this haulage.

In my opinion, a 250-volt circuit, as required by the state mining law in Alabama, would be safer. It is true it would require more copper for the DC current used in haulage in the mine. The current for the same power would be approximately doubled, requiring a 000, instead of a No. 1 wire on the inside three sections of the haul.

Disregarding the larger first cost, however, the heavier wire would give a greater rigidity, which would enable the trolley wheels to follow the wire better and cause less sparking.

Finally, although the old formulas in common use for finding the weight of rails on locomotive haulage require 10 lb. per yard, for each ton on the individual drivers, which calls for a weight of rail $10(10 \div 4) = 25$ lb. per yard, for 10-ton locomotives and the reply suggests the use of 30-lb. rails, even this I consider far too light for the proposition in hand.

This mine will operate, in a field of 3,000 acres; and assuming an 80 per cent recovery and 250 working days per year, say for 20 years, it will be a paying proposition to provide a good haulage road having a well balanced track of 60-lb. rails, which I have often seen laid on shorter hauls than this. The cost of upkeep is less and the danger of derailment of cars and consequent delay much less.

Bayview, Ala. John Walls, Sr.

Inquiries Of General Interest

Building Brattice in Rise Headings To Remove Gas

Practical Points in Building Brattice To Remove Gas in Rise Headings — Set Posts Two Feet From Rib—Nail Boards on Intake Side of Posts

WE ARE anxious to learn the best and most practical way to build brattice in a pair of headings driven to the rise and which have been allowed to fill with firedamp formed by gas generated at the face of the headings.

In one section of our mine where the rooms are driven to the rise, we have been experiencing more and more difficulty in keeping the faces clear of gas. It has been necessary to use canvas nailed to posts set along the rib in each room, in order to conduct the air to the face.

Unless this is done there is not force enough in the air reaching the faces of the rooms to sweep away the gas. In an idle time, a while ago, some of these rooms filled with gas that gave us much trouble to remove.

At that time, there was considerable difference of opinion as to the right way to build a brattice in a room. Most of the old timers, however claimed that the air should be carried up on the small side and returned on the larger side of the brattice.

Any information that *Coal Age* or its practical readers can give us in regard to the building of brattices in rooms will be much appreciated and may assist others who are like situated.

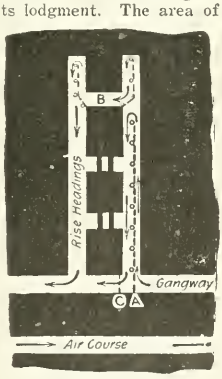
———, Pa. Bratticeman.

The removal of gas from rise headings is always more difficult than where the headings run to the dip or are level. The gas being lighter than the air tends to rise and hang at the face of a pitch.

In order to overcome this natural tendency of the gas and sweep it from the face a strong current of air is required. In other words, the velocity of the current must be sufficient to disturb and carry off the gas.

As shown in the accompanying figure, a brattice is constructed, in a room or an entry, by first setting a line of posts parallel to the rib of the opening and about two feet from it. Canvas or boards are nailed to these posts on the rib or intake side.

By carrying the air up behind the line of brattice, the velocity of the current is much increased and is made more effective for removing the gas from its lodgment. The area of opening behind the brattice or the intake side, should be from one-fifth to one-fourth of that on the other side, which is the return.



REMOVING GAS FROM RISE HEADINGS

The figure illustrates the manner of removing a firedamp mixture from a rise heading that has been permitted to fill with gas down to the gangway. The arrows indicate the direction of the air current and the dotted lines show the position of the brattice.

Before taking any steps to disturb or remove this gas, notify and withdraw all the men working on the return of the air passing the headings.

Conditions may even make it advisable to withdraw the men from adjoining sections or from the entire mine.

Employ only reliable and experienced men equipped with approved safety lamps. Safeguard every approach to the return current. Now, proceed to increase the air volume and following the intake, start to erect a line of brattice reaching from the rib of the gangway, at *A*, a short distance into the first heading.

Extend this brattice gradually, giving the air passing around it plenty of time to remove the gas, as shown by frequent tests with the safety lamp. The brattice boards or canvas are nailed on the intake side of the posts, which are set two feet from the right-hand rib of the heading.

When the brattice finally reaches the last crosscut, *B*, that portion on the gangway, at *A*, is moved forward to *C*, so that the air now passes up this heading on both sides of the remaining brattice and, flowing through the open crosscut *B*, returns down the second heading to the gangway.

The brattice left standing in the first heading is now removed and work begun to deflect the air to the face of the first heading, by building a new line of brattice, starting from the outby rib of the crosscut *B* and extending gradually to the face of that heading.

When the face of the first heading is clear, the same method is employed to drive the gas from the face of the second heading, arranging the brattice as indicated in the figure.

Examination Questions Answered

Miscellaneous Questions

(Answered by Request)

QUESTION—*(a) What is a siphon? (b) Under what conditions can it be used? (c) In case a shaft, say 60 ft. deep, is located on a high mountain side, could a siphon be used to drain the shaft of water and, if not, why not?*

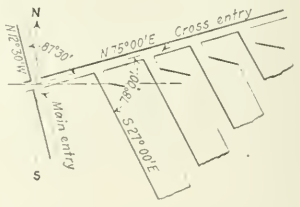
ANSWER—(a) A siphon is a pipe line having two branches of unequal rises united at the crown or highest point in the line, and forming a continuous conduit extending from an upper to a lower basin or pool.

(b) The conditions essential to the successful operation of a siphon are: 1. All joints must be air-tight and an air-trap must be arranged to remove air that accumulates at the crown. 2. Preferably both ends of the pipe must be submerged in the water. 3. The atmospheric pressure on the water in the upper basin must be sufficient to overcome the suction head, or vertical rise to the crown, and the resistance to the flow in that arm of the siphon. 4. The relative diameters of the pipe in the two branches must be such that flow in the intake branch, under atmospheric pressure, will be at least equal to the flow in the other branch under the discharge head. Otherwise, the siphon will shortly run dry.

(c) A siphon could not be used to drain water from a shaft 60 ft. deep, because atmospheric pressure, even at sea level, normally, is only equal to that of a water column of 14.7 ÷ 0.434 = say 34 ft. Practically, the suction head of a siphon, or vertical rise from the surface of the water in the supply basin to the crown of the pipe line, in feet, must not exceed nine-tenths of the barometric pressure, in inches. Thus, for a barometer of 30 in., the suction head of a pump or siphon should not exceed 0.9 × 30 = 27 ft.

QUESTION—*(a) The course of the main entry in a mine is N 12° 30′ W; what is the course of a cross-entry turned at an angle of 87° 30′ to the right? (b) What would be the course of rooms turned to the right off the cross-entry, at an angle of 78° 00′?*

ANSWER—(a) The course of the main entry lying in the northwest quarter, subtract the angle of its bearings from the angle at which the cross-



SKELETON PLAN OF MAIN AND CROSS-ENTRIES AND ROOMS

entry is turned to the right, which gives for the angle of bearing of the cross-entry 87° 30′ — 12° 30′ = 75 deg. Therefore, the course of the cross-entry is N 75° E.

(b) To find the course of the rooms turned to the right of the cross-entry, add the angle at which these rooms are turned, to the angle of bearing of the cross-entry, which gives 75 + 78 = 153 deg. This is the azimuth of the course of the rooms. Since it lies in the southeast quadrant, in order to find the bearing of the rooms, subtract the azimuth from 180 deg., which gives the angle of the bearing as 180 — 153 = 27 deg. Therefore, the course of the rooms is S 27° E.

QUESTION—*If a man was injured from a slate fall that has broken some of his ribs on each side and also the collar bone and the man is unconscious, what would you do?*

ANSWER—Lose no time in sending for a physician. Then, with great care, lift the broken slate from the fallen body of the man and place him as carefully as possible on a stretcher, or otherwise remove him to a safer place where he will have good air. This being done, try to restore the victim to consciousness by sprinkling cold water in his face and applying smelling salts or spirits of ammonia to his nostrils. Keep the body warm and avoid any unnecessary movement of the injured one that would cause him pain and possibly start bleeding, by reason of the broken bones tearing the flesh or muscles. While waiting for the doctor it may be possible to apply a large triangular bandage about the chest to help support the broken ribs and prevent their movement.

The collar bone being broken, place a pad made of a large handkerchief, in the arm pit on the side of the injury, and bind the arm in a sling to give support to the broken bone, as far as this is possible. See that the patient has good air and is kept warm and make every effort to prevent collapse.

QUESTION—*Why is alternating current more dangerous to use in a mine than direct current?*

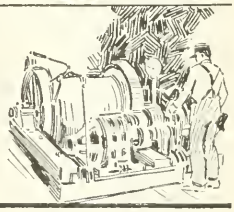
ANSWER—Contact with a live wire carrying alternating current is generally more fatal because of the rapidly recurring shocks produced on the nervous system, which is the nature of that kind of electricity. On the other hand, contact with a wire carrying direct current causes a single shock to the system, after which the current continues to flow steadily until the contact in broken.

QUESTION—*What precautions should be taken when transporting powder or permissible explosives into a mine in which electricity is used?*

ANSWER — All explosives should be taken from the powder magazine by a competent person in charge. This should be conveyed into the mine, in a special car or cars properly padded or otherwise protected against shock or possible electric charge due to accident on the road. All detonating caps or electric fuses should be carried in a separate container and kept away from the powder and other explosives. The powder car or cars should not be attached to a mantrip or one carrying timber and other supplies into the mine. Preferably, the powder car should be taken in alone.

Where the miners are permitted to fire their own shots only sufficient caps and explosives should be given to each miner for his day's work and these should be placed at once where they will be safe until used. Better practice, however, is to employ competent shotfirers who are authorized to charge and fire all holes that, in their judgment, are safe. This work should be done after the men have left the mine.

Increasing Output of Coal



Loading Machine and Method of Operating It So as to Move a Four-Hundred Foot Slab in a Day

Sides of Adjacent Rooms Slabbed Repeatedly Till 150-Ft. Pillar Is Drawn—Cutter Bar Enters Loosened Coal, Moves It to Conveyor, Which Deposits It in Car—In One Hour 150 Tons Have Been Loaded

By M. Martin*
Huntington, W. Va.

ROOM-AND-PILLAR methods of mining have militated greatly against the loading of coal by machines. This system at its best affords but a short working face, and to obtain as near 100 per cent efficiency as it is possible to get with any type of loading machine it is vitally necessary to provide a long working face on which the machine can load continuously over the side of the car. This will eliminate the two greatest time wasters machine loading has to contend with, namely, that of moving from one working place to another and of shifting the mine cars, with the attendant shutdown of the loader, while this change is being effected.

Most operators would say on first thought that the amount of money required to change their system of mining would be too great and the time required too valuable. A little study of the American System of Mining, as shown in Fig. 1, should relieve any doubt about the simplicity of the change and the time required to make it.

The system has its greatest economy in laying out a new mine, reducing the initial expenditure to a marked degree, the principal savings being on track, timber, ventilation and the concentration of the work, which in turn effects a saving in superintendence costs, as it requires a minimum number of men for that work. This system produces a much larger tonnage and a greater percentage of recovery than is possible with a larger area of development under the old system.

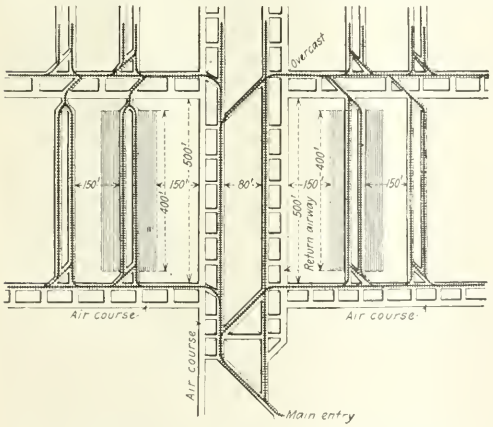


FIG. 1. LAYOUT FOR SIDE-WALL MINING

Two roadways are driven about 15 ft. apart and, including the approaches, 500 ft. long. When these are completed a 75-ft. slab is taken off the flank of each in 11 or 12 cuts. As the slabs on adjacent pairs of rooms meet the whole 150-ft. pillar which was left between room couples is mined out. The cutter then starts to slab the 15-ft. pillar between the twin rooms.

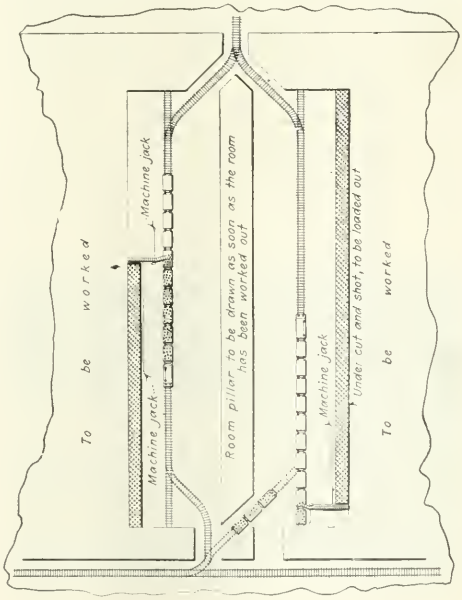

To be worked
Machine jack
Machine jack
Room pillar, to be drawn as soon as the room has been worked out
Machine jack
Under cut and shot, to be loaded out
To be worked

FIG. 2. PLAN OF ROOM IN WHICH COAL IS BEING LOADED BY CONTINUOUS METHODS

Coal is mined from a long side wall; the loading machine then loads this coal into a trip of cars spotted by a locomotive. Cars can enter by one opening to the room and leave by the other.

*Vice-president and general manager, American Loading Machine Corporation.

The plan as outlined in this article and as illustrated in Fig. 1 involves the driving of parallel entries of regular width, leaving a small room pillar approximately 15 ft. wide between the two entries. This pillar should be pierced as often as is required by the mining law. A block of coal 150 ft. thick (to vary according to local conditions) is left on either side of these entries. Slabs are taken from these two blocks of coal in the manner illustrated in Fig. 2, the loading track being moved over each time to bring it within easy reach of the loading machine.

Upon reaching the centers of the 150-ft. blocks a return is made to the room pillar and a slab taken from either side. The steel is then removed and the room entries at either end are bratticed and work started on the next room. It undoubtedly is true that but few companies are willing to develop the entire territory before drawing the coal. In this event it is suggested that every other two blocks be worked, the alternate two being left for recovery upon return.

Speed Is of the Essence of Such a Plan

This work must of necessity be done with great speed, and can be done in the manner described only by the aid of mechanical loaders. A shortwall machine can slab a 400-ft. face in most coals in from three to four hours. After being undercut or topcut, as the case may be, the coal should be shot though not in the manner usual when the coal is loaded by hand. A light charge of power should be used—sufficient to disintegrate and separate the coal from the roof, leaving the coal in the position of a tight or standing shot.

After this is done the loader, shown in Figs. 3 and 4, is brought in, unloaded from its truck, sumped and fed in the same manner as is a shortwall mining machine. Cars are then brought in and continuous loading on a 400-ft. face begins. It is admitted that lack of continuity in the operation of a loading machine is one of its most serious drawbacks. With this machine a cut on a 400-ft. face can be loaded out in less than a union working day.

This machine is a comparatively new one, the one shown in the illustrations being the first of this type built. This loader was conceived and built in a coal mine by a practical miner, who has been in charge of mining at one of the large mines in West Virginia for fifteen years. In the forepart of Fig. 3 will be noted a horizontal bar 7 ft. long. Chisel-point bits are set in

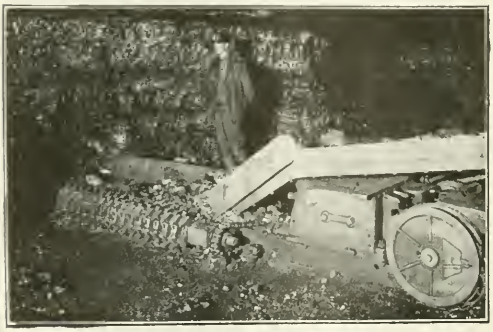


FIG. 3. AMERICAN LOADING MACHINE AT WORK

The horizontal bar 7 ft. long and covered with chisel bits rotating rapidly forces its way under the loosened coal and moves it toward the belt by which it is carried to the mine car.

FIG. 4. VIEW OF MACHINE AS SEEN FROM BEHIND

The coal when lifted by the horizontal bar with the chisel points shown in Fig. 3 is thrown on the belt and kept from going further by the guard, which can be seen in this illustration as also in that just referred to.

lugs around the periphery of the bar, which rotates at a speed of 240 revolutions per minute up and toward the conveyor, which will be seen running up and over the motor, whence it discharges into the mine car on the track parallel with the face.

The propelling power of the original machine was an old type of standard shortwall machine. This has now been changed to a new and improved design, eliminating a number of superfluous gears and shafts as well as some unnecessary weight, but retaining the shortwall-propelling principle. The operation is similar to that of a shortwall mining machine. The loader is sumped and fed as if it were to be used for cutting.

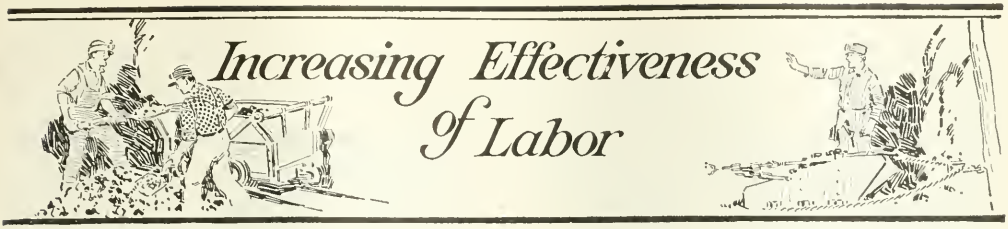
The height of the coal governs the loading capacity of the machine. The machine moves along the floor at a varied speed of from 1 to 48 in. per minute while loading; it is quite easy, therefore, to figure its capacity in any seam of coal. The speed with which the machine loads is controlled by friction in the same manner as the shortwall machine.

Machine Scrapes up Bottom Coal Clean

After the first cut in a room or entry has been loaded out it is necessary to scrape the bottom; after that the machine makes its own bottom by scraping it for a depth of from one to three inches, according to the manner in which the bits are set. This does not require any special adjustment nor does the machine consume any more power in performing the work of scraping the bottom, which generally is conceived to be one of the most annoying problems to be met in a mine which undercuts the coal.

The loader shown in the illustrations has been in operation at the mines of the Buffalo Eagle Colliery Co., Braeholm, W. Va. The later type of machine, embodying all the principles of the one shown in this illustration but somewhat different in design, will be put upon the market soon. The new machine will be able to load successfully in a coal bed less than 30 in. in thickness.

Briefly summing up, this machine is operated like a shortwall mining machine, will load any coal cut by one of these machines, travels from place to place on a truck, is loaded and unloaded by its own power, requiring no special operator; it scrapes the bottom and has in a 6-ft. seam loaded coal at the rate of 150 tons per hour. This machine is now being manufactured by the American Coal Loading Machine Corporation, Huntington, W. Va.



Refuse-Stacking Car, Making Pile Sixty Feet Wide, Much Reduces Labor of Dumping and Track Shifting

A Larry and a Rapidly Moving Conveyor Mounted on a Turntable Truck Make It Possible for One Man to Dispose of All the Rock Coming from a Large Mine

By A. F. Brosky
Pittsburgh, Pa.

AMONG the many costs in and around mines that can be greatly reduced is that of refuse stacking or slate dumping. When much slate has to be disposed of, several men and a few mules are constantly employed at this work, and many coal cars lie idle awaiting the disposal of the slate which they contain, making it necessary to have more mine cars that would otherwise be required.

A refuse-stacking car or larry is being manufactured that is capable of handling a large amount of refuse at a low cost. This device strongly resembles an ordinary coke larry, except that it is provided with a conveyor beneath the hopper and a turntable between the truck and the superstructure. The hopper has a capacity of seven tons and the turntable is power-actuated through a clutch from the motor by which the conveyor is driven.

Rock Spread by Rapidly Running Conveyor

The material is delivered from the hopper to the discharge apron through a suitable gating arrangement. The discharge conveyor, made of manganese steel, travels at a speed sufficient to throw the material 20 to 30 ft. beyond the conveyor end. It discharges at the rate of five tons per minute. All four wheels are drivers, power being furnished by a 30-hp. 230-volt direct-current motor. This car will discharge refuse to either side or to the front. When loaded, it has, on straight track with a 6-per cent adverse grade, a speed of 400 ft. per minute. All operations are controlled from a platform that is installed at the rear end of the car.

Small mines especially, but a few large ones as well, continue the old-fashioned method of stacking refuse; the material is brought to the dump in cars and is discharged by tipping the ends of the wagons by means of a small crane. To dispose of, say, 150 tons of slate each day in this manner may require from ten to twelve men. In many cases a mule and a driver are necessary to transport the pit cars to the dump. Thus the dumping of the rock requires about the same number of men as are employed on the tipple to dump and prepare the coal, although this is many times the volume of the slate that the same mine will stack.

Nor do the disadvantages of this method end here, for the dump track must be shifted frequently. This last item is perhaps the most costly of the entire operation. To stack a pile 60 ft. wide at the top by the old system would necessitate at least six shifts of the spur track, whereas this refuse-stacking car will at one track set-up make a fill of this width. In order to dispose of the greatest amount of rock with the least amount of track shifting it is necessary first to build up a high narrow pile. Fig. 1 shows a refuse pile stacked by the old and by the new systems, using a one-track set-up.

For purposes of calculation the angle of repose of slate may be considered as being 45 deg., this being sufficiently accurate for all practical purposes. The cross-hatched portion of the trapezoid of Fig. 1 represents a section through a refuse pile as made by the old system. This is superimposed upon a cross-section of a pile made by the new mechanical method. A simple mathematical calculation, using the dimensions indicated, shows that the mechanical method gives a cross-sectional area of 2,700 sq.ft., whereas the old method yields an area of only 1,200 sq.ft. Thus from a single stationary track the refuse-stacking car can dump more than twice as much material as can be dumped by the old method. To discharge as much refuse by the old scheme as may be discharged by the new would require the track to occupy successively, in the first instance, six different positions, figuring a width of 10 ft. for each track set-up at the top of the pile.

In the Pittsburgh district mine refuse may be piled

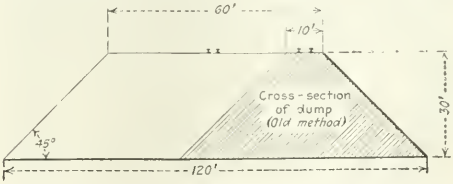


FIG. 1. DUMP CROSS-SECTION, OLD AND NEW METHOI

The cross-hatched area shows the old form of dump, where the gallows frame is used and the dump is hand-trimmed in spare moments. The large area shows the new dump, which though more saving of labor in low rock piles is a large source of economy in all, high or low.

to any convenient depth without any great liability to firing. In some places, however, as, for instance, in Cambria and Indiana counties, of central Pennsylvania, where refuse-pile fires are common occurrences, good judgment must be used in determining the depth to which a pile may safely be carried. In such localities as few things are more annoying than the smoke from dump fires, the town must be so situated as to be out of the path of the wind that prevails over the dump.

Handling the refuse by means of a stacking car enables the rock to be well spread, thus making it possible to build low dumps and to reduce the risk that such fires will occur, the exact cause of which has not been definitely determined. It does not at first seem likely that these fires originate from spontaneous combustion, because to a casual observer they seem comparatively free of inflammable material. However, there is always a certain amount of coal and bone which reaches the dump, and most shales in the coal measures contain an appreciable quantity of oil. Moreover, broken timbers frequently are placed in slate cars and removed to the surface. In places where such fires start, whether originating from spontaneous combustion or from forest fires, blacksmiths' ashes, dumpmen's stoves, discarded wicks, or some other cause, there is always sufficient inflammable material, frequently including pyrite, to sustain them.

Shallow Piles Less Likely to Catch Fire

In order to decrease the probability that these fires will be started, supposing that they are caused by spontaneous combustion, the piles should be shallow and wide rather than deep and narrow. In high piles but little radiating surface is provided and a comparatively heavy load is imposed on the material at the bottom of the pile. This may intensify the heat which the oxidation of the inflammable constituents generates.

It has been found in Indiana County that if shallow piles are made and allowed to weather and disintegrate for one year, a second layer of the same depth as the first may be placed upon it with safety. If the slate stacker is used in such a case it will be necessary to shift the track, at the oftenest, only once a year.

The Valley Camp Coal Co. has one of these refuse-stacking cars at its Soudan mine at Van Voorhis, Pa.

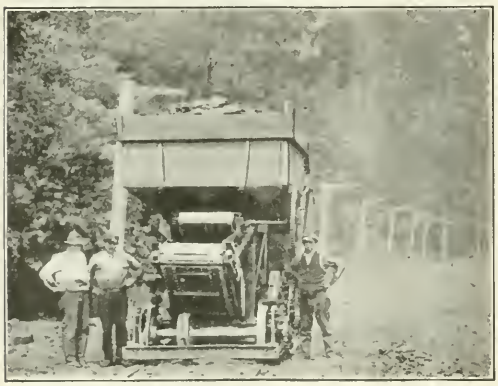


FIG. 2. ROCK STACKER ON ROAD OF ITS OWN MAKING

Stacker holds seven tons and on a straight track up a 6 per cent grade has a speed of 400 ft. per minute. Note the width of the fill and the evenness of the road. A narrow fill is difficult to maintain.

FIG. 3. CONVEYOR WIDENING A FILL—ON THE RUN

In this case the work is being done by two men, one arranging the feed and another driving the car. The throw is dependent on the speed of the traveling apron

This machine has been in operation for more than four and one-half years and has given excellent service. The length of haul from the refuse hopper on the tipple to the dump is somewhat more than 3,000 ft. In that distance adverse grades as steep as 4 per cent are negotiated by the stacking car without apparent difficulty.

An average of four round trips are made every hour, or thirty-two trips in an eight-hour workday. As the hopper capacity is seven net tons, 160 tons of refuse can be stacked during a single shift. Although 70-lb. rail is recommended for greatest efficiency, this company uses a 50-lb. rail for its track and it has nevertheless not experienced a single derailment.

Side-Dump Trailer Will Be Added

That this machine has an appreciable drawbar pull was evidenced at this mine when the slate stacker, being coupled to a railroad car half filled with coal, pulled it for a considerable distance over level track. The results of this test suggested an idea to the officials of the mine. There are times when more than the usual amount of refuse must be disposed of in one day. To meet such emergencies the company is obtaining an ordinary contractors' side-dump car, which will be attached to the stacking car as a trailer. The exact capacity of this trailer has not been decided upon as yet. As the stacker is not required to yield its greatest output now, when disposing of 160 tons in eight hours, the company believes that the machine with the trailer will be enabled, when occasion demands, to dispose of nearly 275 tons of refuse daily.

Advantages possessed by this refuse-stacking car may be summed up as follows: (1) One man loads and unloads all slate; (2) the rock can be discharged 30 ft. from the center of the car, and thus it builds up its own fill; (3) the refuse may be deposited ahead or upon either side of the car; (4) it builds a dump 60 ft. wide from a single track position. The machine as here described is manufactured and sold by the Heyl & Patterson Co., Inc., of Pittsburgh, Pa.

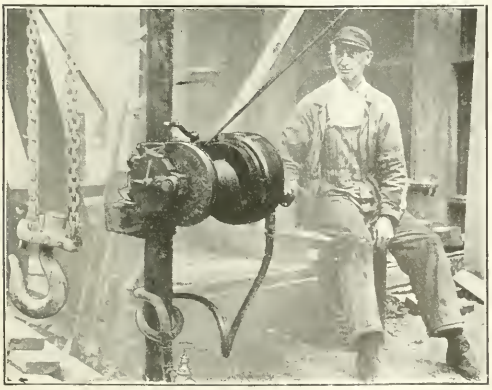
The ease with which the dumping is done is greatly

in its favor. It is difficult today to obtain and retain dump labor where the old strong-arm methods in the glare of the sun are still pursued. Finding men for this job when some of those on regular duty have laid off or left is one of the most vexatious duties of the mine foreman. Where there has been a heavy run of rock over night the shortage of men and the overplus of cars to be dumped may almost lay a mine idle in the earliest and most productive hours of the day. The slogan used to be "Do it yourself if you would have it done," but a better motto is "Make it easy and there will be men enough to do it, and they won't want watching."

Waughoist, Driven by Rotary Engine, Though Light, Is Powerful

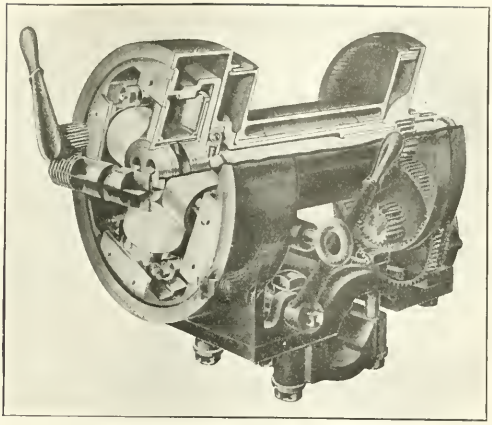
AS EVERY mining man knows, a light yet powerful engine or motor capable of exerting a strong pull on a rope or cable always is convenient and sometimes well nigh indispensable about a mine. The uses to which such a machine may be put are many, a few of them being as follows: Hoisting (or lowering) cars to or from the working face in a mine room, replacing cars off the track, pulling cars up or lowering them down a grade on a heading or gangway, dragging timbers up slopes where no track is laid or through break-throughs or other narrow passages, hoisting timbers in manways or chambers opened in steeply pitching coal, thus greatly enhancing the effectiveness of mine labor and enabling one or more men to do the work of many. Where cars leave the track the replacing of them promptly may save a half hour's time for the whole mine day force and prevent the miners from going home on short time. The few men at the wreck can quickly rerail the good cars and derail those which should be left for later attention. The machine may also be used in pulling props or other timbers, the operator being in safety from falling roof while actual withdrawal takes place.

To meet these and similar uses both under and above ground the machine shown in the accompanying illustrations has been placed upon the market. The principle upon which the engine operates is essentially identical with that of any ordinary single-acting steam



WAUGHOIST MOUNTED ON A PIPE POST

It can, however, be attached to either a wood post or other timber, if such be available. This hoist has the advantage that it takes almost no room and can readily be moved from place to place.



HOIST IN PARTIAL CROSS-SECTION

The cylinder block is composed of four cylinders cast integral and spaced 90 deg. apart. These are mounted on a hollow shaft through which compressed air is led and exhausted from the machine.

or air engine, except that many inversions have been made. In order to obtain compactness and simplicity all connecting rods and crossheads have been eliminated and their functions performed by other means. Two elements only rotate. These are the cylinder block containing the pistons and the spider together with its shaft. The cylinder block is composed of four cylinders, cast integral, and equally spaced 90 deg. apart. This is mounted on a stationary hollow shaft through which compressed air is led to and exhausted from the machine, the air being controlled by suitable ports. Thus the cylinder block is free to revolve around an axis perpendicular to the plane in which reciprocation of the pistons takes place.

Enclosing this element and revolving in synchronism with it is the spider, which really is the inverted crank of the ordinary engine. Essentially the spider is a hollow box with four flats equispaced about its internal perimeter. These flats take the thrust of the engine pistons. Integral with the spider is a shaft supported in suitable bearings. This forms the axis about which the spider revolves. It is parallel with but eccentric to the axis of rotation of the cylinder block.

When the opening, or port, in the bottom of one of the piston cylinders registers with the live-air port in the axle, air enters the cylinder and the piston exerts pressure against the flat surface of the spider against which its outer end bears. Because of the eccentricity of these parts, as above mentioned, rotary motion of the spider carrying the cylinder block with it is produced. After rotating through an angle of about 180 deg. the cylinder uncovers the exhaust port in the axle and the air is released. In the meantime the opposite cylinder has rotated to the point where it begins to receive air and exert power. Thus turning effort of the machine is practically uniform.

Instead of connecting rods the pistons are provided at their outer extremities with rollers, permitting easy transverse motion between the piston and spider flat against which it bears. To keep the rollers and pistons from dropping away from contact with the spider a plate is employed that engages with a tongue along the lower edge of the piston, holding these parts together.

In addition to the advantages of compactness and simplicity, the construction above described lends itself admirably to the splash system of lubrication. It also permits of high speed without objectionable vibration. All engine parts run in a bath of oil and reciprocating and revolving members are carefully balanced.

This engine, known as the "Waughoist" and built and sold by the Denver Rock Drill Manufacturing Co., of Denver, Col., is so designed as to be fastened readily to a post or timber either under or above ground. When so mounted it may be effectively used to perform the many operations of hoisting and pulling encountered in and about the mines. Of course, back gears are interposed between the engine shaft and winding drum, as may be seen in one of the illustrations.

Combination Steam Trenching Hoe, Shovel And Locomotive Crane

AFTER nearly five years of study, experiment and test upon a patented device for trench excavation, a machine called the steam hoe has been perfected. This might be described, in a homely way, as a "back-acting steam shovel," for the dipper moves toward the machine in digging, and fills with a "hoe" motion, instead of being hoisted upward and outward.

This difference in digging motion is important in many kinds of excavation, particularly trenching. As the dipper is loaded by pulling in toward the machine, the steam hoe backs away from the ditch it digs. Thus it always remains on solid ground, instead of being supported upon a platform over the excavated trench, as a steam shovel must necessarily be supported. This ability to work on solid ground is of particular advantage in soft or sandy material. When excavating in such ground, a steam shovel, its weight carried by the sides of the trench, is delayed by many cave-ins. This machine not only obviates most of the caving but eliminates much trench bracing.

While this machine is especially adapted to soft and sandy soils, it is capable of the hardest kind of trench excavation, such as cutting through stiff shale or large boulders. This work requires all the strength and power of a steam shovel, which the steam hoe possesses. It is equipped with a 22-ft. dipper handle, and digs a trench as deep as 14 ft. When operating to this depth it is wise to carry the boom at 40 deg. with the horizontal. At this angle the machine with the length of dipper handle above mentioned can dump material 13 ft. 9 in. above grade and 33 ft. from the pivot shaft.

MACHINE IN USE AS TRENCHING HOE

Pulls the dirt toward it and so does not have to straddle the ditch. The caterpillar moves it backward as the cut is completed. Dipper stock is 24 ft. long.

WORKING IN CRUMBLY MATERIAL

Acting by a pull instead of a lift it will work in crumbly material and, resting well back of the cut trench, there is no tendency to cause the sides to cave.

When operating in ordinary materials such as earth or gravel this machine easily gives an output of 200 to 300 cu.yd. per day in trench excavation. It is quick-acting and is provided with the same simple control that has proved its efficiency on the steam shovel. It may be furnished with either traction wheels or caterpillar type of mounting, the two being interchangeable on the same truck frame.

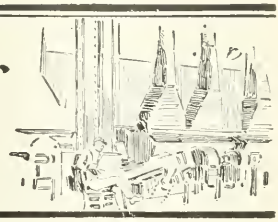
Another valuable feature of this machine is its ready convertibility to either a steam shovel or a locomotive crane. Each of these machines can be quickly and easily changed over to a steam shovel, or in less than half a day's time it can be converted into a locomotive crane handling a clamshell bucket for such work as loading or unloading cars, deep excavation, etc. As a crane it gives excellent results with either a dragline or orange-peel bucket. This machine is built and marketed by the Ball Engine Co., of Erie, Pa.

Vacuum Used to Suck Coal out of Barges

THE vacuum process has recently been applied to the unloading of coal, barges at the City of London Electric Supply Co.'s Bankside depot being discharged in that manner, says the *Colliery Guardian*. On the wharf a tower 65 ft. high has been erected with platforms at various levels. On the uppermost of these a receiver is placed, from which flexible piping extends down into the hold of the boat to be unloaded.

One section of the receiver is connected with a vacuum pump which exhausts the air, thus sucking up the coal from the barge to the receiver. Only filtered air reaches the suction pumps. From the receiver the coal drops through a double compartment airtight box into an endless belt which conveys it to the storage bunker or to trucks. Coal up to 4 in. in diameter can be raised and 60 tons per hour are dealt with by each of the two plants at work.

Lowering Power Losses



During a Momentary Peak Load the Feed-Water Supply of a Boiler Should Be Automatically Curtailed

Carrying the Water in a Boiler at a Uniform Level Does Not Result in the Greatest Efficiency—A Suitable Automatic Feed Regulator May Be Made to Control the Rate of Feeding so That Dry Steam and Best Results Are Obtained

By Roland Moeller

BOILER-FEED regulation originally aimed at keeping the water level in the steam generator as nearly constant as possible. Later, about the year 1912, it was realized that keeping the water at a uniform level at all times had marked disadvantages. Prior to that time, automatic boiler-feed regulation gave an irregular, intermittent feed, which, in so far as its effect on the generation of steam was concerned, was not much of an improvement over hand regulation. While a mechanical device that is absolutely reliable has never been built, many automatic mechanical contrivances are far more reliable than a human being, especially where the apparatus is given a reasonable amount of care and attention. It is for this reason that a water regulator properly designed will add much to the safety of operating a plant.

Rate of feed-water flow into a boiler has a notable effect upon its steaming capacity. A full opening of the feed-water valve may pass enough cold feed water into the boiler to absorb all the heat evolved in its furnace without generating any steam whatsoever. Intermediate rates of feed, of course, reduce the steaming capacity of a boiler in proportion to the feedwater flow.

At Peak-Load Period Feed Should Be Reduced

It is evident, therefore, that frequent periods occur in the operation of a boiler when it would be desirable to reduce the rate at which water is fed so as to make possible the maximum generation of steam. This is particularly true after a period of low load when a sudden peak comes on. Under these conditions the furnace must be given time to catch up with the new peak load, and if, meanwhile, the rate of feeding is temporarily reduced, the boiler has a far better chance to meet the sudden increased demand for steam if little heat is being consumed in bringing the feed water to the boiling point.

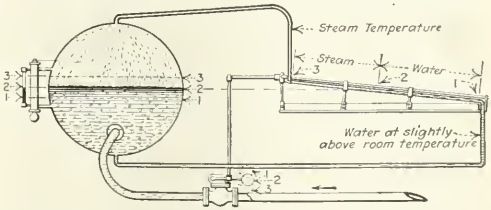
On the other hand, should the load suddenly drop off, it takes some time for the furnace to slow down its operation until it generates heat at a rate commensurate with the new load conditions. It is then desirable to increase the rate of feeding temporarily so as to absorb the extra heat generated by the furnace during this brief period.

Again, where a number of boilers are operated together, fewer units can be made to do the work if scientific feed-water regulation is employed. With such regulation all the boilers deliver their maximum output, the rate of feed-water flow being reduced to a minimum in all of them at the same time to make this possible.

Under Normal Load Feed Should Be Steady

An automatic feed regulator should, then, feed continuously as long as there is a steady load on the boiler. It should temporarily reduce the rate of feed flow when a sudden increase in load occurs and temporarily increase that rate when the load suddenly decreases. It should keep the water level high under low loads and low under high loads. During periods of steady steaming it should maintain a constant water level by maintaining a constant rate of feed proportionate to the load. During gradual changes in demand it should adjust the rate of feed in proportion to the changes in the load.

A device which functions on these principles acts as a kind of compensating boiler governor. It supplies the means of absorbing the excess heat generated by the furnace during the brief period following a sudden decrease of load when the furnace has not yet had time to adjust itself to the new conditions, and prevents absorption of heat by the feed water when the furnace has not had time to catch up with a sudden increase in



REGULATOR FOR SUPPLY OF WATER TO BOILER

The level of the water in the long inclined tube on the right rises and falls with the height of the water in the boiler. When the level of the water falls by reason of low demand for steam the part of the tube exposed to steam heat is lengthened and the tube expands, operating the valve so that it admits a little more than the normal quantity of water. Whenever the level of the water in the tube rises because the height of water in boiler is raised by an increase in steam demand, the length of the steam section of the tube is decreased and the tube contracts closing the valve through which the boiler is being fed. Thus water is supplied to the boiler most freely during periods of small steam demand and not at points of peak load.

load, and when all the heat generated is required for steam making. It utilizes the volume represented by the difference between high- and low-water marks as a kind of heat reservoir, and so regulates the water level as to insure dry steam at all times. It guards also against damage arising from too high or too low a water level.

Water Level Changed by Rate of Steaming

It has been conclusively demonstrated that the water level in a steaming boiler undergoes pronounced fluctuations which bear a direct relation to the rate at which steam is being produced. This is because of the increased number and volume of steam bubbles present in the water when the boiler output is high. This variation of water level according to load is one of the characteristics of steam boilers utilized in the type of regulator shown diagramatically in the accompanying illustration.

A regulator of this construction is extremely simple, consisting merely of a straight inclined tube, a lever, a heavy iron base, and a rugged, balanced, practically frictionless regulating valve. Such a device is easily adjusted to maintain the water level between any desired limits. The connections to the boiler, as may be seen, are extremely simple.

The metal tube mentioned has a large coefficient of expansion and is connected to the boiler in such a way that the level of the water in this tube varies with that existing in the boiler. The water in the lower end of the tube not being exposed to any source of heat, becomes comparatively cool, and the upper end or that portion above the water is kept hot by steam from the boiler. As steam slowly condenses in the upper part of the tube, it is returned to the boiler through the lower connection.

Feed Change for High Load Only Temporary

If the water level in the boiler suddenly rises because of an increase in load, the level of the water in the tube also rises and the length above the water containing hot steam is reduced. If, on the other hand, the water level in the boiler falls because of a decrease in load, the length of the tube exposed to hot steam is increased by the amount that the water recedes. The portion of the tube that is exposed to the hot steam is increased by the amount that the water falls. That portion of the tube expands owing to the heat of the steam and to the greater length that is thus exposed. This increases the over-all length of the tube. This difference in length between high and low water is utilized to operate a valve which controls the rate of flow of the feed water.

When a sudden increase occurs in the demand for steam, the water level in the boiler rises. The length of the tube exposed to steam is decreased and that exposed to water is increased. Consequently there is a contraction and the over-all length of the tube is lessened. This in turn reduces the opening of the feed-water valve. If the high load continues, the height of the water in the boiler will, of course, gradually drop off until the water level in the tube comes to a point where the feed-water valve again begins to open.

The opening increases gradually until a uniform rate of feed is reached which is equivalent to the rate at which the water is evaported in making steam. If the demand for steam is high, the demand for feed water is high, and the valve must have a wide opening. In order to obtain this, the tube must be expanded. This in turn can be brought about only by a lower water level, which is exactly what is desired under high-load conditions.

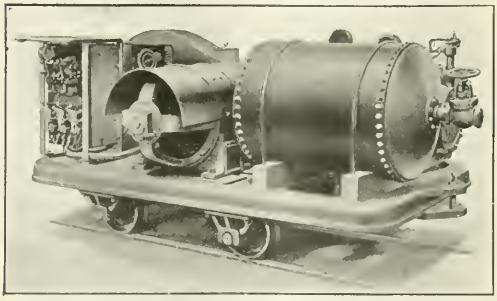
If, on the other hand, the demand for steam suddenly drops off after a continued heavy load, the water level in the boiler falls immediately, and with it the level of the water in the tube. The length of the tube exposed to hot live steam is thus increased, causing an increase in its over-all length. This in turn opens the feed valve so as to admit water to the boiler at an increased rate until a level is reached higher than that existing under high-load conditions. To reduce the flow of feed water to conform to the lessened demand for steam the opening of the feed-water valve must be decreased to less than it was when the demand for steam was high. To accomplish this the thermostatic tube must contract. It does this only with a rise in the water level. Higher water level during periods of low load is desirable for heat-storage purposes and is entirely permissible with light loads.

Typical time-temperature charts before and after installation of these automatic thermostatic boiler-feed regulators have shown an average feed-water temperature under hand regulation of 178 deg. F., which was about the best obtainable, while automatic regulation resulted in an average feed-water temperature of 210 deg. F. The average feed-water temperature was therefore increased 32 deg. F., which is equivalent to a saving of 3 per cent in fuel.

Power Saved by Automatically Stopping Compressor When Air Is Not Needed

THE usual method by which constant pressure is maintained in a compressed-air system is by "unloading" the compressor—that is, by allowing it to run idle (without delivering compressed air) during those periods when the air required is less than the compressor can deliver. Where machines are driven by electric motors, much power is wasted during such times of resultless operation. This can be saved by providing the machine with an automatic electric starting and stopping device so arranged that the motor will stop immediately the load is thrown off the compressor and start again when the demand for air increases.

Such an automatic control can now be furnished for belted, motor-driven air compressors. It takes the shape of a self-starter and pressure regulator, working in connection with a differential unloader. This appa-



PORTABLE COMPRESSED AIR OUTFIT WITH AUTOMATIC STARTING AND STOPPING DEVICE

Small units instead of large ones and their remoteness from the power house have made it difficult to adjust compressed-air output to meet varying demand and to find men who will conscientiously shut down a compressor when it is not needed. The irregularity of demand cannot be cured where units are small but by the device described in this article the delivery can be balanced to meet demand and the power hitherto wasted may be saved.

ratus automatically shuts off current from the motor the instant after the compressor has been "unloaded," and automatically starts it again when the pressure in the air system falls to a predetermined level. The control operates in such a manner that the motor in starting attains full speed before load is thrown on the compressor. Thus all danger of burning out the windings or other electrical connections is eliminated.

The entire apparatus is of rugged construction and built to withstand long and severe operating service. The adjustment for pressure is accurate and reliable. Pressures either above or below that of the atmosphere can be accommodated.

The self starter employed with direct current is made for use either with or without a knife switch and fuses. It is of the magnetic lockout type, consisting of a series of ruggedly constructed clapper-type contactors with series coils, so designed that each accelerating contactor is magnetically prevented from closing until the motor current has fallen to a predetermined value. A main contactor of the clapper type, equipped with a powerful magnetic blowout, is provided for opening the motor circuit. The resistor material consists of flat cemented units in the small sizes, and cast-metal grids in the large sizes.

The alternating-current self-starter is of the primary-resistor type and can be supplied with either open or enclosed panel. It has time-limit acceleration and low-voltage protection. Two double-pole contactors and a solenoid-operated, dash-pot timing relay are provided. One contactor connects the motor and starting resistor to the supply lines, the other short circuits this resistor after the lapse of a definite time interval determined by the relay.

The self-starter is controlled by a pressure regulator that may be of either the diaphragm or the gage type. The former is suitable for pressures above that of the atmosphere only, while the latter can be used under either pressure or vacuum. Both types can be employed with either alternating or direct current. The diaphragm type has a quick-break switch, its current-carrying parts are covered and the diaphragm is of rubber. It operates at pressures from 1½ to 175 lb. per square inch.

The gage type has silver contacts which handle the pilot circuit of a relay which in turn carries the pilot circuit of the automatic starter. Adjustment can be made for a pressure range (between starting and stopping) as low as 5 lb. per square inch in a 100-lb. air system. The regulator operates at pressures ranging from a 30-in. vacuum to 1,000 lb. per square inch above the atmosphere. This automatic control can be provided by the Chicago Pneumatic Tool Co., of 6 East 44th St., New York City, with its compressor equipment.

Strength of Cable Splice Made by Hammer Exceeds That of Cable

CABLE-REEL locomotives and cutting machines have one weak spot—the cable. They would get better service if only the cable were more rugged and if the splicing, when necessary, as it so frequently is, were electrically more perfect, more easily made and stronger when made. The locomotives and cutting machines approach perfection but the cable as often supplied needs improvement. The result is that the locomotive and cutting machine get low voltage, the work of the machine cutter is delayed and he is subject to shock. To meet this the Newberry cable splice or, rather, connector, has been devised and is being made by the Huntington Cable Splicing Co., of Huntington, W. Va.

A short length of cable is cleared of insulation on either side of the break. The two free ends, being freed of twist by a few light blows, are pushed together as are the bristles of two brushes, so that the wires of the two ends are brought in close proximity. The splice or clip is slipped sideways over the wires thus bunched and is closed by a few blows of a hammer where the number on the splice appears, the rail being used as an anvil. By this means the tongue enters the V cut in the splicer. By turning the cable and striking the connector the splice is made perfect. All that is then needed is a piece of insulating tape.

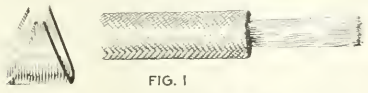


FIG. 1

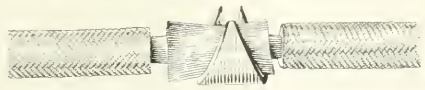


FIG. 2

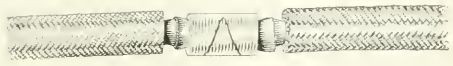


FIG. 3

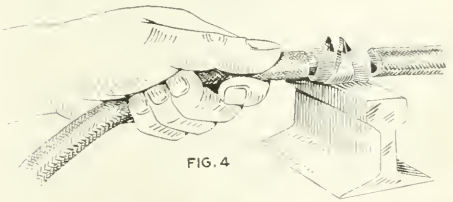


FIG. 4

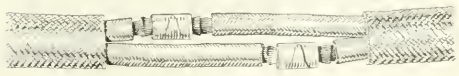


FIG. 5

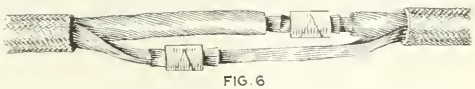


FIG. 6

A FEW BLOWS OF HAMMER MAKE CABLE SPLICE

At an exhibit in the exposition at Huntington recently a cable thus repaired was pulled apart and it broke at a point remote from the splice, showing that the repaired part had a strength greater than that of the original cable.

The same arrangement can be used with a concentric cable and with terminal bonds, only here steel is used instead of copper, so that the splice can be welded to the rail. In splicing concentric or duplex mining-machine cables care must be taken to cut the cable so that the two splices will not come opposite each other. Care must, of course, be taken to see that in removing the insulation the wire is not cut. The connector used must be of a size suited to the cable. By slipping in a few extra wires an over-large connector can be used but it is better to procure one of the proper size.

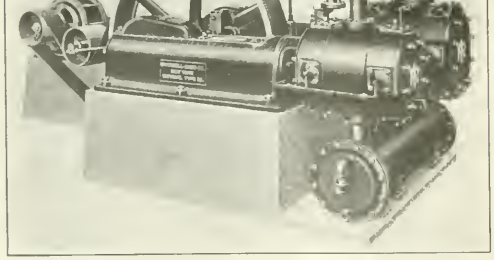
Five-Step Control Adjusting Work to Load Prevents Power Waste in Compressors

IN THE COURSE of a day the demand for compressed air varies considerably and with any given invariable clearance, speed and stroke the output of the compressor remains constant, causing an immense waste of power at low-load or no-load. The stroke cannot readily be varied, but by regulating the clearance the stroke can be made with a reduced consumption of power by reason of the reduction in the discharge. The time is past when compressors must be so built that they can run only at full or no-load when the demand for air fluctuates.

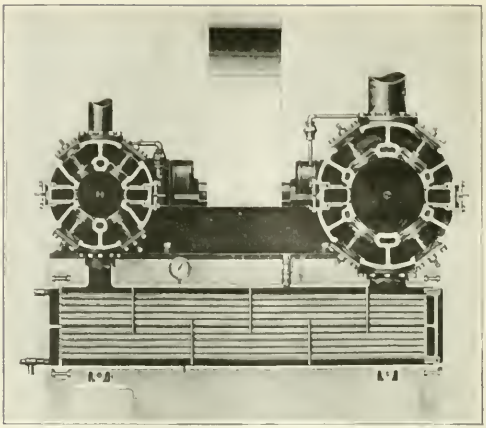
Clearance control has been employed with entire success in the larger sizes of direct-connected electrically-driven compressors built by the Ingersoll-Rand Co., of 11 Broadway, New York City. Many of these larger machines have been installed where more than 600 cu.ft. of free air are required per minute and direct motor drive is employed. This control assures efficient operation at partial loads.

With this clearance control the compressor is automatically loaded or unloaded in five successive steps, these being obtained by suitable reductions or increases in the clearance space of the air cylinders. The compressor will accordingly operate at full, three-quarters, one-half, one-quarter or no-load. The design is such as to obtain efficent operation at any partial capacity, the input in power required being approximately proportional to the output demanded. This control is entirely automatic. If the machine is operating at full-load and the demand falls off, the control unloads the compressor, causing it to run at a partial or no-load point until the demand for air becomes larger, when the control automatically increases the load in the proper successive steps.

One extremely valuable detail of this type of control is the fact that the clearance pockets are made integral with the compressor cylinder and the entire regulation is obtained by varying the amount of free air drawn into the cylinder for compression. By this means no loss of power arises from wastage of air or leakage. The clearance pockets at the ends of each cylinder are automatically thrown into communication with the cylinder in proper succession, the process being controlled in accordance with predetermined variations in the receiver pressure. When the compressor operates at partial capacity a portion of the air is compressed into an added clearance space instead of being forced through the discharge valves. On the return stroke this air expands, giving up its energy to the piston.



COMPRESSOR WITH CONTROL TO ECONOMIZE POWER
By varying the clearance to suit the demand for air the power input is reduced considerably at partial or no-load.



CROSS-SECTION OF COMPRESSOR SHOWING CONTROL
The inter-cooler is placed below the air cylinders. Note that the controls on the cylinders are similar.

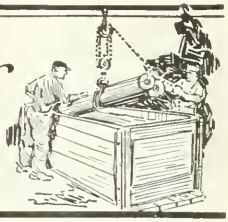
During this process the inlet valves remain closed until the pressure within the cylinder falls to that of the intake. When this point is reached the valves open, and free air is drawn into the cylinder during the remainder of the stroke. Thus the amount of air taken into the machine is lessened without reduction in its pressure. On two-stage machines clearance space is added in proper proportion to both high- and low-pressure cylinders, giving a constant ratio of compression and maintaining conditions conducive to the highest efficiency throughout the entire load range.

Another excellent feature embodied in these machines is the maximum-demand stop, which prevents the compressor from being operated at any greater load than is desired. This stop can be adjusted so that the machine cannot be loaded above a predetermined amount. Under conditions where the load factor is low this reduces the maximum demand and permits a saving to be made in the purchase of electric energy.

With clearance control the reduction in power requirements will be in proportion to the reduction in output capacity. All regulating mechanism is independent of the running gear. Loading and unloading is performed in steps the size of which is small enough to preclude any undue fluctuation in current demand.

Belt-driven compressors of this type can be furnished either single- or double-stage. The piston displacement capacity for a discharge pressure of 100 lb. ranges from 610 to 1,505 cu.ft. of free air per minute. Such machines may also be had arranged either with the ordinary or the short-belt drive with floating idler. This latter arrangement saves both floor space and belting and permits a greater arc of belt contact. Among the improvements are plate valves for both intake and discharge and a five-step clearance control for regulating the output of the compressor. Valves of the plate type as employed on this machine have been perfected after a complete analysis of their design and operation. The most important details are support in perfect alignment throughout the entire operation and without a wearing guide of any kind.

Reducing Wear, Tear and Decay



Will Neither Corrode Nor Wear Away*

By D. C. Ashmead
Kingston, Pa.

RENEWAL of chute linings always is an important item in the expense of operating anthracite breakers. For years nothing but blue annealed sheet iron was used. Because of the effect of the acid water upon this material it was soon eaten away and the life of a sheet was seldom more than three or four months. Experiments have been made from time to time on other types of linings and some of them are now being employed. A number of companies are still using chutes of the old type but are lining them with galvanized sheet iron instead of with blue sheets. This resists the acid action of the water and also permits the coal to slide on an easier slope.

Vitrified clay pipe makes an excellent lining for coal chutes and appears to resist wear indefinitely. Some chutes so fitted have now been in active service for more than three years and show only slight signs of wear. Great care must be taken in installing the lining to see that the ends of the pieces of pipe exactly match, as otherwise they will wear out more rapidly than if set properly. Glass has been tried by some companies but has been found too brittle. Monel metal also has been used in a few places and to a slight extent.

Sheet Iron Being Replaced in Breakers

The Hudson Coal Co. has made many experiments with chute linings, and during the past two years has installed many breaker chutes made of what is known as "Corros iron." The first trial of these chutes started about two years ago with a half dozen experimental sections installed in the Loree breaker. Since then sheet-iron chutes have been replaced to a limited extent in two other breakers. The Marvine breaker, built during the past year, has been fitted almost entirely with Corros iron chutes.

A typical straight section of one of these chutes is shown in Fig. 1 as well as a typical curved, or spiral, section. It will be noted that in design and appearance these chutes closely resemble those made of cast iron, and, broadly speaking, this is what they really are, as they differ from the ordinary cast-iron chute only in the composition of the metal from which they are made. This material, known by the trade name of "Corros iron," is in reality a high-silicon cast iron, containing approximately 12 per cent of silicon. The properties claimed for it are immunity from corrosion by acid water, comparative freedom from oxidation and extreme resistance to abrasion, as the hardness of the metal is fully equal to that of chilled iron. It is so hard that it cannot be surfaced by ordinary machine tools.

Experience with these chutes would tend to corroborate these claims. Those installed at Loree breaker approximately two years ago show no appreciable wear or deterioration apart from the fact that the inner surfaces have become smoothed and brightened by the passage of material. Installations made more recently have given similar results. It should be noted that when these chutes are first installed they, of course, have a rough cast finish on the inside, as no practicable method has been devised for making them any smoother at this point than can be accomplished by extreme care in facing the mold in which they are cast. As a consequence when the chutes are first installed ordinary pitches are not quite sufficient to carry the material over them. After they have been in service several months, however, the inside surface of the chutes becomes smooth and bright, and the pitch required is only that ordinarily employed for sheet steel under good conditions. When installing these chutes it probably is best to place them on such a pitch as is ordinarily required for the operation of smooth-iron or sheet-steel chutes, and line them with iron sheets. Then this lining should be removed, one sheet at a time from the bottom upward, thus exposing, successively, say each day, a new section of Corros iron to the wear of the material passing down the chute.

The cost of Corros-iron chutes depends largely on the

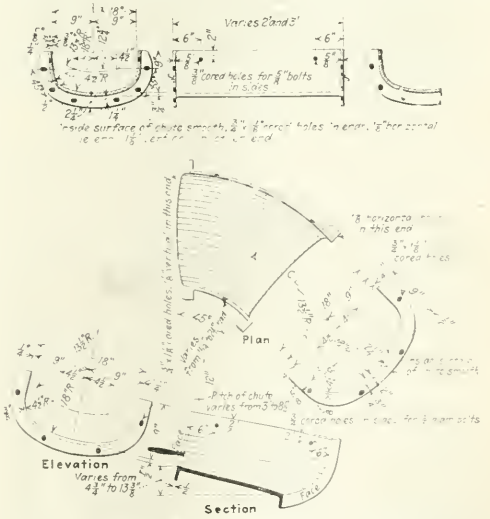


FIG. 1. SECTIONS OF CORROS-METAL CHUTING

This illustration shows not only the straight but the spiral chute sections. The metal contains about 12 per cent silicon.

*Excerpt from article entitled "Advances in the Preparation of Anthracite," read before the American Institute of Mining and Metallurgical Engineers at the September session, held at Wilkes-Barre, Pa.

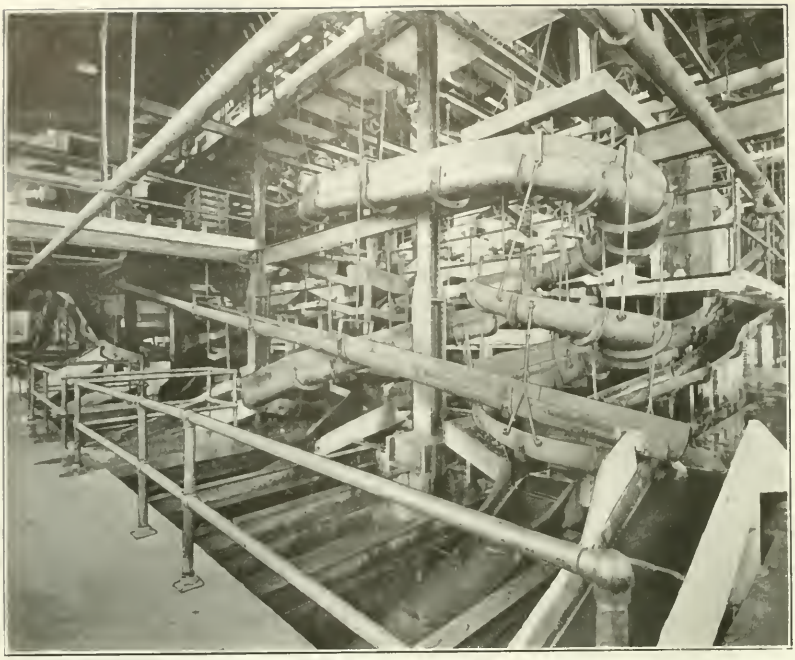


FIG. 2.
Chutes in Loree Breaker

A plant of the Hudson Coal Co. The advantage of these chutes is that they do not obstruct the light or take up much room. It is useless to provide windows in a breaker if chutes are to be erected within it which prevent light from passing through the building after it has penetrated the outer walls. It is largely these neat suspended chutes that make the Loree and Marvine breakers such bright and efficient places for operation. Almost every point in the Marvine breaker is illuminated by sunlight from all four quarters.

nature of the casting, as the chief expense incurred is that of handling the metal in the foundry. Straight sections of 18-in. chutes, 3 ft. long, cost approximately $24 per linear foot. The ordinary breaker chute lined with sheet steel costs approximately $3 per foot. Just how long Corros-iron chutes will last has not been determined, but none has as yet shown appreciable signs of wear. It has been demonstrated that in certain locations Corros iron has already outlasted at least ten renewals of No. 10 sheet-steel chute lining, and bids fair to last indefinitely. The erection of Corros-iron chutes requires care, as they are necessarily made in flanged sections of definite size; moreover, this metal is rather brittle, being only about half as strong as ordinary cast iron, so that adequate supports must be provided.

Fiber Pipe Does Not Corrode in Acid Water And Is Unaffected by Electrolysis

A PIPE has been made of fiber on which sulphuric, hydrochloric, acetic and other acids have no effect and which chlorine gas will not injure. The Massachusetts Institute of Technology has shown that 43,000 volts are required to puncture ☆ of an inch of it. All of which might be entirely without interest if the pipe did not have other physical qualities fitting it for the workaday world. As for weight, however, it is one-quarter that of iron or steel pipe; as for strength it has stood 4,124 lb. per square inch of cross-sectional area applied externally and 782 lb. applied internally. It is recommended by the manufacturers for use under a pressure not exceeding 600 lb. per square inch, as they assert that it is capable of withstanding much greater pressures under actual working conditions.

The Massachusetts Institute of Technology has shown that it expands only twenty-six ten-millionths of an inch per degree Fahrenheit. Sudden changes of temperature do not affect it, but it is not recommended for use in conveying steam or hot water at over 180 deg. F. Being light, 25,000 ft. or more of 3-in. pipe can be carried in a single carload. Two-inch pipe weighs 1½ lb. per ft., 2½-in. pipe, 2 lb.; 3-in. pipe 2.5 lb.; 4-in. pipe 4.5 lb., and 6-in. 7 lb. The threads are well formed and can be made with hand-threading machines furnished by the manufacturer. Even 6-in. pipe can be threaded by hand. The pipe has been used by several Illinois coal companies for carrying the most acidulous of water and by Bell and Zoller for casing a hole carrying a cable from the surface into their mines.

Its strength, unlike that of wood pipe, is not dependent on iron bands but is inherent in the pipe itself. A little paint scratched off wood-stave pipe and the bands will corrode, leaving it no longer watertight. The joints of this pipe are, moreover, screwed and therefore reliable.

It is at present made in only 7-ft. lengths or shorter and it cannot be provided with fittings of like material. Lead-lined iron ells and tees are furnished to go with the pipe, also combination couplings for connecting it with iron pipe and pumps. The fiber pipe can be leaded into cast-iron fittings. The cost is unexpectedly low and it can be installed for half as much as metal pipe, because it is light and easy to handle. A coating of a specially-prepared paint makes the joints airtight. No tools are needed to lay it.

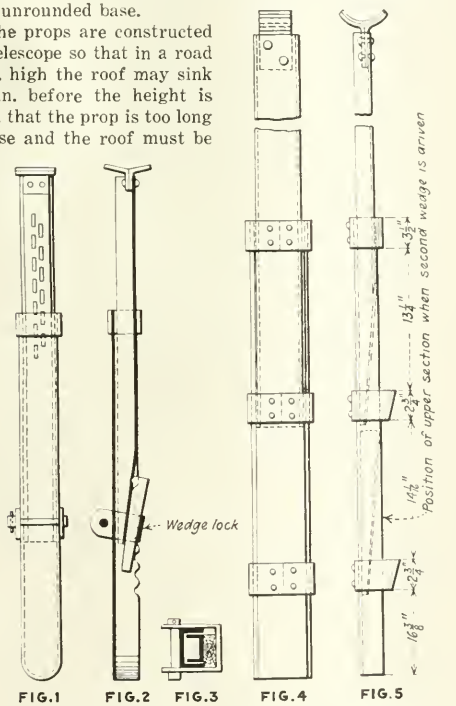
It is manufactured by the Fiber Pipe Co., 421 Board of Trade Building, Indianapolis, Ind., under the name of the Bermico Fiber Pipe. It seems likely to solve completely the water troubles in straight-line pipe under and above ground and to serve most acceptably in many other ways around the mine.

Telescopic Props Can Be Used and Re-Used*

SCHWARZ telescopic props have been satisfactorily used in the No. 3 Prosper colliery in Germany since March, 1919, and their use has recently been extended to the timbering of roads. The prop itself has been improved from its earlier form by replacing the upper T-shaped portion, which the original design embodied, by a square channel section which fits into the lower portion, which is a channel of large dimensions (Figs. 1-3). This modification enables the prop to offer greatly increased resistance to bending and buckling stresses.

The wedge lock (Fig. 3) also has been simplified, and now consists of a strong flat bow instead of the former closed strap of malleable cast iron, the bow being secured by a square-headed wrought-iron bolt with collar and cotter. The props used in the roads, especially those for the face conveyors, are substantially of the same type but of larger section, and the two adjustable wedge locks are flat bows riveted on the lower member of the prop instead of being fitted with eccentric bolts. The wedge surface of the upper member is 18 in. long, and the two fixed bows are arranged at such a distance apart that when the upper member has sunk to the level of the lower edge of the bottom bow—at which moment the wooden wedge should be driven into the latter—the tapered surface of the upper member has just passed the upper bow. (See Figs. 4 and 5). This type of the prop has a flat, unexpanded and unrounded base.

The props are constructed to telescope so that in a road 7 ft. high the roof may sink 28 in. before the height is such that the prop is too long to use and the roof must be ripped if the post is to be retained in place, but by that time, in most cases, the pressure has been taken up by the packwalls. The place is then retimbered with pointed-wooden props and thick bottom pieces, the iron props now recovered being used again near the face.



PROPS THAT HOLD SLATE AS ROOF LOWERS

The upper part of the post wedges its way down into the lower half as the roof descends. In Figs. 4 and 5 a prop with two wedges is shown.

*From *Glückauf.*

Cable Exterior Being of Rubber, Not Braid, Greatly Extends Life of Conductor

THE upkeep of the many cables to cutting machines and cable-reel locomotives is a considerable and continuing expense. Like all decay wear and tear, the expense of replacement is not the only cost. A cable the insulation of which has been injured wastes current, makes the handling of the cable dangerous and might even cause a mine fire. Where the splicing is inadequate the voltage is lowered, the cutting or hauling abilities of the machine are impaired and there is a risk of burning the armature by excessive use of current.

Single- or multiple-conductor cables with an exterior covering of rubber in place of the ordinary braid are by no means new. Recognizing the remarkable wear-resisting qualities of the rubber used in the manufacture of ordinary pneumatic tires, builders of electrical cables have long sought to obtain this quality in the covering for such conductors. It can hardly be conceived that a tire subjected to the road abrasion and the stresses it receives would long endure if its exterior wearing surface were composed of cotton fabric or braid. In tire building, as is well known, cord or fabric is used as reinforcement only, the rubber on the tire exterior receiving the actual wear.

In developing Super-Service cable the Rome Wire Co., of Rome, N. Y., followed the same general procedure as that pursued by tire builders. Instead of using a braid covering, a loose hard braid is embedded in the rubber coating of the conductors and, like automobile tires, the cable is vulcanized in molds under great pressure, making the insulation extremely dense and thus impervious to oils, grease, gasoline and alkalies and resistant to the ill effects of high temperatures. The rubber employed is of the same quality as that used in tires guaranteed for 6,000 miles or more.

A piece of this cable was placed across a factory driveway and allowed to remain there for forty-five days. During this time it was crossed by all vehicles entering the yard. These were of almost endless variety. Five-ton trucks, ordinary pleasure automobiles, horses and wagons, wheelbarrows, bicycles and the feet of pedestrians all tended to pound and grind this cable into the pavement. At the conclusion of the test, however, the cable appeared to be entirely uninjured except that it was somewhat dusty. When pounded under a trip hammer the cable was not permanently flattened nor was the rubber broken.

Placed under the tension of 200 lb. a piece of No. 16 two-conductor cord 6 in. long stretches about ⅛ in. This size of cord will take a pull of 350 lb. without breaking. Not only have tests like these conducted at the manufacturers' plant indicated extreme tenacity of the product but cords and cables in use for many months throughout various parts of the country have demonstrated their long life and excellent wear-resisting qualities.

Does Not Corrode or Become Air-Bound

IN HANDLING mine water, particularly if it be corrosive, the most serious problem presented is that of obtaining satisfactory pumping units for gathering from the workings to the central sump, where a high-pressure pump can void the water to the surface. Such gathering pumps must be compact, as they have to be located where space is an important consideration. They must be rugged and simple in construction and, above all else, they must be reliable.

In theory the centrifugal pump would be ideal for this work were it not for one operating condition. Gathering pumps are placed above the liquid level and although the suction lift is small, the flow of water is variable. Thus, even if such a machine be fitted with a foot valve there is always danger not only of valve trouble but that in addition the foot of the suction pipe may be actually uncovered. In this case air would be admitted to the pump and the "prime" would be lost. This would necessitate shutting down the unit.

The absence of satisfactory means for preventing these troubles has resulted in the almost universal adoption of direct-acting pumps for gathering service.

These will lift water from a level lower than their own and are not seriously affected by admission of air to the suction. They often have, however, only relatively short life because of the structural necessity of using materials insufficiently resistant to corrosion.

A type of centrifugal pump is now being marketed that combines extreme simplicity in construction with an ability to retain prime, even though air be drawn into the suction. This pump originally was developed for the handling of highly corrosive liquids in chemical plants but the design readily lent itself to the employment of a variety of corrosion-resisting materials.

The design of the pump is so unusual that a brief description will be of interest. Fig. 1 shows a motor-driven pump with priming connections removed and with suction head unbolted so as to show the pump interior. It immediately will be noted that the pump does not have the usual discharge chamber, or volute. The impeller has a multiplicity of short blades which extend practically to the casing wall. These blades are supported on the shaft by a spider. It should be noted here that the central or spider portion of the impeller does no pumping and indeed is not shaped to fit the casing.

The shape of the casing prevents impact of the incoming liquid against the impeller, and as all work

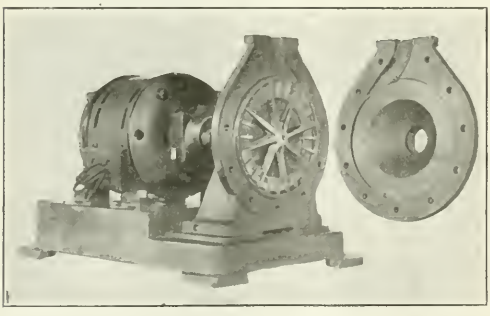


FIG. 1 MOTOR-DRIVEN PUMP, SUCTION HEAD UNBOLTED
Pump has also its priming parts disconnected. It will be seen that the impeller has a multitude of short blades which extend almost to the casing wall but only a short way toward the center of the spider.

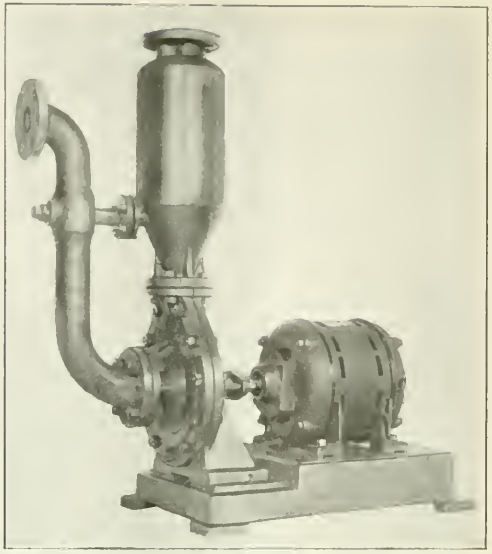


FIG. 2. PUMP WITH ITS PRIMING CONNECTIONS
The entrained air is removed from the water in the large chamber above the pump, a small bypass returning a portion of this water to the mixing connection on the suction pipe.

is done at an angle of 90 deg. to the shaft, no end thrust is produced. This permits the elimination of thrust or other bearings except those on the driving unit. The impeller is provided with sufficient shaft to pass through the stuffing box and extend outside of the pump casing. It is then attached directly to the shaft of the driving machine, either motor or turbine.

The actual working area of the impeller blades is so slight that only a small amount of liquid is needed to seal effectively the interstices, even though the clearance be as great as $\frac{1}{32}$ in. This from a practical standpoint means that as long as sufficient sealing liquid is provided the pump will continue to function.

Fig. 2 shows a pump assembled with its priming connections. On the discharge is provided a chamber which serves to assist in the separation of entrained air from the liquid. A small bypass returns a portion of this liquid to the mixing connection on the suction side of the pump. Here the sealing liquid is mixed in a fairly uniform manner with the air in the suction line and the mixture then passes into the machine. Some idea of the effectiveness of this unit may be gained from the fact that with an empty suction line sealed at the intake end, vacuums in excess of 20 in. may be readily obtained. This is accomplished by the pump itself and not by means of ejectors or similar appliances. Recirculation of the priming liquid reduces the normal pump capacity by only about 10 per cent.

This pump, which is the product of the La Bour Co., of Michigan City, Ind., is extremely compact and may be mounted on a truck or on skids as well as permanently. No foot valve is needed and no float or other automatic control is required. If at any time during operation the supply of water should be cut off, even for several hours, no harm will result and the machine will resume operation when water again seals the suction opening. In other words, it is impossible to air bind this pump.

How Journal-Box Mine-Car Truck Retains Its Alignment, Thus Reducing Track Accidents

Car Wheel Revolving on an Axle When Rounding Curves Receives Side Thrust and Wears Excessively, Soon Becoming Dangerous —Much of This Can Be Obviated by Attaching Wheel to Axle

By F. C. Barks*
St. Louis, Mo.

THE cost of transporting coal underground from the face to the shaft or other opening is an item of mining expense that depends largely upon the mine-car trucks employed. This item becomes large if truck failures are frequent, for in addition to the cost of repairing breakdown there may be the added expense of wrecks and the consequent loss of production.

Minimum transportation cost is attained only when trucks are built sufficiently durable to render long and continuous service under all conditions. The above being true, the building of a mine-car truck is a matter to which serious thought and study may well be devoted, for to produce a truck that is durable and will give service under the most severe conditions requires both careful design and the employment of suitable materials.

Even good axles, wheels and bearings will not produce a good truck if incorporated in a poor design. Accordingly the matter of design may be called a consideration of first importance. Generally speaking there are only two types of trucks from which to choose, these are (1) those in which the wheel turns on the axle, and (2) those wherein the wheel does not revolve upon, but with the axle, which in turn rotates within a journal box.

These two classes can be subdivided, the first to include plain-bore, self-oiling and roller-bearing wheels, and the latter to include both the rigid and the self-aligning journal box. So far as the basic principle is concerned, however, there are only the two general types.

In every truck made, regardless of the type, one constant relation between the wheel and the axle exists—all loads and side stresses received by the wheel are carried to the axle. (See Figs. 1 and 2.)

When Flange Pressures Set Up Wear in Axles

Whenever the wheel flange comes in contact with the rail, as is the case either in rounding curves or on uneven track, pressure upon the flange develops and is transmitted directly to the axle at the end of the wheel hub, as indicated by the arrow "A." Another pressure, "B," is set up also on the outer end of the wheel hub.

*President, Lincoln Steel and Forge Co.

If no movement takes place between the wheel and the axles—that is, if the wheel and the axle revolve together—this force is merely a static pressure of metal against metal, and cannot produce wear. However, if the wheel revolves on the axle, motion is combined with pressure, and wear results. There can be no wear of either a wheel or axle where there is no motion between the two, but the instant that motion is introduced wear begins.

It is highly desirable in a mine-car truck that the wheel shall fit the axle closely, so that there be no chance for the wheel to wobble. If this be desirable in a new truck it is equally so in one that has had several years of service. The surest way to maintain a close fit between these members is to design the truck so that the wheel does not turn on but with the axle.

The effect of pressure when combined with motion, as well illustrated in Fig. 1, has proven disastrous, having been the cause of much truck trouble and expense. This destructive factor applies to every truck wherein the wheel turns on the axle, regardless of whether it be fitted with plain or with roller bearings. In the one there is sliding friction and the other rolling friction between the wheel hub and the axle.

Sliding friction is perhaps the more destructive, as it is more difficult to lubricate, but rolling friction, particularly where excessive pressure is involved, is

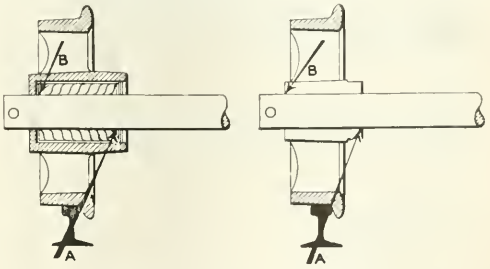


FIG. 1. SHOWING THRUST *(A)* AND COUNTERBALANCING FORCE *(B)* ON WHEEL WHEN ROUNDING CURVE

This is the condition when the wheel is loose on the axle. The thrust and counter-thrust result in uneven wear either on the roller bearing, as in the left, or on the plain bearing, as on the right.

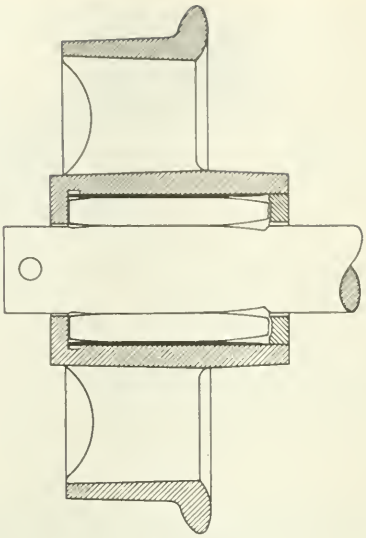


FIG. 2. ULTIMATE CONDITION OF BEARING AS RESULT OF THRUST

Hub ends wear large and out of round, rollers wear cigar-shape and axles are scored where plain-bored and self-oiling wheels are used.

concentrated at the points of roller contact, and the tendency is to wear a groove in the axle, point the rollers, or wear the inner surface of the wheel hub or the roller-bearing bushing, or all of these combined.

Every manufacturer knows that these conditions exist and has partly succeeded in overcoming the wear by extending the rear end of the hub, thus reducing the pressure. The hardening of the axles and rollers by heat treatment also helps materially, as the harder these members are made (up to a certain point) the longer will they resist wear.

Correcting the fault in this way is only a temporary expedient, however, as the forces that cause the wear depend upon the load carried and the speed. A truck of this type might give good results when carrying a four-ton load at twelve miles per hour, but might quickly fail if the speed were increased to sixteen miles per hour.

Many examples of failures from the above causes are to be found in the scrap piles. Plain-bore and self-oiling wheels wear large and out of round at the hub ends (Fig. 2), while the rollers in wheels employing them wearing away at the extremities, become cigar-shaped; the axles being scored by the movement of the bearings. With any of the above conditions the operator does not get the service that he should get from his equipment, and mining costs are increased.

Cure for Wear Is Use of Journal Boxes

The surest cure for these evils is to remove the cause. This is purely a matter of design, the cause being entirely eliminated in the journal-box type of truck—the one in which the wheel and axle turn together, the latter revolving within a journal box.

Of the two types of journal boxes—the rigid and the self-aligning—the latter is unquestionably to be preferred, as its value has been repeatedly proven by railroad experience. In these boxes the bearing is held in position by a "wedge" placed directly over the journal (Fig. 3). In this position it carries the same weight as the bearing. When first used by the railroads this wedge was flat on top. Now it is crowned—that is, made higher in the center. With the flat wedge the weight could not be equally distributed over the bearing, and the result was that the axle wore unevenly, and "hot boxes" were common.

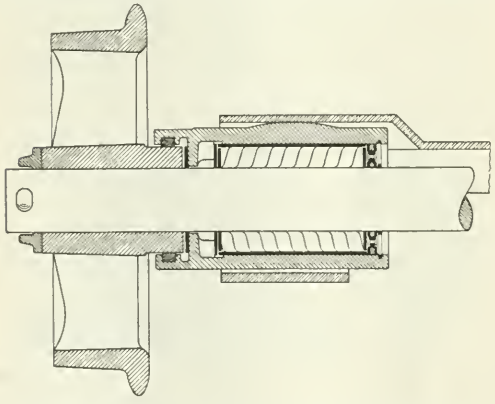


FIG. 3. MINE-CAR WHEEL WITH JOURNAL BOX

A wedge is placed directly over the journal, which wedge is crowned on top so as to distribute the weight and make the axle wear even.

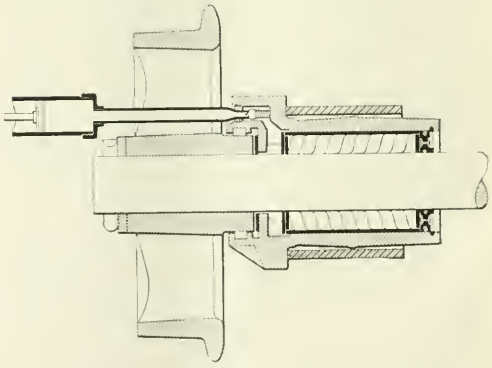


FIG. 4. METHOD OF GREASING CAR WHEEL

A grease gun is inserted between the spokes of the wheel, where a self-closing spring oiler with a beveled face is located. This guides the gun to the right place. The grease passes to a storage and distributing chamber, from which it is slowly delivered, completely coating the roller bearings.

This was corrected by making the wedge higher in the center. As this distributed the weight on the bearing so that it bore on every point of it equally, the axle wear became uniform. This detail was worked out by the railroads at a time when loads were light and speeds low. If any attempts were made now by the common carriers to use flat-topped wedges with present-day heavy loads and high speeds, the results would be disastrous.

In mine-car trucks roller bearings are generally conceded to be more efficient than plain bearings. They hold grease better, give longer service and produce an easier-running car, provided, of course, they are properly placed and cared for.

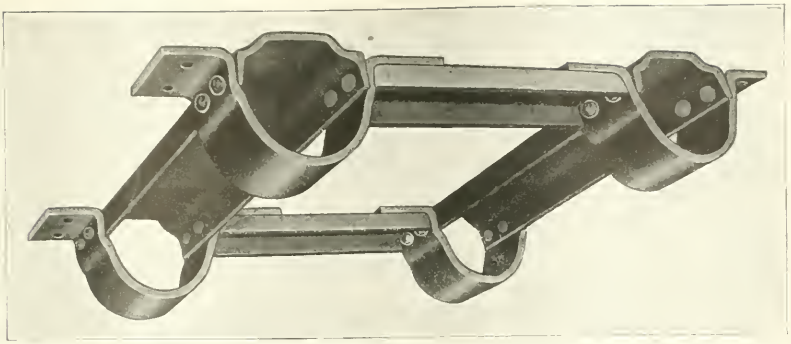


FIG. 5.

Truck Frame

Rigidity in construction in the frame is of primary importance. A mine-car truck should keep its shape regardless of the many impacts to which it is subjected.

It is of the greatest importance, even when used in a journal box, that these bearings be placed in such a manner that the weight carried will be equally distributed over their entire length. This is easily accomplished by crowning the upper surface of the journal box—that is, making it highest at a point directly over the center of the bearing. The weight of the car, of course, rests on the high point of the journal box, and is therefore naturally distributed evenly along the bearing.

Mere employment of the self-aligning journal box does not by any means insure that the truck upon which it is placed is durable and will stand up under severe service; it signifies only that the manufacturer has started in the right direction.

There are still many adverse conditions to contend with, and the success with which he surmounts these obstacles determines the real value of his truck. In order that a truck may give satisfaction it should last for many years without undue or excessive wear on any of its parts that would render it unsafe to operate.

Other Qualities a Truck Should Have

Some of the more important factors that a manufacturer must incorporate in his truck are as follows: (a) Strength, (b) ease of greasing, (c) a simple and safe wheel fastening, (d) provision for side thrust, (e) provision for quickly replacing any broken or worn parts, (f) provision for maintaining a fixed wheelbase. Yet while he provides all these factors the height of the car must not be raised over that of other types of trucks having the same wheel diameter.

To illustrate how these features can be built into a journal-box truck, reference may be made to certain details of the Lincoln truck, which is of the self-aligning journal-box type. This truck is an individual unit of the mine car—that is, it embodies a complete frame to which the car body is attached, and on which it is carried.

Frame Is Pressed From Heavy Flat Bars

The frame is pressed or forged from heavy flat steel bars and channels, so that it can withstand corrosion for many years and still maintain adequate strength. The pockets on the sides receive the journal boxes, this construction positively maintaining a fixed wheelbase.

The ease with which a truck of this kind can be greased is of great importance because adequate lubrication is absolutely essential to the long life of any journal, and the more easily the lubricant can be applied, the more certain is the box to receive it. Fig. 4 shows that the truck in question can be greased from the side by inserting the gun between the wheel spokes. To facilitate this operation a self-closing spring oiler with a beveled face is provided. This guides the end of the grease gun into the oil hole and consequently the operation of greasing is accomplished quickly.

The interior of the journal box is so designed as to divert part of the grease to the roller bearing and part to the shroud surrounding the wheel hub. It is within the lubricated area of this shroud that the wheel hub, bearing against a steel wearing washer, takes the side thrust. The importance of a shroud for keeping the end of the wheel hub lubricated cannot be overestimated, and many sad experiences have resulted from inattention to this detail.

Enables Grease to Travel to Wheel Hub

The shroud also enables the grease to travel along the axle into the wheel hub, providing the amount of lubricant necessary for the loose wheel when rounding curves or when spragged. Little lubricant is required at this point, yet a certain amount is highly desirable.

As a wheel fastening a cotter pin is generally accepted as being the most efficient, but it should, however, be protected against wear. This can be easily accomplished by using a washer with projecting lugs, thus preventing motion between the washer and cotter.

Grease Trolley Wire to Prevent Sparking

By W. H. Hunt*
Central City, Ky.

BY GREASING the trolley wire with a hard conducting oil of a cheap grade the trolley wheel may be caused to operate without sparks or flashing yet without involving any considerable expenditure. Sparking and flashing at the trolley are annoying and injurious to the motorman. The singing of the trolley wheel cannot be heard when grease is used.

The practice also saves the wear on the trolley wheel. It is said that one new wheel on greased wire will outlast a dozen on dry wire. Furthermore it gives perfect contact and so saves power, especially on a heavy grade. One greasing will serve under ordinary use for five or six months. A number of mine officials in my district are greasing their trolleys, and they are so well satisfied with the results that they will never again use a dry wire.†

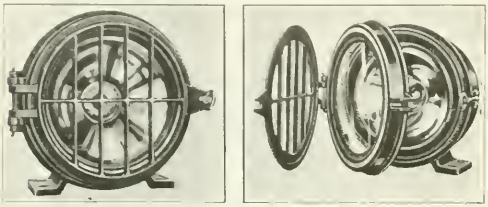
*Assistant State Mine Inspector, Second District, Kentucky.

†The practice is followed also on street railroads for the purpose of preventing sleet from accumulating on the trolley wire.—Editor.

Locomotive Headlight with Separate Hinged Grid Door and Green Mirror Reflector

FOR avoidance of accident a headlight should be clear and bright yet not dazzling. Formerly mine-locomotive headlights were built with the glass fitted into a grid door. This, while protecting the glass from breakage, rendered its proper cleaning difficult if not impossible of accomplishment. In a new type of headlight recently placed on the market the grid door is separated from the one carrying the glass, both being hinged at the side and fastened by the same locking device. This enables the motorman to maintain his headlights at maximum efficiency.

These headlights are equipped with yellowish green mirrored glass reflectors molded and ground to a true parabola and then polished and silvered. In the process



LOCOMOTIVE HEADLIGHT THAT LIGHTS WITHOUT DAZZLING PASSERBY

On the right is the headlight with grid and glass front, which are separately hinged so that the latter may be cleaned. On the left is the light as it appears when approaching the observer. The reflector and socket are flexibly suspended to prevent jar of the lamp filament.

of reflection many of the violet and blue rays are absorbed and a beam of golden yellow non-dazzling light capable of penetrating fog or dust much more deeply than white light, is projected.

Glass reflectors such as these are not only highly efficient but are also durable, permanent, non-tarnishable, are easily cleaned and never require polishing. Reflector and lamp socket are flexibly mounted in the case so as to prevent the vibration of the locomotive from breaking the lamp filament. The case is made of cast iron and provided with a rear door, permitting adjustment of the socket so as to bring the filament to the focus of the reflector. All parts may be removed through the front door, making inspection and repair easy. This lamp was designed especially for use on mine locomotives and is placed on the market by the Electric Service Supplies Co., of Philadelphia, Pa.

Mine-Rescue Work and Organization as Practiced in Great Britain

THROUGH the National Safety Council, through first-aid and mine-rescue meets, international and local, as well as through the U. S. Bureau of Mines and the technical journals, a fair knowledge of American practice in mine-rescue work and organization has been obtained. Our readers will welcome, however, the opportunity to become acquainted with British methods which is afforded by the new book on "Mine Rescue Work and Organization," published by Crosby Lockwood & Son, of 7 Stationers Hall Court, London, E. C. 4, and obtainable of the D. Van Nostrand Co., 8 Warren St., New York City.

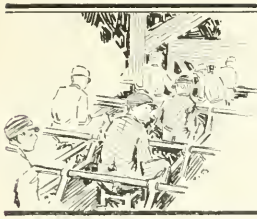
This book of 171 pages, well but not excessively illustrated—the cuts are all well chosen and essential to the understanding of the text—is written by H. F. Bullman, author of "Coal Mining and the Coal Miner," and Frederick P. Mills, chief officer of the Durham and Northumberland Collieries Fire and Rescue Brigade, a foreword being written by Colonel W. C. Bleckett, president of the Institution of Mining Engineers.

At the very opening of the book is the exceedingly practical suggestion that a bicycle mounted on a stand with the front wheel removed and the back wheel subjected to a braking device, giving a definite retarding effect, be used as a means of testing the ability of rescue men to do hard work without excessive pulse action, rapid breathing and trembling. This machine is known as an ergometer and was invented by Professor Martin, of the Lister Institute. It seems a severer, surer test than can be obtained by requiring the man whose heart is to be tested to run around a room before examination. Only by having men physically reliable can any assurance be felt as to their ability to meet the supreme test in safety work. A graph has been drawn which shows the amount of carbon monoxide in the exhalations after various outputs of energy in foot pounds both when breathing oxygen and when breathing air. The percentage rises at first and falls thereafter.

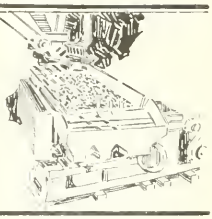
The book gives a full description of the training course for rescue men and sample daily reports, medical and other certificates as to their experience and capabilities. It details a drill for smoke-helmet men, who have a telephone attachment added to the helmet. An interesting chapter on the bearing which physiological data have on breathing apparatus and mine-rescue work follows. Various types of breathing apparatus are described—the Aerophor, Proto, Tissot, Gibbs, Paul and Briggs. Smoke helmets, the antipoys apparatus, respirators (gas masks, we would term them), the respirator hood, reviving apparatus and accessory material are treated in several pages. Several American devices such as the Mine Safety Appliances Co.'s carbon-monoxide detector and gas mask are briefly described. A headlight rescue lamp and the Geophone also receive attention. A few pages are devoted to the equipment of rescue stations and brigades and others to the rescue-work regulations of the British Government.

Overfusing and Blocking Circuit Breakers Is Apt to Cause Much Loss

WALTER GREENWOOD, safety engineer of the Carnegie Steel Co., at the meeting of the Metals Section of the National Safety Council at Boston said: "Bad results do not always follow the use of fuses of excessive capacity or the blocking of circuit breakers. For this reason operatives who wish overloads to be carried are encouraged to indulge in these bad practices in disregard of instructions. Even when distant control is employed the contact points of the blades of operating controllers can be made to stick. Damage, however, frequently results before other means that may have been provided will break the circuit. If operators could only be made to realize that overfusing or blocking circuit breakers is the same in effect as rendering inoperative a safety valve or an open throttle valve on an engine the practice would not be followed. The damage it can do is limited in extent only by the protection, if any, provided in the branch system and sometimes it extends back to the generators, with consequent opportunity for accidents.



Improving Quality of Output



Horizontal Screens Offer Many Advantages Over Gravity In the Screening of Bituminous Coal

Bar Screens and the Inclined Shaker Rely on Gravity as Modified by Friction—With the Horizontal Screen, Height Is Saved, Picking Is Easier and More Effective and Screening More Complete

By Wesley S. Harris*
Bicknell, Ind.

FIRST attempts at the separation of screenings from mine-run bituminous coal probably were made on bar screens. The bars in this case were placed on an incline and were variously spaced to effect separation of any desired size from the larger coal. This method of screening became quite general, and is still in extensive use. However, bar screens soon were found to make only an approximate separation of the sizes because of the various inherent difficulties in their operation. With bars sufficiently steep to insure sliding of the coal under all conditions, it was found that the material moved across the screen at such a rapid rate that a large percentage of the finer pieces would remain entrained in the mass, to be deposited with the lump.

Gravity Screens Give Uncertain Operation

It also was discovered that a slight amount of rust forming on the screens would interfere with coal movement. This condition would improve as the rust wore off until the material would again be sliding across the bars at too high a rate for even approximate separation. The velocity at which coal passed over the bar screen was affected also by the moisture as well as by the fireclay or other impurities contained. Even the natural fracture of the material was found to have much to do with the rate at which it would travel across the screens. Suitable inspection of the coal or the removal of the impurities by picking when employed in conjunction with the bar-screen system was, of course, not possible except at those mines having a small tonnage.

Perforated Sheets Replace Screen Bars

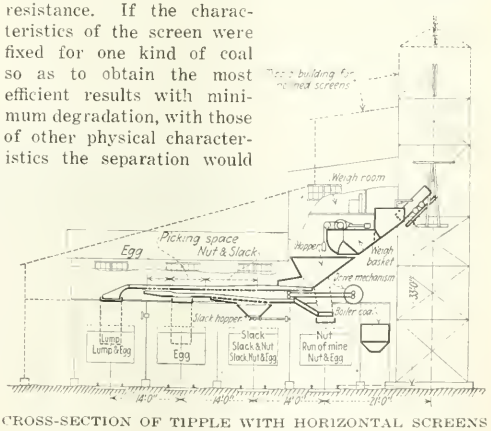
In an effort to improve the quality of the screened product, resort was made to flat perforated plates mounted on a slope, with the result that when the angle of inclination was low enough to obtain even an approximate separation of sizes, it was found that the coal would clog and refuse to pass freely over the screen. In order to effect movement of material across such plates, agitation of the screen surface was necessary. Herein lay the germ of the inclined shaking screen.

Devices of this type were progressively improved until a series of high-grade balanced screens was developed giving preparation of varying sizes and with facilities for mixing practically any of the grades desired.

In developing inclined screens, engineers found that there was no practical method of determining the proper inclination of the screening surfaces, stroke of the screens and speed at which they should be oscillated. In each case these had to be determined by trial or judged from experience, and when once established for any given installation they were quantities which did not change from day to day.

If Coal Is Not Uniform Screen Works Badly

With inclined as with bar screens the resistance across the surfaces was again found to be variable, depending upon weather conditions, whether dry or wet coal was being handled, the amount of fireclay present and the nature of the fracture. Coal which would flow slowly over the inclined shaker would screen more thoroughly than that which had a lower frictional resistance. If the characteristics of the screen were fixed for one kind of coal so as to obtain the most efficient results with minimum degradation, with those of other physical characteristics the separation would



CROSS-SECTION OF TIPPLE WITH HORIZONTAL SCREENS
Dotted lines show how much larger must be the tipple and how much higher the head frame when gravity screening is used instead of horizontal screens.

*General superintendent, Panhandle Coal Co.

either be less refined or there would be an increased breakage due to unnecessary wear between the coal and screen surfaces.

From a careful consideration of all of the above I believe that it is safe to state as a general rule that where gravity is resorted to either wholly or in part for passing coal over screening plates the quality of the preparation will be variable.

With the general introduction of inclined shaking screens and with further demands for clean coal, picking tables or belts were introduced, permitting of hand removal of the impurities after the material had been sized. A further refinement was added in some of the large mines by the introduction of degradation screens which extracted the breakage from the prepared sizes just prior to their being placed in the car.

The latest development in sizing equipment is the horizontal screen, two makes of which are on the market. These are the Marcus and the Jacobsen screens, which are manufactured by several firms under the above trade names. A general drawing of a Jacobsen screen is shown herewith.

Better Sizing Where Gravity Is Not Used

These screens are mounted in a horizontal position in the tipple and in no wise depend upon gravity for conveying the coal over their surfaces. They are so designed that the horizontal motion of the screen moves the coal at an approximately uniform speed of 45 to 50 ft. per minute. Such speeds, I have found, are satisfactory for the removal of impurities by hand picking while the coal is on the screen.

These screens give perfect sizing, as the force of gravity tending to pull the smaller coal through the perforations always acts at right angles to the screen surface. With inclined screens, on the other hand, the action of gravity is reduced in the ratio of the projected area of the perforations to their actual area. There is no tendency for the coal to avalanche across the perforations because the motion of the screen and coal are both in the same plane, the location of which is not changed, as is the case with the inclined shaker.

Action also is of equal intensity on both forward and backward strokes of the screen while with the inclined separator effective motion is possible only on the major portion of one stroke. Horizontal screens also afford an opportunity for the direct removal of impurities from the coal while they are on the screening surface without necessitating additional picking tables. This is so because the screens are not only horizontal in position but are arranged at a convenient height so that pickers may stand on a level floor and work as easily as if picking from a table. Screens of this kind give a slight agitation to the coal so that impurities are more readily detected by the pickers than is possible on a continuously moving belt or table.

Should it be desired temporarily to stop the movement of a large lump of coal for the purpose of stripping off a piece of impurity this can easily be done on the horizontal screen. The lump it is desired to clean is readily held back until the impurity is broken loose. It is not necessary to lift the lump out of the mass. With the picking belt this cannot be done because of the friction between the lump of coal and the rubber or corrugated iron pans forming the table bottom.

Horizontal screens have a greater capacity for a given area than have inclined screens or those of any other kind. The Marcus and the Jacobsen screens are both of the balanced type and operate without in any way subjecting the tipple to vibration.

Horizontal screens, on account of the low headroom required, in many cases can be installed in existing tipple structures with a minimum of expense. In the accompanying illustration I have indicated in dotted lines the outline of the tipple building required for the installation of inclined shaker screens. The saving in building material made possible by the use of horizontal screens is readily apparent from this drawing.

Horizontal screens may be mounted so low that the distance from the dump to the car is reduced to a minimum. This materially reduces the amount of breakage, especially in the nut and egg sizes. This low tipple height also results in a lower hoisting height, with consequent increased capacity of the hoist and a considerably lessened cost of the tipple structure.

Refuse and degradation conveyors may be installed at slight additional cost, as they consist simply of horizontal sheet-iron troughs fastened rigidly to the screens. They partake naturally of the same motion as the screen to which they are attached. This results in the elimination of much extra gearing, shafting and the electric equipment necessary for driving such devices. Such conveyors entail small maintenance charges, as they embody no moving machinery.

Mounting all machinery and screens on one horizontal floor renders this type of screen highly convenient to repair and also facilitates the inspection of coal as it comes from the mine.

Loree Plant Recovers Seven Tons of Anthracite Slush for One Dollar

THE Dorr plant at the Loree breaker consists of a 26-ft. tank which separates the plus 60-mesh solids from those which are smaller. Separation of finer solids could be effected with a larger tank, but as the finer coal contains more ash no more complete recovery from the waste water is provided. The product goes to three Dorr classifiers and the following results are obtained:

Total solids in slush feed to hydro-separator, 49.8 short tons per hour.

Average size of total solids in feed (cumulative):

Size	Per Cent
Plus 60-mesh	44.50
Plus 100-mesh	57.60
Plus 200-mesh	72.10

Average ash content of total solids in feed, 32.9 per cent.

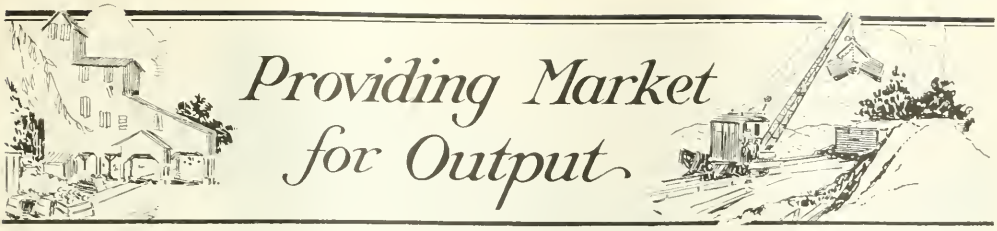
Total solids recovered by hydro-separator and classifier, 22.71 short tons per hour.

Average size of recovered solids (cumulative):

Size	Per Cent
Plus 60-mesh	89.00
Plus 100-mesh	97.00
Plus 200-mesh	99.50

	Per Cent
Average ash content of solids recovered	24.85
Proportion of total solids recovered by hydro-separator and classifiers	45.60
Proportion of total solids lost by hydro-separator	39.10
Proportion of total solids lost by classifiers	15.30
Proportion of plus 60-mesh solids recovered by plant	91.00
Proportion of plus 100-mesh solids recovered by plant	76.70
Proportion of plus 200-mesh solids recovered by plant	62.90
Proportion of total combustible recovered by plant	51.20
Proportion of water eliminated by plant	98.40

The plant shows a direct operating cost of 5.3c. per ton covering labor, power, supplies and repairs, and a total operating cost of 14.3c. per ton, including 8.8c. per ton to cover interest, insurance, taxes and depreciation at 20 per cent on an investment of $17,500 for building and equipment. This cost covers delivery of finished product to a conveyor either for stocking or for loading on cars for shipment. The additional cost of operation for this conveyor will vary with local conditions.



Air-Dump Cars Carry to Storage Pile Small Coal for Which Old Ben Coal Corporation Has No Market

Coal Is Dumped from 12-Ft. Trestles, 100 Ft. Apart, and Handled In and Out of Storage by Clamshell Buckets—Six Air-Dump Cars Receive and Dump a Thousand Tons of Slack and Boiler-Furnace Coal in a Day

COAL companies which during the car shortage found it profitable to store coal ready to load when cars were more plentiful have found that storage in the bituminous region has its advantages at times of unbalanced demand, when for instance domestic sizes of coal can be sold and slack cannot. With no market for fine sizes it does not pay to run the risk of shipping coal of that description without consignee.

It may be necessary, should that be done, to sell the coal for less than the freight, a practice that demoralizes the market for all the small-sized coal produced. Nor is it profitable, when monthly men have to be paid and a force of daymen and miners has to be kept intact, to wait to fill domestic-coal orders till a demand arises for fine coal. When the market for slack is extremely bad it might be difficult to operate at all if no place or equipment for the storage of coal were available. So there is an advantage in storing in the slackest of times if it can be done cheaply and safely. The anthracite region long ago learned that this is a fact. It rarely has a car shortage, but owing to the unbalanced demand it almost always keeps large quantities of fine coal on hand. This practice is so reasonable that it is sure to grow from now onward.

The Old Ben Coal Corporation owns several mines in Franklin County, Illinois, and during the war, when the car shortage was acute, utilized a number of standard Western 30-yd. air-drum cars at its Buckner operation to supplement the supply of railroad equipment. The dump cars were discharged in a storage yard, and, whenever railroad cars were available, the material was rehandled for shipment.

This expedient proved so successful that the same plan was put into effect recently on a much more elaborate scale at Christopher, Johnston City, Sesser and possibly at other Old Ben operations, in an effort to stabilize production and keep the mines running throughout the working day.

In each installation the storage yard is laid out in such manner as to involve a haul of about one-quarter mile. One high track is placed in the middle of the storage yard. This is built on a strong trestle about 1,320 ft. long and 12 ft. high. On each side of this trestle is a switching track, the distance between centers of the elevated and the switching tracks being 50 ft.

Instead of using the ordinary contractors' dump car the Old Ben company had Western standard steel 30-yd.

STORAGE TRESTLE AT JOHNSTON CITY, ILL., SHOWING TRAIN OF CARS, EACH HOLDING FORTY TONS WHEN FULLY LOADED

This trestle is not really used for storage but for the purpose of placing coal where it can be transferred by a clamshell crane which travels along the track in the foreground of the illustration. The trestle is petticoated with plank so that no coal goes under the roadway. In this way the coal is made readily accessible.

Storage Pile

Almost as fast as the coal is dumped over the sides of the trestle it is moved by a steam shovel to the pile on the left. Note how the trestle is shrouded with plank, so that none of the coal can get beyond the reach of the shovel

air-dump cars built, provided with steel side-extensions each affording a capacity of 45 cu.yd. and holding about forty tons of coal. These cars are used under the tipples in the same manner as railroad equipment except that the storing is confined to screenings and boiler-furnace sizes. Only six dump cars are required at each mine. It takes about thirty minutes to fill one dump car with furnace coal and two with screenings, the two sizes being loaded simultaneously.

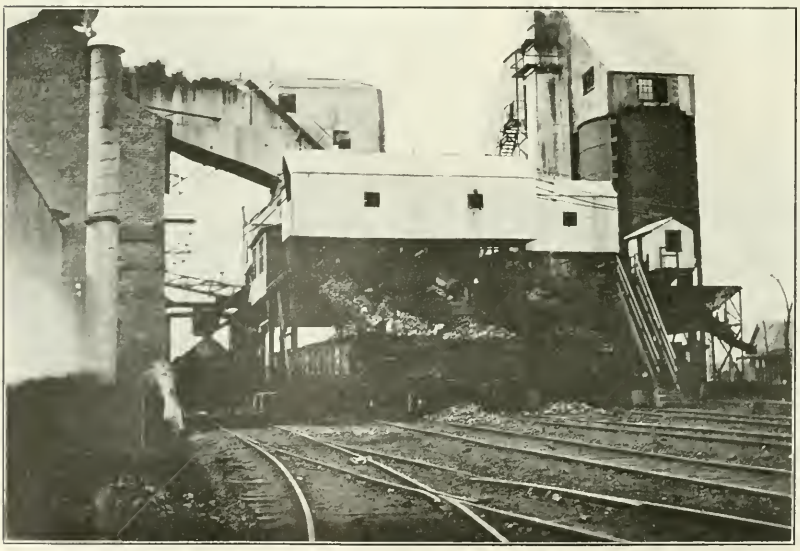
One Locomotive Handles All Dump Cars

It requires from fifteen to twenty minutes to make the round trip to the storage yard with these three cars of coal, including the time taken in dumping. While this is being done three other cars are under the tipple taking on their loads. This enables a single locomotive to handle the dump-car trains, of three cars each, continuously and efficiently. Six air-dump cars thus keep the mine in operation.

The cars are dumped upon both sides of the trestle, and the coal is moved back into storage piles by a clamshell bucket that also reloads it for shipment. The piles thus formed are about 100 ft. apart and the capacity of the storage yard is approximately 70,000 tons. This, of course, could be increased, by further rehandling.

At Old Ben mine No. 16, at Sesser, Ill., 1,084 tons were handled in this way by air-dump cars on Jan. 27 last; 1,013 tons on Jan. 28, 1,039 tons on Jan. 29, 2,000 tons on Jan. 31, and so on. The larger sizes of coal are not included in these figures. They were, of course, loaded into the regular railroad equipment. The cost of storage and reclamation has been about 15c. per ton.

One of the accompanying photographs was taken at Johnston City, Ill., where the Old Ben company recently bought a mine, and is now equipping it for storage and greater production. This picture was made before much coal had been dumped in the storage yard and conveys a good idea of the track-layout and the trestle-construction.



Sesser Tipple

At this tipple, as at those located at Christopher and Johnston City, the sizes of coal for which there is no immediate market are taken in air-dump cars to a trestle 12 ft. high and there deposited, to be stocked and ultimately reclaimed by a steam shovel with a clam-shell bucket.

Sale of Small-Size Coal Can Be Promoted By Showing How It May Be Burned

INSTEAD of complaining that the public wants coal that is wrapped in tissue paper and tinfoil it would be better to let the public know that the sizes of degradation have their advantages and that they are not few or unimportant. The message has been carried most successfully to the big producers of power for public or private consumption.

However, these people could be readily appealed to, for they read their technical journals carefully and make a study of their costs. The generality of coal consumers who use coal for domestic purposes make no such effort to become informed. They are their own worst enemies when they go in the market year by year for domestic sizes of anthracite or bituminous, not knowing that with the proper type of furnace the finer sizes can be burned with greater satisfaction than the larger sizes, provided that the quality of the coal by analysis and heat value in each case is the same.

Fortunately the furnace which will burn small coal shows an ability to fit itself to lower-grade fuels such as lignite and so in every way serves to make itself the basis on which to push a successful campaign for the domestic use of fine coal.

Will Be No Need for Coal to Be Large

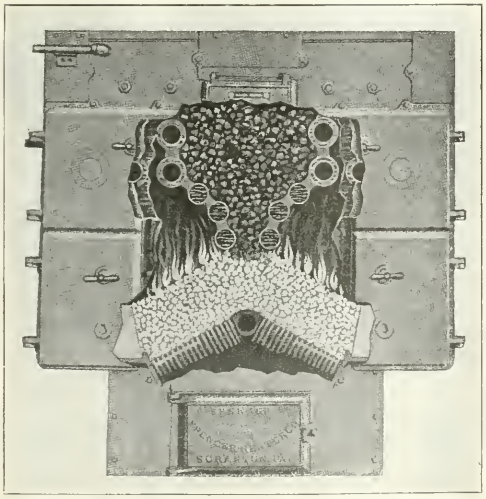
The advantage of bringing the public to a realization of the value of fine coal is that there will then be no need for any coal to be large. It cannot be made large at will but it can always be made small if the public demands it, and coal can be prepared more readily for the market if the public is not particular as to how small the coal is.

As ordinarily built and handled the domestic house-heating furnace is extravagant in its fuel consumption. Firing a charge of green coal directly upon an existing fire is by no means an economical or scientific method of burning fuel. Such a charge deadens the fire and makes the heat generated irregular—at least for a time. Furthermore, the highly irregular attention that a house furnace ordinarily receives is conducive to neither economy nor efficiency. The ideal house furnace would be one wherein fuel of small, inferior or cheap grade would be fed automatically and in small quantities to the fire when and as needed, and where the intensity or rapidity of combustion would be controlled in accordance with the predetermined temperature desired throughout the house.

Many schemes have been tried in the attempt to obtain the results mentioned. Putting the draft under control of a diaphragm responsive to the steam pressure or a thermostat mounted in the living room or elsewhere are familiar examples. In the furnace shown in the accompanying illustration a means is employed for automatically feeding the fuel to the fire in accordance with its requirements.

Essentially this furnace differs from others in that it contains a coal magazine and a sloping grate. The magazine is water-jacketed to keep the coal therein below the temperature of ignition or even that at which, with bituminous coal, coking commences. The grates are placed at approximately the angle of repose of the coal so that an even and uniform thickness of fire will be continuously maintained. This arrangement keeps the fire always bright and clean on top, permitting continuous absorption of radiant heat. Small sizes of this furnace are made with a single sloping grate and side magazine while the larger sizes are built with double sloping grates and a central magazine.

The double grate makes a unit that is highly flexible. In severe weather both grates are used; in mild weather the ashes are allowed to accumulate on one side until they become so thick that fuel from the magazine refuses to flow to that side of the furnace. It is cheaper, more efficient, and requires less fuel to burn one side at normal capacity than to burn both sides of the grate at a greatly reduced capacity.



A FURNACE THAT WILL BURN SMALL SIZES OF COAL

The furnace feeds itself from a magazine, the coal running down one or both sides of the pile of ash and partly-burned fuel on either side of the grate and so being added to the fire in a thin layer which accordingly is completely consumed. In moderate weathers by letting one side remain ash-bound the capacity of the furnace can be halved with advantage. The quantity of coal burned can be regulated also by varying the amount of ash on the grate.

Can Be Used to Burn Inferior Fuels

Small and what are usually termed inferior grades of fuel may be successfully burned in this furnace. It will operate on anthracite of buckwheat size as efficiently as upon chestnut. In the West it is fired with and successfully burns lignite slack. Of course lump coal cannot be used in this furnace because large pieces will not pass through the discharge opening of the magazine.

The grate bars employed are of the rocking type and the fingers are curved in circular arcs. These fingers are longer near the "peak" of the grate than they are adjacent to the sides of the lining. As a result any clinker that may form will naturally be projected to the lower portion of the grate. Here upon shaking, which is merely a rocking of the bars, they are caught by the short fingers and broken up or reduced in size so that they will pass readily to the ashpit.

The furnace as above described is built in twenty-seven sizes for steam and in fourteen sizes for hot-water heat. It is the product of the Spencer Heater Co., of Scranton, Pa. Not only does it burn coal effectively but for house heating it renders available cheap fuels that heretofore have been considered fit only for steam generation for power purposes.

U. S. Engineer's Office Opens Bids for Coal For Dredges at New York

BIDS were opened Sept. 27 at the U. S. Engineer's Office, New York City, for furnishing 5,000 tons of coal for the sea-going dredges Raritan and Atlantic, the coal to be delivered in lots of 450 tons a week at the following places: Pier 18; Port Liberty and Greenville piers, f.o.b. barge or lighter. The coal was to be classified in Pools 9, 4, 10, 54 or 64, or the equal. Bids were also received for stevedoring. The bids received were:

	Pool No.	Price Per Gross Ton	Stevedoring Per Ton
Astell Coaling & Lighterage Co			$0.998
Standard Coal Sales Co.		$5.29	91
Standard Coal Sales Co.		6.19 (in bunkers)	
Commercial Coal Co		6 59	1 10
E. Russell Norton	10	5.66	1 00
Eureka Stevedoring Co			1 20
Imperial Coal Corp.		5 49	
Maryland Coal & Coke Co	9	6.09	
Maryland Coal & Coke Co	10	5 81	
Maryland Coal & Coke Co	34	5 65	
Maryland Coal & Coke Co	64	5.65	
Empire Coal Mining Co		6.25	
Dexter & Carpenter	9	6.34	
Dexter & Carpenter	4	6.46	
Dexter & Carpenter	10	6.06	
Dexter & Carpenter	34-64	5.75	
Rapid Coal Co.			90
National Coal Stevedoring Co			1.30
Cortright, Dominick & Cunningham, Inc.	9	6.00	1.10
Cortright, Dominick & Cunningham, Inc.	10	5.70	
Cortright, Dominick & Cunningham, Inc.	64	5.55	
Archibald McNeil Sons Co	64	5.59	
W. A. Marshall & Co.		5.45 for Oct. del. 1.06 5.75 for Nov. & Dec. del. 5.60 for 3 mos. del.	
McCann Camp Co.		5.75	1.35
Vaughn Stevedoring Co			1.00
Crescent Fuel Co.	64	5.90	
Crescent Fuel Co.	10	6.00	
Haddock Fuel Corp		5.34	1.19

Railroads to Ask 28 Per Cent Reduction in Freight Rates on Iron Ore

TRAFFIC executives of railroad lines in official classification territory announced Oct. 6 that in order to move a supply of iron ore prior to the closing of lake navigation, and in order that the furnaces may resume or increase their operations, they would at once make application to the Interstate Commerce Commission for authority to make a reduction of 28 per cent in the rates which were based on the advances of Aug. 26, 1920.

Notice has been given of this purpose to the iron and steel interests through the chairman of their committee and it is expected that this will have an immediate stimulating effect upon the iron and steel production.

The rate, if approved by the commission, will expire with the close of business Dec. 31, 1921, and prior to that date conference will be held with the iron and steel interests to decide upon a policy for the period after Jan. 1, 1922.

Steel Workers Ask Miners to Accept Less; Other Firms. Some Union. File Cuts

LACK of complete harmony between the steel workers' union and the miners' union appeared in the closing days of the hearing in the Trinidad district of Colorado, in which the Colorado Fuel & Iron Co. is seeking to enforce a proposed 30 per cent cut in wages. The steel workers, through a committee supposed to represent them, urged the miners to accept the cut, so that they could resume work in the Pueblo steel mills.

The Pueblo mills are operated by the company and are shut down because of inability to compete with Eastern steel mills. High price of coal is a contributing cause. Many of the mines are operating on a part-time basis at the regular wage scale, pending a decision of the State Industrial Commission, which has been conducting an investigation.

The mine workers' union, through its district president, John McLennan, charges that the steel workers' committee was not authorized to intercede, but represented a hand-picked committee with the company paying their expenses. Through their leader the United Mine Workers' district organization has announced a policy of "no reduction under any consideration."

Since the controversy arose, Sept. 1, two other coal companies operating in El Paso County, have filed notices with the State Industrial Commission of reductions ranging from 10 to 30 per cent, and the Victor-American Fuel Co., the largest operator in Colorado under union contract, has notified the commission that in the event reductions are granted to their competitors they will be compelled to ask similar consideration. Forty miners of the Keystone Mining Co., at Colorado Springs, have filed a protest with the state commission against proposed wage reductions on Oct. 15.

Lehigh Valley Announces Coal-Segregation Plan; Government Objects

THE Lehigh Valley Railroad Co.'s plan for the segregation of its coal properties, in accordance with the U. S. Supreme Court's decision of Dec. 6, 1920, was filed Oct. 6 in the U. S. District Court of the Southern District of New York by E. H. Bowles, vice-president and general counsel of the company. E. E. Loomis, president of the company, in setting forth the plan, said it called for no assessment from the 19,122 stockholders and resulted in no sacrifice of their equity in the coal company investments.

The plan calls for the issuance of $30,000,000 of non-accumulative preferred stock of $100 par value, yielding dividends at 7 per cent, to be turned over to the Lehigh Valley Railroad, the road to convey all of its interest in the common stock to a trustee, who will issue 242,432 certificates of interest in the common stock of the coal company in the ratio of one certificate for every five shares of common or preferred railroad stock. These certificates are to be dividend bearing. The stock of Coxe Brothers & Co. will, until its maturity, Feb. 1, 1926, remain as at present, after which time it is to be sold into the treasury of the Lehigh Valley.

The Government at the same time filed three main objections to the segregation plan.

Idle Freight Cars Reduced 19,838 in Week

A FURTHER reduction of 19,838 in approximately a week in the number of idle freight cars is shown by reports received from the railroads of the country by the Car Service Division of the American Railway Association. The total on Sept. 23 was 414,698 compared with 433,536 on Sept. 15. Of the total, 201,153 were in good order and could be placed in immediate service if transportation demands warranted while 213,545 were in need of repairs.

Tabulations showed 55,849 surplus box cars in good repair compared with 62,372 on Sept. 15, or a reduction of 6,523, while there were also a total of 110,376 surplus coal cars immediately available for transportation purposes, which was 8,138 coal cars less than on the earlier date. A reduction within a week of 1,332 was reported in the number of surplus stock cars.

Kansas Leaders Go to Jail, Having Refused To Give Bond Not to Promote Strikes

ALEXANDER HOWAT, district president of the United Mine Workers of America in Kansas, and August Dorchy, the district vice-president, went to the Cherokee County jail Sept. 30, sentenced to six months each for having called a strike in violation of the criminal section of the Kansas Industrial Court law. They could have escaped serving their sentence if they had consented to furnish bond of $2,000 each that they would call no more strikes in the coal fields of Kansas. Thomas Harvey, secretary-treasurer, is now ranking officer of the district. He is regarded as an opponent of Howat's policies and may be appointed to succeed him.

United Mine Workers to Form Political Party

WHEN the United Mine Workers of America concluded their sessions at Indianapolis on Oct. 5 they had resolved by vote to form a new political party to include organized labor, as represented by the American Federation of Labor, and the organized farmers. Samuel Gompers was requested to call a conference of all the officers of the unions affiliated with his federation to accomplish this end. The vote was almost unanimous and was not prefaced by any discussion.

As a preamble to the resolution a committee report indorsed the Nonpartisan League government of North Dakota, declaring that "to say that labor and the farmer cannot organize politically will not belie the fact that North Dakota has already accomplished this and is the banner state and advance guard of what we hope to be a nation-wide accomplishment."

"We realize that the formation of a labor party proper," added the report, "can be made a reality, but in doing so we should not incur the enmity of those of the already well defined political parties who are our friends. In other words, we must not destroy any structure that now affords a semblance of protection until such time as a new structure can be built."

New Wage Scale to Be Formulated Feb 14

The conference also resolved to hold its next convention at Indianapolis on the fourth Tuesday in January, 1924. In view of their previously adverse vote requiring the Kansas strikers to go back to work contrary to the wish of Alex. Howat, president of the Kansas district, it was strange indeed that they elected him to represent them as a delegate to the International Mining Congress that meets next year in England. With him they associated William Mitch, secretary of the Indiana district. It seems as if the appointment of Howat was the outcome of a political deal made between the administration and the more lukewarm Howat men at the time when the international officials were striving mightily to have the conference back them in breaking the Kansas strike.

It was decided on Oct. 4 that the demands of the mine workers for a new scale would be formulated not later than next Feb. 14, when the convention will meet again in Indianapolis to receive the scale committee's report.

The conference was informed that Herbert Hoover, Secretary of Commerce, had proposed to John Moore, representative of the mine workers at the Unemployment Conference in Washington, that the mine workers pledge themselves to arbitrate their controversies with the operators next spring.

John L. Lewis, international president, said the union would make no such pledge but would retain the right to strike. He asserted that no one would have the power to agree to arbitration of wage disputes or to make any other agreement concerning the wage scales to be proposed next March until the special convention had been held in February, 1922, to receive the report of the committee on wage scales.

The convention authorized the collection of a special assessment of $3 for each of the membership of approximately 300,000. The International treasury of the organization has about $1,000,000. According to the official financial report, the organization owes sums aggregating $500,000.

In an effort to discredit President John Lewis and his administration Local Union No. 1, of Braidwood, Ill., obtained the indorsement of about three hundred other locals to a resolution divesting the scale committee and international officers of the power to negotiate a wage contract unless it carries the full demands of the membership. The convention voted this resolution down and thus retained to the officers and the committee their power to meet the operators in conference next March.

The convention also upheld the union executive board in fixing the salaries of international officers. This action maintains the salary of President Lewis at $8,000, the salaries of other officers ranging downward according to their position. Provision was made to make the next meeting smaller and less unwieldy by amending to the constitution so as to permit no local union to have more than one delegate unless it has more than 500 members. The convention adopted a number of other resolutions on recommendation of the resolutions committee. These included one asking the American Legion to "set its house in order," but avoiding any criticism of the legion as a whole.

Other resolutions declared for the nationalization of mines, for self-determination for Ireland and Russia, demanding that the election of officers for the American Federation of Labor be by referendum, protesting against the confinement of Tom Mooney and Warren K. Billings in San Francisco, recommending that district organizations use every effort to have laws enacted to protect employees from eviction from company houses, demanding the release of political prisoners, declaring for unemployment and health insurance, pledging moral and financial support to the Mingo strikers, asking that President Harding bring about an investigation of the West Virginia situation, and asking for the enactment of legislation to make unlawful the employment of guards by operators. The convention refused to go on record on the subject of light wines and beer, holding that prohibition is neither an industrial nor an economic question, and therefore had no place in the convention. The delegates refused to concur in a resolution favoring the One Big Union idea.

A ban was placed on miners joining the Ku-Klux Klan. The proposition was voted down that the union expend $500,000 at the discretion of the Kansas district officials in fighting the Industrial Court law. The convention voted for a vigorous prosecution of the attempt to unionize the West Virginia fields and condemned the West Virginia officials for their alleged aid to the operators.

On Oct. 4 the committee specially appointed for that purpose requested President Harding to extend protection to the coal miners held in jail by the West Virginia authorities.

Thirty-Eight Industrial Centers Report More Employees at Work

IMPROVEMENT in the unemployment situation, indications that "the industrial pendulum is definitely on the upward trend," and "marked increased industrial optimism from every section of the country" are announced in the report of the U. S. Employment Service for September.

The report is based on statistics collected from the payrolls of 1,428 firms in sixty-five principal industrial centres, each of which usually employs more than 500 workers. On Sept. 30 these firms had 18,050 more employees on their payrolls than they carried on Aug. 31, an increase of 1.2 per cent.

Thirty-eight cities reported employment increases during September, Toledo, Ohio, leading with an increase of 24.1 per cent, as compared with August. Twenty-six cities reported decreases of employment. The greatest decrease, 5.4 per cent, was reported by Providence, R. I. New York City reported a decrease in employment of 2.2 per cent. The situation in one city—Columbus, Ohio—was unchanged.

"The greatest change reported is in the Western and Southern sections of the country," says the report, "obviously due to agricultural activities and the advance in the price of cotton. The industrial areas in the East not only held their own but slightly increased their forces in many lines, leading with textiles, and including iron and steel and the railroads.

"These favorable trends, however, should not obscure the fact that within the next thirty days thousands of agricultural seasonal workers will return to the industrial centers and join the multitude of unemployed unless buffer employment is furnished until they can be absorbed by their previous occupations.

"The marked increased industrial optimism reported from every section of the country seems to be based largely on the improved conditions in the wholesale and retail business, which has been partly stimulated by the change of season."

Senator Lenroot Attacks Smoot Sales Tax As Almost Impossible to Collect

SENATOR LENROOT, of Wisconsin, attacked the Smoot sales tax on coal in the Senate on Thursday last, arguing that the collection of the tax would be difficult if not impossible of ascertainment and collection. Referring to Senator Smoot's reference to the application of the tax on coal, Senator Lenroot said:

"He says coal sold for consumption in a boiler will be taxable but coal sold for coke will not be taxable, but the coke will bear the tax when sold. Let us see where the Treasury would be in administering this law upon coal. Remember, the manufacturer or producer must pay the tax. Much of the coal is sold by the producer to wholesalers of coal. We have heard something of the American Wholesale Coal Association of late. The wholesaler buys from the producer. He sells to whoever will purchase. The producer does not know, when he makes his sale, whether it will be used for boilers or made into coke. The wholesaler does not know. How then is the tax to be determined and when is it to be paid? Must producers follow their coal to see what becomes of it after they have sold it, or will the government have agents to ascertain what becomes of every ton of coal sold by the producer? It is an absolute impossibility."

Senator Smoot replied that the tax could be administered but said he would explain it later, but Senator McCumber, of North Dakota, said he should explain it while the matter was fresh, and "explain away, if he can, the observations that have just been made with reference to coal."

Senator Smoot said he would give a detailed explanation this week, but in passing said the government would hold the manufacturer responsible for the tax on every sale to a wholesaler, but if the goods were to enter into further process of manufacture the wholesaler would give the manufacturer a certificate and the manufacturer would not be required to pay the tax.

Senator Lenroot also stated that if the tax could be determined and applied it would add from 40c. to 50c. a ton to the price of hard coal, now controlled by a virtual monopoly, and wherever the tax can be shifted at least 40 per cent will be added to the amount which the government receives, to be paid by the consumer. Where the tax cannot be passed on it will add to the already heavy burdens of manufacturers now operating without profit in order to give employment to labor.

Scranton Officials to Enforce Cave Law; Strike Planned in District No. 1

WHEN, on Oct. 3, it was announced to the Labor Committee in Scranton which had been appointed to ascertain the facts, that Alex. Connell, Mayor, and Harold A. Scragg, attorney, of the city of Scranton, intended to require entire compliance with the terms of the Kohler cave law, the mine workers who were out of work because of the closing of the collieries at which they formerly labored determined that a strike was the only solution of the difficulty and to make it large enough meditated on bringing in the whole of the northern coal area, or what is known as District No. 1. They hope that if a general strike of the district is called, in violation though it be of the mining contract, the Glen Alden Coal Co. will be importuned by the other operators to reopen its closed mines and protect itself by placing its operations under the provisions of the Fowler Law.

In refusing to allow violations of the Kohler Law, Mayor Connell said:

"After more than ten years of hard, sturdy, uphill fighting for relief from mine caves the people of this city were successful at the last session of the Legislature in having two laws passed known as the Fowler and Kohler Acts. The provisions of these two laws may appear to the coal operators drastic and a hardship on the coal companies, but really they are not.

"The Fowler Act, creating an anthracite mine-cave commission and providing for a tax on anthracite coal, is the law for which we have been fighting for years, and we know from sorry past experience that the courts would not allow us to tax anthracite coal without also taxing bituminous coal, and to get around this difficulty our lawyers made the acceptance of the tax bill 'voluntary' with the coal companies, and as a little pressure to show them how to accept the Fowler Bill we drafted the Kohler Bill."

Mr. Connell continues with the statement that the act provides for a review of all actions taken by the officials under the Kohler Act and so would not afford them an opportunity "to shake the plum tree," as the mining companies had alleged. The Mayor went on to say that the sentiment toward a loose enforcement of the Kohler Law was not as widespread as the mine workers semed to think and in evidence of that fact he declared that he had recently been accused of slackness in its enforcement by former Congressman John R. Farr.

B. & O. Spends $2,200,000 for New Cars

THE Baltimore & Ohio Railroad Co has awarded contracts for 2,000 new freight cars, of which 1,000 will be box cars and the remaining number steel hopper cars. The purchase will mean an expenditure of $2,200,000, which will be raised by financing arranged some time ago through the National Railway Service Corporation.

The Standard Steel Car Co. has been awarded a contract for 500 box cars and 500 hopper cars, with the understanding that these cars are to be built at the Baltimore plant of the company, located at Curtis Bay.

The American Car & Foundry Co. will build 500 box cars at its plant at Madison, Ill., and the Cambria Steel Co. will turn out the remaining 500 hopper cars at Johnstown, Pa.

President Confers With Lewis to Prevent Interruption of Coal Production

IN AN effort to prevent interruption of coal production after the miners' national agreements have expired next March, President Harding, Secretary of Commerce Hoover and Secretary of Labor Davis held a four-hour conference in the White House, Saturday, Oct. 8, with John L. Lewis, president of the United Mine Workers of America, but no agreement was reached. Mr. Lewis was firm in his stand that the miners could not commit themselves to any prior understanding before they meet next February to consider the new agreements.

Following the conference Mr. Hoover stated that the conference with the miners' representatives was in sequence of discussions carried on during the preceding week with representatives of coal operators under the auspices of the unemployment conference.

"The desire of the conference," he said, "was to determine the steps to be taken now that would minimize the danger of stoppage in coal production at the expiration of the national agreements at the end of March by a prior undertaking to arbitrate any ultimate differences.

"Owing to the situation of the miners' leaders as the result of the decision of the Indianapolis convention to defer discussion of the new agreement until after the February meeting, it has become impossible to come to any immediate agreement."

Freight-Car Loadings Gain 19,543 During Week Ended Sept. 24

LOADING of revenue freight increased 19,543 cars during the week ended Sept. 24, compared with the previous week, according to reports by the Car Service Division of the American Railway Associaton from the railroads of the United States. The total for the week was 873,305 cars, which was the largest number loaded during any similar period since Nov. 20, 1920, but 134,804 cars below the total for the corresponding week last year and 122,596 less than the corresponding week in 1919. Increases compared with the week before were reported in the loading of all commodities in all districts but all were below the corresponding week last year except the Southwestern, which gained.

Senator Kenyon Presents Two Coal Bills—To Regulate The Industry and to Curb Profiteering

SENATOR KENYON, of Iowa, introduced two coal bills in the Senate Saturday, Oct. 8, one intended to regulate the industry itself and the other aimed to curb profiteering. Both measures were referred to the Committee on Manufactures.

The coal regulation bill, which is a modification of the Newton bill, introduced in the House in August, declares the ownership, production and distribution of coal to be charged with public interest and use, and directs the Federal Trade Commission to compile reports respecting the ownership, production, distribution, investments, sales, margins, profits, etc., in the coal industries, the information necessary in the compilation of such reports to be obtained from corporations and persons interested in the industry. The commission also is to have the authority to investigate the "organization, business, conduct, practices and management" of such persons or corporations, including any corporation acting as a holding company for or guarantor of the stock of any coal corporation, or any partnership acting in a capacity analogous to that of such a holding company.

The Kenyon bill eliminates section 10 of the Newton bill, which required licensing of operators and dealers. A new provision, however, authorizes the Secretary of Labor to investigate wages for miners and other employees by classes, miners' wages to be shown less operating expenses such as blasting, blacksmithing, etc.

The anti-profiteering bill makes it unlawful for any person, firm, partnership, association or corporation engaged in interstate commerce to profiteer in coal. For the first offense a fine of not less than $100 nor more than $10,000 is provided, while for each succeeding offense the minimum fine is $1,000, while the violator may be sent to prison for from ninety days to five years, in the discretion of the Court.

The measure defines profiteering as charging or exacting excessive or unreasonable prices for coal. It provides that sales yielding margins in excess of the following rates shall be considered evidence of profiteering: sales of operators of not more than 1 000 tons per month, 50c. per ton; sales up to 5,000 tons a month, 50c. per ton on the first 1,000 and 35c. per ton in excess thereof; sales over 5,000 tons, 35c. per ton up to 5,000 tons and 30c. over that amount; sales of less than 12,000 tons a year, 40c. per ton; sales of less than 60,000 tons a year, 40c. per ton up to 12,000 tons and 30c. over that amount; sales over 60,000 tons a year, 25c. per ton.

Senator Kenyon announced that he would urge the earliest possible action on both measures.

Fight for Open Shop Started in Texas Mines

AN OPEN-SHOP fight which bids fair to be a "fight to the finish" is on at Thurber, Texas, between the Texas Pacific Coal & Oil Co. and the coal miners it has employed. The open-shop declaration by the coal mining company came after two unsuccessful attempts to adjust wage controversies between it and the miners so that it would be possible to open some of the mines that have been shut down for several months.

The coal company first announced, after several attempts to compromise with its miners in their wage demands, that it would open Mine No. 10 on Sept. 12 on the wage basis of 1918, which was $5 a day for day labor and $2 a ton for tonnage. The miners had been demanding $7.50 a day for day labor and $2.65 for tonnage. The company's move to open the mine was an open-shop move, according to the miners, and they called on the hoisting engineers to leave their jobs. This the engineers did, and the fight was on.

W. K. Gordon, general manager of the Texas Pacific Coal & Oil Co., has said the company will stand firm in its determination not to pay the wage scale demanded. "We have explained to the men," he said, "that the wages they ask will put the cost of production $1.50 a ton more than the market price of coal, and that under the wages we offer we can expect to sell our coal only at actual cost of production. Two attempts have been made to adjust wages, and both have failed. We have taken the only course open. There are now several hundred idle men in Thurber, all needing employment. If the men will accept our proposition, there will be employment for all."

Boone County Grand Jury Indicts Three Hundred Marchers

ON OCT. 1 the special grand jury of Boone County, West Virginia, completed its work of investigating the recent armed march through Boone County and into Logan County in which hundreds of members of the United Mine Workers participated, and upon the completion if its labors the jury returned a total of 302 indictments, covering treason, pistol toting, stealing and other crimes. Among the 302 indicted was C. F. Keeney, president of District 17, United Mine Workers of America, who is at present in jail at Williamson awaiting trial there on the charge of having been implicated in the death of two men in Mingo last May. The charge against Keeney in Boone County is pistol toting.

The Logan County Grand Jury only a few weeks ago returned indictments against participants in the armed march, and the Kanawha County Grand Jury also is expected to return indictments against those implicated in the march.

Treason against the state is punishable by death. The other offenses carry, on conviction, imprisonment in the penitentiary or jails. Deaths occurred in Logan County, where President Keeney, Secretary Mooney and Blizzard, another official of District 17, are under indictment for murder, but no murder indictments were returned by the Boone County Grand Jury because, so far as can be learned, there were no deaths in that county. More than five hundred witnesses were examined by the grand jury.

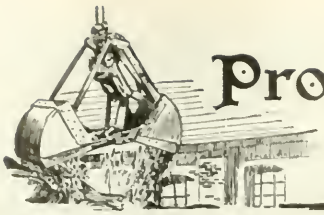
When it became apparent that indictments were to be returned, there was a general exodus of miners from the Boone County coal field in order to escape arrest and trial for participation in the march.

Coal Committee Report Ready for Unemployment Conference; Interested in Wages

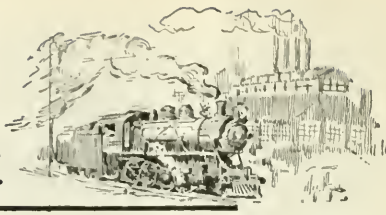
AFTER nearly two weeks of daily sessions the bituminous coal section of the mining committee of the unemployment conference has completed its report. This report deals entirely with emergency relief of existing unemployment among bituminous coal miners. No consideration was given the matter of employment in anthracite mines, as the figures show that more men are employed in that industry than usual and that no emergency exists.

The committee expects to make a more elaborate report on permanent measures intended to prevent unemployment in the bituminous coal mining industry. Thomas T. Brewster, Michael Gallagher and Phil H. Penna, coal operators, have been appointed by the President as advisers to the unemployment conference. The coal committee expected to report to the conference Tuesday, Oct. 11.

Secretary of Commerce Hoover says that the unemployconference may take an active interest in the matter of wage awards in the coal fields, which expire March 31, 1922. John L. Lewis, head of the United Mine Workers, a member of the conference, has not been able to attend the conference, having been delayed by his presence at the mine union convention. In the meantime he has been represented by J. Moore.



Production and the Market



Weekly Review

WITH bituminous production gaining its seasonal autumn stride, the majority of the coal operators are sitting by watching the business barometer slowly climb, but some coal men are out tying up large pieces of winter business at low figures—lower than the prices quoted, but how low is not yet known or appreciated. Demand for coal is uneven. New England reports industrial buyers surfeited with bargain coal from West Virginia, Canada dull, Chicago pessimistic, with large buyers in control of prices; Cincinnati with wide price range and buyers hesitant; Cleveland reports better steam demand as iron and steel pick up; Birmingham shows no increase in industrial coal requirements, and the Northwest has sufficient coal to meet all needs even with the more active call as winter closes in.

In the coal fields the non-union mines are busy. Many operators in southeast Kentucky, Logan and both high- and low-volatile along the Norfolk & Western in southern West Virginia are actually setting new production records. The union fields are producing only the highest grades and the business these operations can get is the spill-over from the non-union districts. Pittsburgh, for instance, reports that asking prices on steam are being obtained on sales as demand picks up.

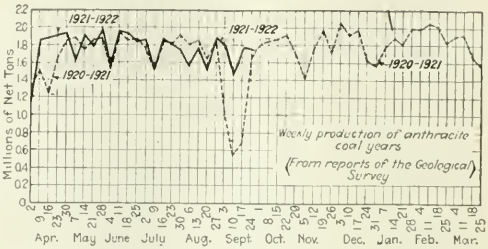
Shipping Board to Aid American Exporters

British competition in the export market may receive a setback by the Shipping Board's offer to lease idle boats to American exporters at $1 per month. The proposal is now being considered by the exporters.

Domestic sizes are the prop holding up soft-coal business everywhere west of Pittsburgh. Save when Pocahontas is being pushed under pressure and at new low figures, as at Chicago and Cincinnati, the trade in household coal is steady and prices are even up. *Coal Age* Index of spot bituminous prices rose to 89 on Oct. 10, from 88 on Oct. 3.

A coal bill for the regulation of the industry itself and another intended to curb profiteering were introduced in the Senate last week. The Coal Regulation bill is not unlike the Newton and Calder measures introduced in the previous Congress although more drastic than either; the Anti-Profiteering bill is one of the most stringent measures for the suppression of coal profiteering ever introduced in Congress.

Cooler weather has quickened the anthracite domestic trading. The family sizes are almost in seasonal call, although orders as a rule are for smaller lots than usual.

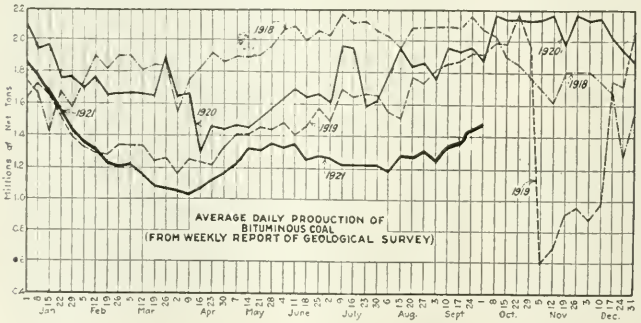

1921-1922
1921-1922
1920-1921
1920-1921
Millions of Net Tons
Weekly production of anthracite coal years
(From reports of the Geological Survey)
Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar.

The coke market has stiffened, production has increased and prices have strengthened. One heavy furnace inquiry and a better demand have advanced the producers' idea of prices to a level which may be difficult to maintain throughout the balance of the year.

BITUMINOUS

Production of bituminous coal during the week ended Oct. 1 jumped 348,000 tons over the figure for the week preceding and was the largest of any week since last January. The total output was 8,876,000 net tons, according to the Geological Survey. A slight decrease in output is indicated by preliminary reports of the following week—Oct. 3 to 8—when loadings for the first two days dropped 1,127 cars.

The September output was 35,105,000 net tons. The average per working day was 1,386,000 tons over the August



Estimates of Production

(NET TONS)

BITUMINOUS COAL

Week Ended	1921	1920
Sept. 17	8,187,000	11,654,000
Sept. 24 (b)	8,528,000	11,851,000
Oct. 1 (a)	8,876,000	11,350,000
Daily average	1,479,000	1,892,000
Calendar year	297,346,000	399,936,000
Daily av., calendar year	1,285,000	1,725,000

ANTHRACITE

Sept. 17	1,778,000	718,000
Sept. 24 (b)	1,754,000	1,701,000
Oct. 1 (a)	1,832,000	1,855,000
Calendar year ( )	67,531,000	65,893,000

BEEHIVE COKE

Sept. 24 (b)	70,000	402,000
Oct. 1 (a)	82,000	376,000
Calendar year	4,116,000	16,070,000

(a) Subject to revision. (b) Revised fro m last report.

average. In the eight years preceding, however, the lowest output for September was in 1914, yet even that month showed 39,019 tons. Cumulative production to Oct. 1, 1921, is 296,000,000 tons, or less than during the same period in any of the last nine years.

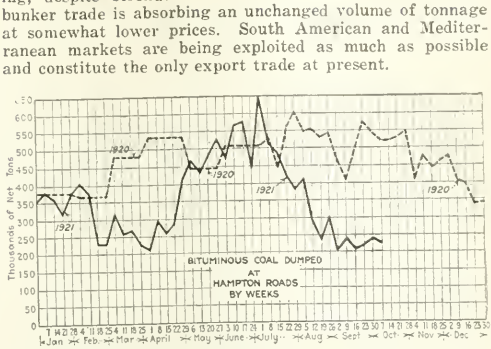
PRODUCTION OF SOFT COAL BY GROUPS OF STATES, 1918-1921
(In Net Tons)

Region	First Eight Months of 1921	Year 1921 at Same Rate as First 8 Mos.	1920	1919
Northeast (*a*)	156,723,000	235,084,000	331,510,000	300,420,275
Southern Appalachian (*b*)	11,037,000	16,556,000	23,500,000	20,803,263
Eastern Interior (*c*)	62,256,000	93,384,000	130,800,000	90,407,132
Western Interior (*d*)	12,805,000	19,208,000	29,930,000	21,741,003
Mountain States and Northwest (*e*)	18,365,000	27,548,000	40,680,000	32,381,012
Total (*f*)	261,186,000	391,780,000	556,420,000	465,752,685

(*a*) Michigan, Pennsylvania, Ohio, West Virginia, Maryland, Eastern Kentucky and Virginia. (*b*) Alabama, Georgia and Tennessee. (*c*) Illinois, Indiana and Western Kentucky. (*d*) Iowa, Kansas, Missouri, Oklahoma, Arkansas and Texas. (*e*) Colorado, New Mexico, Utah, Wyoming, Montana, North Dakota and Washington. (*f*) Alaska, California, Idaho, North Carolina, Oregon and South Dakota not included.

New River and Pocahontas coals are being sold under pressure along Long Island Sound at $6@$6.25, f.a.s. The all-rail movement to New England and eastern New York changed but little during the week ended Oct. 1. According to the Geological Survey, 2,876 cars were forwarded, compared with 2,894 cars the week before and 5,016 during the same week last year.

Accumulations at the Hampton Roads piers are increasing, despite strenuous efforts made to move coal. The bunker trade is absorbing an unchanged volume of tonnage at somewhat lower prices. South American and Mediterranean markets are being exploited as much as possible and constitute the only export trade at present.



Lake dumpings were 724,305 net tons in the week ended Oct. 3—700,297 cargo and 24,008 vessel fuel—as compared with 971,262 tons a year ago. Cumulative tonnage for the season now stands at 19,553,863.

Receipts of coal at Duluth-Superior Harbor declined sharply in September. According to reports from the U. S. Engineer Officer, 207,901 net tons of anthracite and 647,095

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	Sept. 6, 1921	Sept. 27, 1921	Oct. 4, 1921	Oct. 10, 1921†
Pocahontas lump	Columbus	$5.35	$4.90	$4.75	$4.50@$5.00
Pocahontas mine run	Columbus	3.15	2.65	2.80	*2.60@2.85*
Pocahontas screenings	Columbus	2.30	2.10	2.10	*1.85@ 2.25*
Pocahontas lump	Chicago	5.15	4.75	4.75	4.50@ 5.00
Pocahontas mine run	Chicago	2.50	2.85	2.65	*2.25@ 3.00*
*Smokeless mine run	Boston	5.15	4.90	4.90	*4.75@ 4.90*
Clearfield mine run	Boston	1.95	1.90	1.95	1.70@ 2.15
Cambria mine run	Boston	2.40	2.35	2.35	**2.10@ 2.70**
Somerset mine run	Boston	1.75	1.75	1.80	**1.55@ 2.10**
Pool 1 (Navy Standard)	New York	3.25	3.25	3.25	*3.00@ 3.25*
Pool 1 (Navy Standard)	Philadelphia	2.95	3.10	3.10	2.90@ 3.25
Pool 1 (Navy Standard)	Baltimore	2.50	2.80	2.80	*2.75*
Pool 9 (Super. Low Vol.)	New York	2.45	2.55	2.45	*2.30@ 2.50*
Pool 9 (Super. Low Vol.)	Philadelphia	2.35	2.40	2.40	2.25@ 2.50
Pool 9 (Super. Low Vol.)	Baltimore	2.20	2.60	2.65	*2.35@ 2.50*
Pool 10 (H. Gr. Low Vol.)	New York	2.20	2.30	2.15	2.05@ 2.25
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2.05	2.05	2.05	1.90@ 2.15
Pool 10 (H. Gr. Low Vol.)	Baltimore	2.00	2.30	2.45	*2.25@ 2.35*
Pool 11 (Low Vol.)	New York	2.05	1.90	1.90	*1.65@ 1.90*
Pool 11 (Low Vol.)	Philadelphia	1.80	1.80	1.85	1.75@ 1.90
Pool 11 (Low Vol.)	Baltimore	1.80	2.10	2.20	*2.00@ 2.15*
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.80	1.90	1.90	*1.65@ 1.85*
Pool 54-64 (Gas and St.)	Philadelphia	1.70	1.75	1.75	1.65@ 1.85
Pool 54-64 (Gas and St.)	Baltimore	1.60	1.70	1.90	*1.75@ 1.90*
Pittsburgh sc'd gas	Pittsburgh	2.65	2.65	2.65	2.55@ 2.75
Pittsburgh mine run (St.)	Pittsburgh	2.25	2.20	2.20	2.20@ 2.25
Pittsburgh slack (Gas)	Pittsburgh	1.70	2.15	2.15	2.00@ 2.25
Kanawha lump	Columbus	3.45	3.35	3.25	*3.00@ 3.40*
Kanawha mine run	Columbus	2.15	2.00	2.00	*1.75@ 2.15*
Kanawha screenings	Columbus	1.30	1.25	1.20	1.10@ 1.25
Hocking lump	Columbus	3.20	3.25	3.25	*3.00@ 3.40*
Hocking mine run	Columbus	2.15	2.15	2.00	1.90@ 2.15
Hocking screenings	Columbus	1.30	1.15	1.10	*1.00@ 1.10*
Pitts. No. 8 lump	Cleveland	3.25	3.25	3.25	3.00@ 3.50
Pitts. No. 8 mine run	Cleveland	$2.30	$2.10	$2.05	**$2.15@$2.25**
Pitts. No. 8 screenings	Cleveland	1.65	1.50	1.55	1.50@ 1.60
Midwest					
Franklin, Ill. lump	Chicago	3.65	3.80	3.65	**3.50@ 4.05**
Franklin, Ill. mine run	Chicago	2.95	2.95	2.75	*2.40@ 3.00*
Franklin, Ill. screenings	Chicago	1.85	1.75	1.70	*0.80@ 2.00*
Central, Ill. lump	Chicago	2.70	2.70	2.50	2.00@ 3.00
Central, Ill. mine run	Chicago	2.40	2.40	2.25	1.75@ 2.75
Central, Ill. screenings	Chicago	1.75	1.60	1.45	0.60@ 2.25
Ind. 4th Vein lump	Chicago	2.95	2.95	2.90	**2.35@ 3.50**
Ind. 4th Vein mine run	Chicago	2.55	2.40	2.55	2.30@ 2.75
Ind. 4th Vein screenings	Chicago	1.70	1.60	1.55	*0.90@ 2.15*
Ind. 5th Vein lump	Chicago	2.90	2.90	2.70	2.15@ 3.25
Ind. 5th Vein mine run	Chicago	2.50	2.40	2.50	2.25@ 2.75
Ind. 5th Vein screenings	Chicago	1.75	1.55	1.45	0.70@ 2.15
Standard lump	St. Louis	2.50	3.15	3.25	**3.25@ 3.50**
Standard mine run	St. Louis	1.85	1.95	1.85	1.65@ 2.00
Standard screenings	St. Louis	0.85	0.50	0.35	**0.50@ 0.60**
West. Ky. lump	Louisville	3.05	2.90	3.00	*2.60@ 3.25*
West Ky. mine run	Louisville	2.35	2.25	2.25	2.00@ 2.50
West Ky. screenings	Louisville	1.25	1.15	1.15	**0.80@ 1.75**
South and Southwest					
Big Seam lump	Birmingham	3.85	3.75	3.75	3.25@ 4.25
Big Seam mine run	Birmingham	2.15	2.15	2.15	2.00@ 2.30
Big Seam (washed)	Birmingham	2.40	2.40	2.30	2.15@ 2.40
S. E. Ky. lump	Louisville	3.50	3.65	3.55	**3.50@ 3.75**
S. E. Ky. mine run	Louisville	2.35	2.20	2.10	**2.15@ 2.25**
S. E. Ky. screenings	Louisville	1.55	1.50	1.25	1.25
Kansas lump	Kansas City	....	5.75	5.75	.....
Kansas mine run	Kansas City	....	4.00	4.00	.....
Kansas screenings	Kansas City	....	2.40	2.40	.....

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

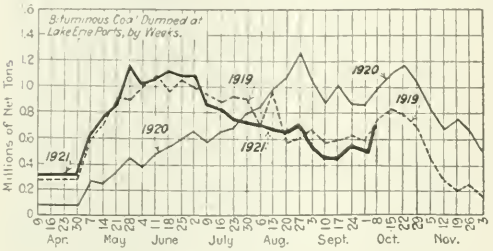
	Market Quoted	Freight Rates	Sept. 27, 1921 Independent	Sept. 27, 1921 Company	Oct. 4, 1921 Independent	Oct. 4, 1921 Company	Oct. 10, 1921† Independent	Oct. 10, 1921† Company
Broken	New York	$2 61	.....	$7.60@$7.75	.....	$7.60@$7.75	.....	$7.60@$7.75
Broken	Philadelphia	2 66	$7.60@$8.20	7.75@ 7.85	$7.60@$8.20	7.75@ 7.85	$7.60@$8.20	7.75@ 7.85
*Broken	Chicago	5 62	13.40	12.80	13.40	12.80	13.40	12.80
Egg	New York	2 61	7.75@ 8.25	7.60@ 7.75	7.75@ 8.00	7.60@ 7.75	7.75@ 8.00	7.60@ 7.75
Egg	Philadelphia	2 66	8.10@ 8.35	7.75@ 7.85	8.10@ 8.35	7.75@ 7.85	8.10@ 8.35	7.75@ 7.85
*Egg	Chicago	5 62	13.40	12.80	13.40	12.80	13.40	12.80
Stove	New York	2 61	8.25@ 8.60	7.90@ 8.10	8.25@ 8.75	7.90@ 8.10	**8.50@ 8.75**	7.90@ 8.10
Stove	Philadelphia	2 66	8.25@ 8.60	8.00@ 8.35	8.25@ 8.75	8.00@ 8.35	8.25@ 8.75	8.00@ 8.35
*Stove	Chicago	5 62	13.40	12.90	13.40	12.90	13.40	12.90
Chestnut	New York	2 61	8.00@ 8.25	7.90@ 8.10	8.00@ 8.50	7.90@ 8.10	**8.25@ 8.50**	7.90@ 8.10
Chestnut	Philadelphia	2 66	8.20@ 8.75	8.05@ 8.25	8.20@ 8.75	8.05@ 8.25	8.00@ 8.50	8.05@ 8.25
*Chestnut	Chicago	5 62	13.40	12.90	13.40	12.90	13.40	*13.80*
Pea	New York	2 47	5.00@ 5.75	6.05@ 6.45	5.00@ 5.50	6.05@ 6.45	5.00@ 5.50	6.05@ 6.45
Pea	Philadelphia	2 38	4.50@ 5.50	6.15@ 6.25	4.50@ 5.50	6.15@ 6.25	4.50@ 5.50	6.15@ 6.25
*Pea	Chicago	5 62	12.40	11.15	12.40	11.15	12.40	11.15
Buckwheat No. 1	New York	2 47	2.75@ 3.00	3.50	2.75@ 3.00	3.50	**3.00@ 3.25**	3.50
Buckwheat No. 1	Philadelphia	2 38	2.50@ 3.00	3.50	2.50@ 3.00	3.50	2.75@ 3.00	3.50
Rice	New York	2 47	1.80@ 2.15	2.50	1.80@ 2.15	2.50	**2.00@ 2.25**	2.50
Rice	Philadelphia	2 38	1.75@ 2.00	2.50	1.75@ 2.00	2.50	1.75@ 2.00	2.50
Barley	New York	2 47	1.25@ 1.50	1.50	1.25@ 1.50	1.50	1.25@ 1.50	1.50
Barley	Philadelphia	2 38	1.00@ 1 25	1.50	1.00@ 1.25	1.50	1.00@ 1 25	1.50
Birdseye	New York	2 47	.....	2.50	.....	2.50	.....	2.50

*Prices and freight rates, net tons; quntations f.o.b. cars, Chicago.
†Advances over previous week shown in **heavy type**, declines in *italics*

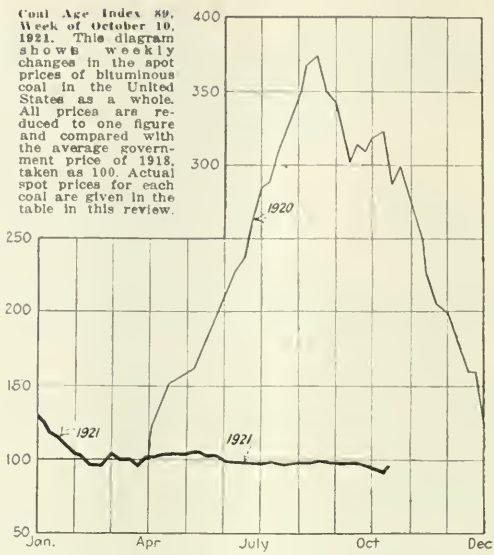
tons of soft coal were unloaded during the month. When compared with receipts in August, decreases of 201,337 and 421,460 tons, respectively, are shown.

RECEIPTS OF COAL AT DULUTH-SUPERIOR HARBOR DURING THE SEASON OF 1921

	Hard	Soft	Total
June	192,830	2,125,453	2,318,283
July	339,383	1,650,629	1,990,012
August	418,238	1,068,555	1,486,793
September	207,901	647,095	854,996
Total to Sept. 30, 1921	1,414,600	7,160,824	8,575,424
Corresponding period, 1920	1,048,650	4,127,491	5,176,141
Corresponding period, 1919	924,187	5,665,757	6,589,944
Corresponding period, 1918	976,420	6,228,244	7,204,664



Coal Age Index 89, Week of October 10, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.



ANTHRACITE

Production of hard coal during the week ended Oct. 1 amounted to 1,832,000 net tons, according to the Geological Survey, or an increase of 78,000 tons when compared with the preceding week. The steam coals are in better position and prices for the independent product are nearing the circular figures of the old-line companies.

Lake dumpings of anthracite are decreasing. Loadings for the last week were 70,400 net tons compared with 100,320 tons for the week ended Sept. 28. Movement up the Lakes to Oct. 1, 1921, was 2,680,651 tons; in 1920 it was 2,406,661 tons.

COKE

Production of beehive coke continued to increase during the week ended Oct. 1. The total output was estimated at 82,000 net tons, 12,000 tons in excess of that for the preceding week and the largest since the last week in March.

Foreign Market And Export News

Coal Paragraphs from Foreign Lands

GERMANY — Production in the Ruhr region during the week ended Sept. 24, was 1,798,866 metric tons, according to a cable to *Coal Age*. This is a slight increase, as compared with 1,768,718 tons in the week preceding.

HOLLAND — Latest cabled quotations to *Coal Age* are: American gas, unchanged at $7, British steam 28s., c.i.f. Rotterdam. This is a drop of 4s. on British coal from last week's quotation.

SPAIN—Coal production in 1920 was 5,973,129 metric tons, or 53,000 tons in excess of the 1919 figure. Of the total output, 491,715 tons were anthracite, 4,928,989 bituminous and 552,425 lignite.

Demands have been made by the Spanish Coal Owners' Association that a customs duty of 7½ pesetas a ton be maintained on coal imported to Spain. The association also asks that coal used on Spanish warships shall be produced in Spain and that railway and steamship companies receiving Government assistance must use Spanish coal.

BRAZIL—Americans are taking an increasing interest in the possibilities for marketing coal in Brazil, according to *Commerce Reports*. Competition with Great Britain, however, is keen, for that Government subsidizes vessels carrying coal; and British industries and British-owned public utilities, especially railways, favor British coal. The British have invested large sums in bunkering facilities, and know from long experience how to handle the business, a knowledge which gives the Brazilians confidence in dealing with those firms.

Hampton Roads Continues To Mark Time; Mediterranean Markets Being Exploited

During the first few days of October the trend of the market has followed the dull pace set by September, when only 900,000 gross tons were dumped for all purposes, and a new low record nearly reached. The market is steady, however, and shippers believe conditions are bringing it to a more solid foundation.

Export business continues dull, but the coastwise trade is brisk. Exploitation of the Mediterranean ports as well as some of the South American fields is also going forward, and shippers hope to open new and fruitful markets in those sections.

During the week ended Oct. 6 accumulations at Tide increased somewhat, shippers apparently looking forward to better business during the late fall. Prices, in the meantime, remain where they have been for the last few weeks, with little reason for change in sight.

Shippers do not believe that the Hampton Roads coal business will suffer during the winter, although they do not hope for a revival of export trade at any time within the near future. Revision in certain port practices, they believe, will increase the bunker business. During the first week in October the general feeling in the market was optimistic; more so, in fact, than at any time within the last six weeks.

PIER SITUATION

	— Week Ended — Sept. 29	Oct. 6
N. & W. Piers, Lamberts Point:		
Cars on hand	1,353	1,316
Tons on hand	25,355	76,803
Tons dumped for week	99,741	53,653
Tonnage waiting	25,000	7,000
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	1,386	1,675
Tons on hand	69,300	32,659
Tons dumped for week	76,000	83,750
Tonnage waiting	11,605	6,700
C. & O. Piers, Newport News:		
Cars on hand	1,401	1,432
Tons on hand	70,000	67,000
Tons dumped for week	41,482	60,038
Tonnage waiting	2,300	2,255

Grave Problem Faces British Coal Industry

South Wales Subsidy Dispute Closes Some Pits—Export Orders Dwindle—French Mine Stocks Increase—No Demand from Any Quarter

During the week ended Sept. 24 the output of the United Kingdom was 4,273,900 gross tons, according to a cable to *Coal Age*. This is an increase of 112,400 tons as compared with the preceding week.

September coal exports from Great Britain were 3,407,000 tons, compared with 3,103,000 in August. In September, 1920, 1,476,000 tons were exported and in September, 1913, 6,197,000 tons.

Honolulu interests have purchased 11,000 tons of South Wales coal. One cargo left Oct. 10, and the other is scheduled for Oct. 28. Few orders are being booked and both buyers and sellers are refraining from futures because of the uncertainty of the situation.

The coal industry in Durham is looking up momentarily as a result of an order from the Norwegian State Railways for 15,000 tons of screened steam to be shipped during October. In Wales the position is so bad that the Welsh Navigation Steam Coal Co., Ltd., has given 24 hours' notice to 1,500 men and executives. The pumps and ponies will be withdrawn from the shafts, and the length of the stoppage is indefinite.

Generally employment in the British coal mining districts declined during August, with the exception of South Wales and Monmouth where it was better than in July. On July 29, 8.1 per cent miners were unemployed, on Aug. 26, this had increased to 8.7.

French Market Is Overstocked

The position as regards available coal is quite satisfactory, in fact too much so, chiefly due to the lack of demand, and in regard to railway stocks, to the fact that these concerns had at certain times to take delivery of huge quantities of German coals. Consumers can go for a fairly long time without buying, as available stocks added to the production and imports under existing contracts are more than ample to meet even an unexpected brisk demand.

German coal deliveries will be controlled by the Office des Houillères Sinistrées direct with the German Kohlensyndikat. It is hoped that this will enable a better regulation of the supplies according to actual requirements, and that France will no longer have to take enormous quantities of fuel for which there is no call, and which at present is encumbering many concerns.

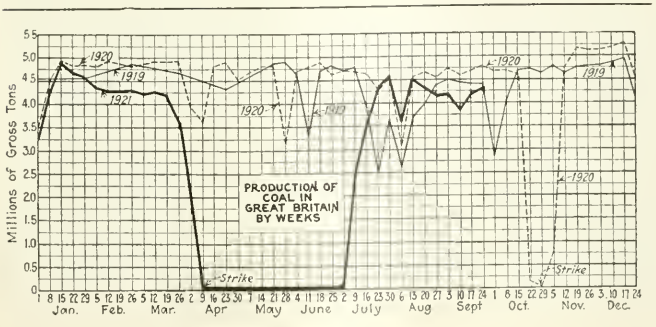
In the face of menacing British competition, operators in the Northern districts have informed their men that some means must be found to reduce the prices. A further discussion will be held on Nov. 12, when the question of wages will be definitely touched. English offers still flood the market but very little new business is being transacted.

Budapest gas works have completed arrangements whereby French mines will supply them with fuel. The arrangement permits the works to buy coal 10 per cent lower in price than was demanded by mines in Czecho-Slovakia and Upper Silesia.

French and Saar production for July, after deducting coal used at the mines, amounted to 2,012,000 tons. Adding the imports during the same month (660,000 tons) and deducting exports (321,000 tons), total quantity available was 2,351,000 tons, or hardly 40 per cent of the normal consumption. During July, French plants produced 56,000 tons of coke. Adding imports (279,000 tons, chiefly from Germany under the Reparation Act) and deducting exports (74,000 tons), this leaves for actual use 261,000 tons.

However, existing stocks at the French mines and elsewhere have to be taken into account, and same at the end of July were:

	Tons
At the mines	1,256,000
In various ports	600,000
Railway depots	1,347,000
Paris District gasworks	136,000
Other gasworks	250,000
Paris Electricity group	51,000
Total	3,640,000



United States August Exports of Coal and Coke, by Customs Districts

Exports of coal and coke, by customs districts, from the United States in August, 1921, are shown in the following table:

	Coal: Anthracite	Coal: Bituminous	Coke
Customs Districts:			
Maine and New Hampshire	248	36	21
Vermont	1,172	227	27
Massachusetts	55	4	...
St. Lawrence	105,701	155,094	1,671
Rochester	50,152	40,936	...
Buffalo	193,493	188,217	5,873
New York	15,438	1,021	98
Philadelphia	988	84,064	56
Maryland	...	66,597	...
Virginia	...	202,472	...
South Carolina	...	12,727	...
Florida	...	3,812	...
Mobile	...	268	...
New Orleans	...	1,021	3
San Antonio	1,458	2,681	2,075
El Paso	165	10,921	2
San Diego	14	2	...
Arizona	1,100	...	...
San Francisco	...	...	7
Washington	42	1,186	...
Alaska	...	30	...
Dakota	1,677	2,934	560
Duluth and Superior	563	1,739	123
Michigan	726	98,499	6,487
Ohio	13	820,602	1,024
Porto Rico	...	...	2
Total	373,005	1,695,090	18,029

BUNKER COAL SUPPLIED TO STEAMERS (In the Foreign Trade)

Customs Districts:	
New York	241,638
Philadelphia	33,397
Maryland	22,685
Virginia	217,369

Pier and Bunker Prices, Gross Tons

(Foreign Bunker Quotations by Cable to C al Age)

	Oct. 1	Oct. 8†
PIERS		
Pool 9, New York	$5.75@$5.85	$5 75@.$5.85
Pool 10, New York	5.50@ 5.60	*5.45@ 5.60*
Pool 9, Philadelphia	5.80@ 6.00	5.80@ 6 00
Pool 10, Philadelphia	5.40@ 5.70	5 40@ 5 70
Pool 71, Philadelphia	6.00@ 6.25	6 00@ 6 25
Pool 1, Hamp. Rds	4.90@ 5.00	*4.85@ 5.00*
Pools5-6-7Hamp.Rds	4.25@ 4.40	**4 25@ 4 50**
BUNKERS		
Pool 9, New York	6.10@ 6.20	5.85@ 5 95
Pool 10, New York	5.85@ 5.95	6 10@ 6 20
Pool 9, Philadelphia	6.10@ 6.30	*5.80@ 5.90*
Pool 10, Philadelphia	5.75@ 6.00	6 10@ 6.30
Pools 9-71, Baltimore		5.75@ 6.00
Pool 1, Hamp. Rds	5 00@ 5.10	*4.95@ 5.10*
Pool 2, Hamp. Rds	4.75@ *4.85*	*4.65@ 4.85*
Welsh, Gibraltar	47s. 6d. f.o.b.	47s. 6d. f.o.b
Welsh, Port Said	56s. 6d. f.o.b.	56s. 6d. f.o.b
Welsh, Singapore	70s. ex. wharf	70s. ex wharf
Welsh, Rio de Janeiro	65s. f.o.b.	65s. f.o.b.
Welsh, Algiers	45s. f.o.b.	45s. f.o.b.
Welsh, Malta	50s. f.o.b.	50s. f.o.b.
Welsh, Lisbon	57s. 6d.f.o.b	57s. 6d. f.o.b.
Welsh, La Plata	60s. f.o.b.	60s. f.o.b.
Welsh, Madeira	52s. 6d. f.a.a.	52s. 6d. f.a.s.
Welsh, Teneriffe	52s. 6d. f.a.s.	52s. 6d. f.a.s.
Welsh, Genoa	55s. t.i.b.	55s t.i.b.
Durham, Newcastle	35s.@ 37s	35s.@ 37s.
Belgian, Antwerp	110 fr.	110 fr

C.I.F. Prices, American Coal

(In Gross Tons)

	Oct. 1 Low Vol.	Oct. 1 High Vol.	Oct. 8† Low Vol	Oct. 8† High Vol.
French Atlantic	$8.75	$8 50	$8 80	*$8 40*
United Kingdom	8 80	8 60	9 00	8 70
West Italy	8 90	8 60	9 00	8 70
Scandinavia	9.70	9 25	9 80	9 70

These quotations are purely nominal and as far as can be learned, no business is being done in these markets.

Current Quotations British Coals f.o.b. Port, Gross Tons

	Oct. 1	Oct. 8†
Cardiff		
Admiralty Large	31s.3d	30s.@ 32s.6d.
Steam, Smalls	18s. 3d	19s.@ 20s
Newcastle:		
Best Steams	27s. 6d.	27s. 6d.
Best Gas	27s.6d.	27s.@ 28s.
Best Bunkers	27s.	27s.

†Advance over previous week shown in **heavy type**, declines in *italics*.

Reports From the Market Centers

New England

BOSTON

Slack Market—Hampton Roads Agencies Have Clear Sweep Through Most of the Territory — Operators Hold to Minimum Prices — Consumers' Stocks Large—Anthracite Fairly Active.

Bituminous—The current market presents every opportunity for improved selling methods. Continued pressure upon the Pocahontas and New River shippers to move accumulations at the loading piers has resulted in the lowest offerings of the season, not only lower than the same coals were offered during the late summer but needlessly low if there were a more intelligent grasp of conditions than most of the Hampton Roads factors seem to show. The record is one of steady forcing brought to bear on the buyer, and since a dozen or more different interests are participating in this dog-eat-dog policy the price level is more or less demoralized.

Well back to points considerably more than midway from Tidewater here to the Hudson River the cost of the smokeless coals is less than the quality grades all-rail from Pennsylvania, this being due chiefly to the rivalry between shippers. The current market, therefore, continues to be dominated by Pocahontas and New River, practically to the exclusion of Pennsylvania coals. The effect is also evident upon the smokeless shippers themselves, for in many instances they have been obliged either to scale down prices on contracts taken early in the year, or lose the tonnage. This seems poor preparation for another season, for in all likelihood buyers will defer purchases, in view of this year's experience.

The daily average receipts at the Hudson gateways bears out the general result of low prices at Tidewater. And at Philadelphia and New York piers the dumpings from day to day continue extremely light. There seems no encouragement whatever for Clearfield, Cambria and Somerset shippers, although doubtless a way will be found later on to increase shipments from these districts. A few operations have been able to work four to five days weekly, but these are cases where there are certain contracts on hand to provide a nucleus, the coal is of the highest reputation, and the sales staff is unflagging and vigilant.

Pennsylvania operators, for the most part, are adhering to their now well settled policy of selling at a price somewhat over cost, and no less. It is observed that there is much less slashing of prices to move output, and less, too, is heard of coal being sent forward either by rail or water without definite consignment.

With marine freights at a low ebb, 85c. being the rate on barges, 2,000 tons and upward, Hampton Roads to Boston, stocks on hand are noticeably large. Consumers of all degrees have tried to take advantage of bargains, but "bargains" have held right through to the fall, and now when $6.15@$6.25 is freely offered on cars Boston for New River coal, the territory can absorb only a relatively small tonnage.

Anthracite—Both companies and individuals have no trouble now in disposing of all domestic sizes, except possibly egg and pea. Once more there is a seasonal demand from the householder. In most cities and towns the retail dealers are active, in some cases for the first time in several months. Shipments of stove and chestnut are notably slow, and the "independents" are once more asking premiums that approach 75c.@90c.

Tidewater—East

NEW YORK

Demand for Domestic Coals Growing—Pea Coal Sluggish—Local Bituminous Market Quiet but Demand Better Inland.

Anthracite — There is a growing domestic demand and present indications are that consumers are not going to be caught napping this winter. Operators and wholesalers report a continued heavy call for stove and chestnut. Egg is sluggish in this market but shippers say there is a better demand along the line.

The lack of demand for egg coal, locally, at the present time, is attributed to the heavy tonnage of this size put in consumers' bins in the past spring and early summer. However, it is estimated that not more than about 80 per cent of the usual winter fuel has been put in cellars. There is practically no market for pea and large tonnages are being placed in storage.

There has been no improvement in the steam coal situation. Buckwheat is some weaker. Rice is accumulating rapidly and some distress tonnages were reported as having been offered here at around $4 alongside. Barley is holding its own.

Bituminous—The Inland demand is the one redeeming feature of the situation. Tidewater call is slow and has fluctuated considerably the past week. Consequently, the amount of coal on the local piers is small.

There is a better feeling, however, and it is believed the turning point is about here. Inquiries are gaining in number and indications point to the early booking of actual business.

With the growing tendency to use the old district designations and analyses in selling the various coals, operators and shippers are giving more attention to the marketing end of the business and are taking care to see that their salesmen become better acquainted with the qualities of the coals they are handling.

The better grades, such as Pools 9 and 10, are a little more active. Pool 10 is more prominent than a week ago. Some effort has been made to ship Southern coals—Pocahontas and New River—into this market, because of the dullness prevailing at Hampton Roads, and it is reported that quotations made to local consumers generally depend upon coals handled here, for Pools 1 and 2 have ranged $6@$6.25 alongside. Considerable of these Southern coals have been shipped to points along Long Island Sound at prices comparing favorably with those quoted by local houses for good grades handled at the local piers.

PHILADELPHIA

Anthracite Quickened by Cool Weather —Prices Unchanged—Steam Coals in Moderate Movement—Bituminous Unstable — Railroads Best Buyers — Tide Trade Negligible.

Anthracite—Thanks to some seasonable weather the city has seen the lighting of many new coal fires and retailers have received much new business. Usually the orders have been for single tons, but there have been many for smaller lots.

The big companies already announce that nut is fast getting into the same position as stove as regards their ability to ship promptly. The individuals can still take some orders for nut, but their situation is also much improved. Pea of course remains a slow seller. It is egg that is making trouble for every operator.

There have been no price changes, and September circulars are still in effect for all companies. There is no doubt that the independents would have at least increased stove, but conditions were not right, with the warm weather and falling demand prevailing at the beginning of the month. It can be taken for granted, however, that they will get their prices at least 75c. above company coal some time during the winter.

Steam coals are in moderate demand. Orders for buckwheat are coming in better volume, but rice is still burdensome. Barley maintains its improvement and seems to gain some.

Bituminous—There is nothing stable about the market, for at the times when the demand seems to flare up in one section it dies down in others. The consumer continues to use the strictest caution in purchases and is prone to

wait for quotations from many sources before actually placing orders.

Outside of the railroads themselves, little attention was paid to the threat of the railway strike, and while considerable railroad coal is going into stock at this time, it is believed that the coming of winter and short supplies have as much to do with it as anything.

Prices have remained firm during the past three or four weeks. Of course with so many new operators in the market there are wide fluctuations, but the average, as quoted in the Weekly Review, has been well maintained.

Tide shippers report a few inquiries recently, but these are so far below normal that little hope of an old-time resumption is hoped for in the near future. There are frequently entire weeks when there are no clearances of coal cargoes from this port.

BUFFALO

Signs of Better Bituminous Demand—No Great Immediate Activity Anticipated—Canadian Trade Dull—Anthracite Slowly Improving.

Bituminous—The shipper is keeping his ear close to the ground in expectation of the stir in business that is bound to come before long. He does not look for much of a boom, for the old-time export trade is not likely to come back for some time, as British competition has now returned. But there are some signs of greater activity in various branches of trade and though locally the demand has not felt it much it is sure to do so before long.

Canal-boat lines report the offering of an unusual amount of pig iron for Tidewater, but grain is moving so fast that the iron is mostly declined, for boats can handle grain much more rapidly.

One reason for the light bituminous movement of late is the lack of business in Canada and the effort to make Canadian coal meet the reduced demand in that territory. Canadians are so indifferent to our coal that they do not visit this market and our jobbers are not able to interest them to any great extent. Prices are much the same as formerly, with no particular improvement in the movement. Still a better showing is looked for this month.

Anthracite—Demand continues light. The amount coming in has been less than it was a month ago. It seems that more coal has been shipped West than East, mostly to take care of the summer surplus, but now, as the Eastern demand improves it is best to turn more of it in that direction. That the local movement is not satisfactory is shown by the cutting of some city retail prices. Independents are selling at about 30c. under the line companies and it will take some severe weather to bring prices up to that level.

It has been common during the winter months to get a dollar or more for this coal than is asked regularly and as soon as the consumer with money goes into the market he will pay it if coal from the usual source fails to come forward promptly.

Lake—Shipments are not up to last month, but are as good as last season at this time. Loadings for the week were 70,400 tons, of which 24,300 tons cleared for Duluth and Superior, 16,200 for Milwaukee, 11,800 for Racine, 10,500 for Fort William and 7,600 for Sheboygan. September shipments were 388,874 tons as against 385,700 for September, 1920, and for the season, 2,680,651 tons, as against 2,406,661 tons last year.

Coke—The trade goes along slowly. A big local furnace lately asked prices for the delivery of 45,000 tons of furnace coke, but it has now withdrawn the inquiry. The inference is that it will start up its byproduct ovens and hopes to be able to keep them going. Quotations: $4.50@$4.75 for foundry, $3.75@$4 for furnace, $3.25 for stock and $4 for chestnut size domestic, adding $3.64 for freight.

BALTIMORE

Soft Coal Trading Dull — Keen Competition Continues — Prices Low — Anthracite Demand Spurred by Colder Weather.

Bituminous—With a tang in the air that portends the near approach of winter the trade has failed to show the usual seasonal interest. Business conditions are reported as in a more hopeful state, but if there is anything like a boom imminent it is not reflected in immediate trading.

Ruinous competition continues and this is especially marked in bunkers. Pools 9 and 71 sold here during the week $5.85@$5.95, trimmed in bunkers. This means a net price f.o.b. mines of $2.09@$2.19. There are still sharp bargains being offered even in best grades of soft coal and, while they are not anything like the bunker prices quoted, it is not unusual to hear of sales of Pool 9 around $2.35 and Pool 71 at $2.50. Best lump gas coals also range $2.35@$2.50.

A most discouraging feature has to do with exports. So far there has been but one loading on export account during October. Bunker trading has also fallen off to a great extent. The situation, as in all the other Atlantic coast harbors, looks like a typical Sunday.

Anthracite—Buying continues light, although there is some sign of revival as the colder weather gets nearer. In the less affluential sections, in direct contrast to conditions a year or so ago, ordering has gone back to the ton and half-ton basis.

Because of the light ordering, no retail advances of much size are noted to take care of the wholesale price increases, both company and independent, that have been made in the past two or three months. It would not be at all surprising, however, if there were an advance at any time, as many of the dealers feel that they are now traveling on too small a margin of net profit.

Canada

TORONTO

Business Active — Anthracite Orders Keep Dealers Busy—Bituminous Coming from Nova Scotia.

Anthracite business has been quite active lately with the advent of cool weather. Dealers are busy making deliveries and anticipate a rush trade for some time as many have delayed their orders until late in the season.

Coal is coming forward freely from the mines and dealers have enough on hand to supply the demand for some time. Arrangements have been made for regular consignments of Nova Scotia coal by water.

Current quotations follow:

Retail:	
Anthracite, egg, stove, nut and grate	$15.50
Pea	14.00
Bituminous steam	11.00 to 11.50
Domestic lump	12.25
Cannel	16.00
Wholesale f.o.b. cars at destination:	
¾-in. lump	$7.75 to $8.50
Slack	6.00 to 6.75

Northwest

MINNEAPOLIS

Buying Becomes Active — Orders for Small Quantities—Coal Shortage Unlikely—Keen Competition for Business.

The first killing frost of the fall started active domestic ordering, though confined to smaller orders than common. Dealers are not encouraging larger orders than the buyer can readily pay for. From the financial standpoint, the present plan is preferable. Small orders which can be paid for within the succeeding month are much better than larger ones for whose settlement more time must elapse.

There is the customary complaint which comes in times like these, of ruinous low prices made, and how disrupting it is to business. This is a part of the trade ritual when things are dull and there is the usual keen competition for business. It is difficult to say how seriously it may be taken. Many firms which have been accused by competitors of taking business in quantities at figures below cost seem to display distressing commercial health in view of that fatal action.

Receipts at the docks have been declining, but the totals are the largest in the last four years, so the stocks are at least not discouraging, with two more months of navigation left. It would be much better for the trade, if the outward movement from the docks had been freer for the last month or more, so that there were a better space available for further receipts. But with the start of fall, the movement to the interior has been distinctly better.

The uncertainty as to requirements makes it impossible to figure very

closely as to whether the present stocks are sadly short or are approximately sufficient. Assuming a vigorous winter and a good demand for industrial consumption, and the present season is threatened with a shortage. But presaging a moderate or a mild winter and less than average industrial requirement, and the stocks will serve nicely.

MILWAUKEE

Market Dull—Consumers Indifferent in the Face of Assured Supply — Winter of Rush Deliveries Predicted.

With frosty weather only a few weeks away, and with less than 60 per cent of home bins filled, delivery facilities ought to be taxed to their utmost, but the outward flow from the yards is far from normal. It is becoming more and more evident that the masses will buy coal only as actually needed during the coming winter.

Consumers have become indifferent, especially now that they have been assured that there will be no coal famine. Coke shares with coal in the dullness of the market.

Coal has gravitated to the bargain counter. A department store is offering anthracite at $1 per ton under the prevailing rates at regular sources. Egg size sells at $14.95, chestnut $15.20, pea $13.45, and buckwheat $11.10. A charge of 75c. is added where coal is carried in. No less than two tons, nor more than six tons are sold to a customer. A Milwaukee dock company is a party to the innovation.

The crowded condition of the docks is reflected in the record of September's Lake receipts, which were the smallest since navigation opened, the totals being 102,492 tons of anthracite, and 193,892 tons of soft coal. Revised figures show the season's receipts to Oct. 1 were 747,722 tons of anthracite, and 2,040,072 tons of soft coal, against 573,707 and 1,053,805 tons respectively in 1920, a gain of 174,015 tons of anthracite, and of 986,267 tons of soft coal.

DULUTH

Better Movement Provides More Storage Space — September Receipts Are Lighter—Few Price Changes.

Coal men are working to the utmost to keep the local docks clear so that cargoes may continue to come and the lane be kept clear as far back as the mines. Increased orders, both from country dealers and their customers are being recorded every day, and with a falling off in receipts during September, it is not thought that any blockade of traffic will come.

September receipts at Duluth-Superior harbor aggregated 854,996 tons, as compared with 1,486,793 tons during August. Of soft coal, 647,095 tons were received, as compared with 1,068,555 tons in the preceding month. Anthracite receipts were 207,901 tons, compared with 418,238 tons during August. For the season to Sept. 30, bituminous receipts were 7,160,824 tons, or 3,033,333 in excess of the same period last year. Hard coal receipts were 1,414,600 tons, or 365,950 more than last year.

Prices remain much the same with screenings down to $3.50, but there are signs of a strengthening market. No further troubles are anticipated from dock fires, as stocks have been lowered by the price reductions on screenings and buckwheat. For the latter, prices have again returned to $7@$7.50 from a drop to $6 which was brought about by an excess of supply.

Inland West

ST. LOUIS

General Improvement Noted — Steam Market Still Quiet — Non-Union Coals Cut Domestic Movement.

The first touch of autumn weather has brought a fairly good demand. People who formerly bought high grades are going to the cheaper fuels. Standard and Mt. Olive are going to be the strongest in St. Louis this winter. The country call for domestic is unusually good.

There is no domestic business from southeast Missouri nor below the Ohio River on either side of the Mississippi on account of Alabama and west Kentucky coming in on non-union prices, with advantageous freight rates.

Country steam business is light. A fairly good movement of steam and domestic is noted to Omaha and some to the Kansas City market and a good through movement of all grades to Chicago and Northern territory.

Steam in St. Louis has improved, mostly, however, for storage purposes. Movement of hard coal and smokeless is slow. Gas house and byproduct coke is selling fairly well.

CHICAGO

Trade in Doldrums—Domestic Market Quiet Before the Storm—Less Distress Tonnage.

A number of operators were in attendance at the meeting of the Illinois Coal Operators' Association in Chicago last week. These men spent much of their time at the offices of their sales agents, or in calling on the trade themselves. They received some first-hand market information and it was difficult to find a more pessimistic lot of men.

The coal trade, on account of the colder weather, is trying hard to look up, but conditions do not justify an optimistic outlook. Steam coals are still weak although there has been a slight improvement during the last few days. Some of the cement plants in the Middle West, which have been operating fairly well all summer, are now planning on closing down for the winter months in view of the fact that the road building season is nearly over. These companies have stopped taking coal, and this has thrown an extra tonnage on the open market.

Retailers have succeeded in selling a few tons on account of the colder weather, and consequently some scattered replacement orders have been made, but there has been no real domestic business this year when one compares the volume of tonnage with other years.

The time is drawing near when the Chicago public will have to consider the coal question. When that time arrives, it is our prediction that there will be a pretty severe scramble for coal. Some of the more hopeful sales agents claim the demand will be good all winter as we are so far behind on requirements that it will be impossible to make up for lost time; others who have been sadly disillusioned all season claim that the domestic demands can be taken care of adequately in at least six weeks.

The smokeless market is holding fairly firm at $2.50 for mine run and $4.25@$4.75 on prepared sizes. Kentucky block as well as West Virginia splint is being sold $3.25@$3.75. Anthracite is moving slowly for this time of the year at prices strictly circular in nearly all cases.

CLEVELAND

District Improvement Appears in Industrial Market—Retail Demand Better —Hard Coal Advances.

A distinctly better tone has appeared in the coal market as a result of some improvement in the industrial situation and in the domestic demand. The most pronounced recovery has taken place in the iron and steel industry both in Cleveland and in the Youngstown district. In the steel industry, operations are on a basis of 50 per cent. This represents a gain of more than 100 per cent over the rate touched at the low point in July and August.

In Youngstown, independent sheet mills have booked sufficient orders to maintain production for from seven to ten weeks and operations are now at about 70 per cent of capacity in that district. In the steel industry, which overshadows all others in manufacturing importance in this district, the feeling prevails that the present rate of production will be continued or increased throughout the winter.

Some inquiries are being received for the future, but in the main the demand continues on a hand-to-mouth basis. This is due to the uncertainty as to the extent of the present revival together with the widespread belief that lower freight rates will become a fact in the near future. Railroads are taking only about two-thirds of the coal contracted for. Mine prices for industrial coal remain unchanged.

The recent chilly spell caused a sharp increase in retail demand in this city. One strong selling point which the retailers have this year is the pre-war quality of coal which is now available for distribution. During the rush the quality of coal deteriorated sharply. This was especially true of Pocahontas. Retail prices on anthracite

have been revised upward 25c. a ton, making stove and chestnut $14.50 and egg and grate $14.25. The advance was due to increases at wholesale.

Receipts of bituminous coal during the week ended Oct. 1 were 959 cars; divided, industrial 707, retail 252, as compared with a total of 1,014 cars the preceding week. However, the receipts for dealers show an increase of 76 cars over the preceding week.

CINCINNATI

Wide Price Spreads Hamper Buying—Smokeless Quotations Break — Screenings in Distress.

For the first time in weeks the market seems to have found a working level without a see-saw of divergent values and spreads in prices that were confusing, to say the least. For weeks those who have studied the situation have been struck by the tenacious effort on the part of some of the companies to hold fast to top prices in the face of a falling market. Sales agents say they have been hampered by the process of dropping the price to get business and then raising it as soon as a few orders showed in the wake. In consequence of this there was an immediate stoppage of business as soon as the price went up once more and a resumption when it fell. In the meantime, the jobber found the spot where the cheap coal could be had, and with a buyer's market to play, a steady stream of business was nearly impossible.

Producers of smokeless have been the most persistent in their attempts to hold to the high values, but without much avail, for slack is selling very close to the mark set by bituminous. The drop in price of the prepared coal still goes on without being hindered in the least by those who advance their prices as soon as a small flow of business is produced.

The descent in price, however, is looked upon in some quarters as being a bone for future contention, for, with the advertising campaigns of "buy coal now" that have been industriously carried on for months, it is feared that the public will hold off for some time to come. Sales agents are inclined to criticize the retailers for holding prices at the same level they were three and four months ago in the face of a drop in the spot prices.

DETROIT

Falling Temperatures Stimulate Domestic Market — Steam Inquiries More Frequent, but Buying Is Slow—Anthracite Demand Improves.

Bituminous—Steam consumers are not showing the interest that should be developing to assure a satisfactory supply for the winter. Inquiries are rather more numerous, but buyers still seem to be holding off, or making purchases in small quantities and at irregular intervals.

Some of the steam users are buying only when they find a chance to get coal at sacrifice prices, while others are apparently successful in providing for requirements by irregular purchases in the spot market.

Low temperatures have given a stimulus to the retail market. Dealers are receiving inquiries and orders in greater number than for many weeks and are making a strenuous effort to handle distribution that should have been under way during the summer months.

Pittsburgh No. 8 3-in. lump is quoted at the mines at $2.40, mine run $2.10, slack $1.65, Ohio 3-in. lump is $3.25, 2-in. lump $3, egg $2.50, mine run $2, slack $1.35. West Virginia or Kentucky 4-in. lump is $3.25, 2-in. lump $3, egg $2.50, mine run $2, slack $1.50. Smokeless lump and egg is $5.25, mine run $2.90@$3 and slack $1.60.

Anthracite — Supplies in retailers' yards are still adequate, with buying demand improving as the result of colder weather.

COLUMBUS

Better Domestic Demand—Lake Market Quiet—Steam Business Is Slow—Prices Are Unchanged.

With the thermometer ranging around the freezing mark, dealers in all sections have been buying more actively. Retail stocks are only fair. Rural dealers are still holding off to a large extent but city retailers are buying briskly. A canvass in Columbus shows that about the usual amount of winter fuel has been stored in comparison with former years. Retail prices are unchanged.

The Lake trade is becoming quiet, although a considerable tonnage was shipped from Ohio ports during the week ended Oct. 1. A large part of this tonnage came from West Virginia and Kentucky mines.

Steam business continues slow in every respect. Railroads are not taking much tonnage and miscellaneous demands are not increasing to any extent. Public utilities are about the only big customers at this time. Because of the larger production of lump, screenings are still weak, ranging $1@$1.20 and in some instances even lower. Reserves in the hands of manufacturing plants are still rather large.

South

LOUISVILLE

Increased Production of Prepared Sizes —Screenings Sluggish—Retail Distribution Growing.

With colder weather there has been an increased movement of prepared sizes, and the market is stiffer. Production is increasing and mines are averaging three to four days a week, with many running full time.

The market is unable to absorb the supply of screenings without heavier industrial buying, with the result that screenings are showing no price improvement over last week. Retailers report better business, there being many small purchases, and a fair sprinkling of good stocking orders.

Jobbers and producers are anticipating a stiffer market for block, and it is believed that fall prices will be steady shortly at $3.75 or better on coal from eastern Kentucky. There has been a very fair movement of western Kentucky lump into Louisville. Western Kentucky with a freight rate of $1.40 for all sizes as against a rate of $1.90 @$2 from eastern Kentucky has some advantage, but has maintained values better than eastern Kentucky this year.

BIRMINGHAM

Steam Slow and Weak — Current Buying Only — Cooler Weather Stimulates Retail Trade — Commercial Production Unimproved.

The steam market is very weak with no material improvement noted in either the source or volume of demand. All buying that is being done at this time is in the spot market and there is no disposition to take on more coal than is necessary for immediate use. Railroads and other contract interests are taking around their minimum quotas and are doing little stocking.

Steam quotations have varied only a little in the past few months. Several days of cooler weather has stimulated the retail trade and if the lower temperatures continue, retailers will be able to cut their stocks and resume shipments from the mines against contracts. At present, however, domestic operations are running irregularly and the output is not moved without trouble. Domestic mine prices for October are as follows: Cahaba and Black Creek, $5@$6; Corona, $4@$4.50; Montevallo $7.25@$7.50; Carbon Hill, $4.25@$4.50; Big Seam, $3.25@$4.25.

West

DENVER

No Market Losses Disappearing — Decision Awaited on Wage Reduction.

Lack of market is gradually disappearing and activities show a favorable tendency toward a stable market. Production for the week ended Sept. 17 was 185,727 tons of a possible full-time output of 281,900 tons, while the week ended Aug. 20 showed an output of 147,598 tons of a possible production of 326,032 tons.

Operators are awaiting the decision of the state industrial commission in the matter of the proposed 30 per cent cut in wages inaugurated by the Colorado Fuel & Iron Co., but which was fought by the miners and resulted in a shutdown of some mines for ten or twelve days. The men are now working at the old wages.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Demand Increased But Little—Outlook Disappointing, Considering Season of Year—Iron and Steel Improvement Not Yet a Factor.

A slight increase in demand is reported, but on the whole the situation at the beginning of October was distinctly poorer than anticipated. In many quarters it was predicted three months ago there would be insufficient transportation as soon as weather came that was unfavorable to railroad operation. However, there are many idle cars and the railroads are handling the traffic so easily that they seem to have a good margin of safety against the time when the weather will make their operations more difficult.

Line demand has increased only slightly. The iron and steel industry, which has been increasing in activity almost continuously since the middle of July, is still at a very low rate of operation compared with pre-war times and there is little if any improvement in progress at present. Lake shipments have continued to dwindle until they are relatively unimportant. Demand for domestic coal, while improved, is distinctly disappointing.

Asking prices that have prevailed in the past few weeks are supported by actual market transactions, but there is no large volume of business, production being largely against contracts. Prices remain: Steam, slack, $1.65; mine run, $2.20@$2.25; ¾-in., $2.75; 1¼-in. domestic, $3.25; gas, slack, $2@$2.25; mine run, $2.25@$2.35; ¾-in., $2.55@$2.75.

CONNELLSVILLE

Operators' Price Ideas Advanced—Furnaces Cautious about Contracting — Merchant Production Increased.

The coke market has stiffened very distinctly in the past week, not so much on account of increased buying, but rather because of consumption prospects having improved and the near approach of winter. Whether the market will really be established at the higher levels now contemplated remains to be seen. The history of the trade presents many instances of improved prospects producing higher asking prices than could be maintained for any length of time.

Recent buying has given an operation to several producers who were anxious to run even if little profit were involved. Some operators state they will not sell on contract under $3.75, while one or two name $4 as their objective. On the other hand, some might shade $3.50, which is the minimum asking price at present, and a great deal of productive capacity might have to be engaged before consumers were faced with a $4 price.

Several furnace interests have been definitely or tentatively in the market for furnace coke to the end of the year, but they seem to be quite patient, and not anxious to blow in their stacks unless under very favorable conditions.

Spot foundry coke, while not quotably higher, is stiffer, with a somewhat broader demand. We quote: Spot furnace, $3.35@$3.50; contract furnace, $3.50@$3.75; spot foundry, $4.25@$4.75.

The *Courier* reports production in the week ended Oct. 1 at 14,400 tons by the furnace ovens, and 37,900 tons by the merchant ovens, a total of 52,300 tons, an increase of 8,540 tons.

CENTRAL PENNSYLVANIA

Demand Stronger for Better Grades—Wage Controversy Closes Some Mines—September Production Lighter.

September loadings were 55,405 cars or 3,175,650 tons, as against August production of 56,636 cars, or 3,247,130 tons. Only two months in the year had a lower production, April with 48,015 carloads and May with 55,225. September, 1920, had a production of 93,015 carloads.

Because of a reduction in wages, 150 miners employed by the Charles Coal Mining Co., east of Seward, along the main line of the Pennsylvania, failed to appear for work although no strike was formally declared. Mines at Marion Center, Indiana County, are also closed because of a refusal of the miners to accept a cut in wages. In Somerset County mining is showing some gains, and in sections mines that had been closed since spring have started operations.

UNIONTOWN

More Ovens Fired — Furnace Coke Firms Up With Better Inquiries—Demand for Coal Is Heavier.

Productive activity at coke plants continued to make gains, stimulated by the firm market tone and increased demands made by blast furnace interests. More than 600 ovens were added to the active list during the week.

In the market phase the principal development of the week was the receipt by operators of an inquiry by the Lackawanna Steel Co. for 15,000 tons of furnace coke per month for the remainder of the year. That inquiry has centered interest on the contract furnace market, and most operators who expect to submit bids concede that the figure at which the order is placed will establish the furnace contract market, for the remainder of the year at least.

For several weeks the spot furnace market has been quotable at $3.35@$3.50 but within the past few days the minimum figure has disappeared from sales. The Lackawanna inquiry has further stiffened quotations and it is possible that those operators who have been holding firmly for $3.75@$4 may be able to bring prospective buyers around to their point of view.

The demand for raw coal has increased considerably. It is noted, however, that consumers needing tonnage have gone direct to the operators. The result has been that a number of smaller coal plants have resumed operations without showing any reflection in spot quotations, those remaining at $1.50 for steam and $2 for byproduct.

FAIRMONT AND PANHANDLE

More Buying Interest Shown — R.R. Fuel Moving Better — Spot Sales Few.

FAIRMONT

Production was not much heavier during the first week of October, although inquiries were becoming more numerous. Contract shipments were limited, but railroad fuel was moving better; Lake tonnage was off and export business was at a low ebb. Mine run ranged $1.50@$1.75, slack was soft, $1@$1.40, and lump was $3@$3.50.

NORTHERN PANHANDLE

Commercial mines worked on a 25 per cent basis. Prepared sizes were in better call but the steam market was lifeless. Contract inquiries were stronger, but for the most part, did not bring closings.

UPPER-POTOMAC

No Improvement Yet—Many Mines Idle —Non-Union Competition too Stiff.

This first week of October brought no improvement in operating conditions. Production was almost at a standstill except in the case of a few larger companies. Western Maryland coal could not be sold in competition with the non-union fields. Mine run ranged $1.50@$1.75.

EASTERN OHIO

Production Increases with Better Industrial Conditions and Seasonal Domestic Demand—R.R. Buying Heavier—Lake Tonnage Unchanged.

A slight improvement in general conditions was felt by the coal trade during the week ended Oct. 1. Production was 366,760 tons or about 58.7 per cent of rated capacity, which volume of out-

put was greater than that of any week since mid-August. The total tonnage mined shows an increase over the preceding week of some 40,000 tons.

Accumulated output for the calendar year to Oct. 1 is estimated at 13,151,000 tons or 54 per cent of mine capacity, based on railroad ratings. Figures given out by the operators' association indicate that their mines worked 48 per cent of possible full time.

There is a better tone to industrial demand and the approach of colder weather is bringing about a considerable improvement in orders from retail dealers. With the increased business which is developing on the railroads, a stimulus is noticeable from that quarter.

As yet, there is no evidence of any change in the movement of Lake cargo coal, and the volume of tonnage being handled is about the same. The railroads have on hand daily at lower Lake docks a little less than 9,000 cars, and receipts from the mines average less than 2,000 cars per day.

Middle West

INDIANA

Steam Sales Coming Easier—Production Heavier—Trade Optimistic.

In spite of the rather cool weather there does not appear to be much increase in the domestic demand. An advance of 25c. on coke and two grades of anthracite is the only indication that winter is almost here. Other than these two increases, summer prices still prevail.

The outlook in the bituminous region southwest of Indianapolis is somewhat improved. There has been an increase in production and sales of steam coal are coming a little easier. Some of the utilities, fearing a car or coal shortage this winter, are storing some coal. There is an increase in industrial activity and this is creating some additional demand.

MIDWEST REVIEW

Better Domestic Movement — Steam Price Decline Halted—R.R. Strike Unlikely—Low Contract Quotations.

Weather conditions continue to affect the coal market to a marked extent; on account of a few nights with frost, the domestic demand has increased materially. The market on steam coal continues unsatisfactory. Cold weather may have some effect on industrial coal, but it is beginning to be doubted. The Middle West industries are still in poor shape, and not much activity is anticipated during the winter months.

Eastern coals at low prices are continuing to make serious inroads. This is because operators in southern Illinois are holding at $4.05 for the domestic sizes while producers in West Virginia and Kentucky are offering their coal freely at 75c.@$1.25 below this figure.

As soon as conditions become anywhere near normal, the Eastern operators are going to discover a hard time in store for them if they wish to retain their market in the Northwest. A great many roads serving Wisconsin, Iowa, Minnesota and the Dakotas, now have direct connections into the Illinois and Indiana coal fields. For instance, the C. B. & Q. taps the enormously rich southern Illinois fields. This road, as it extends through Minnesota and the Dakotas, publishes attractive through rates from mines on its own lines to points in the Northwest also on its own lines. The C. & N. taps the coal fields in the central and southern central districts of Illinois, while the Chicago, Milwaukee and St. Paul, through its recent acquisition of the Chicago, Terre Haute and Southeastern taps the best Indiana fields. It is expected when conditions become anywhere near normal again these roads will all take the necessary steps to see to it that their rates are advantageous and their service in the Northwest excellent.

The market on steam coals has not improved this week, although it has grown no worse. A great deal of tonnage has moved at the low prices established recently, but no lower. Steam buyers refuse to be influenced by any newspaper talk relative to a railroad strike, and it now appears their attitude in this matter is justified through a statement made by one of the high officials of the railway brotherhoods who declares that if a walk-out should be ordered half the workers would become "scabs," and the other half tramps. There may be some talk about a railroad strike, but this will not be taken very seriously.

Big buyers who usually contract, but who this year planned to buy a part of their requirements on the open market, now find they can, if they so desire, make contracts at low prices that would have been considered out of line last spring. It must be said that very few big steam buyers are taking advantage of these low prices at this date.

SOUTHERN ILLINOIS

Car Shortage Arrives at Many Mines—Slightly Better Tone to Steam Prices—Domestic in Good Demand—R.R. Tonnage Increases.

Carterville steam coal has shown a little improvement, principally on screenings, not so much in tonnage movement as in the price. Demand for lump far exceeds the supply and egg is about breaking even.

Railroad tonnage has been unusually good, but at many mines the small number of cars put in caused operations to remain idle while some are working short-time on account of no cars. The circular price prevails on lump and egg with both association and independent operators. The price on screenings range 75c.@$1.25, with mine run $2.35@$2.75.

The Duquoin situation is somewhat similar, both as to operating conditions and prices. In the Mt. Olive field considerable improvement is noted in the tonnage, both railroad and domestic. Steam sizes are hard to move and are going mostly on contract. The St. Louis price on domestic is $3.25; country price, $3.75.

The Standard situation is improving some, especially on domestic prices. Standard 2-in. lump is quoted $2.75@$3. Six inch is $3.25@$3.50, with nut and egg $2@$2.50. Screenings have strengthened to 50c.@60c. Railroad tonnage is fairly good but car shortage is showing up at many mines.

WESTERN KENTUCKY

Screenings a Little Stiffer — Demand Improves — Southern Movement Increases.

Cold weather has resulted in increased orders for prepared sizes, while mine run and screenings are in slightly better demand as a result of the increased consumption on the part of utilities. Movement into the South is increasing, with the cotton and agricultural situation improved and credit conditions better.

Western Kentucky during the past few months has improved her marketing facilities materially through securing better freight rates, and increased territory. The selling field for western Kentucky is better at the present time than ever before in the history of the district.

Middle Appalachian

LOW-VOLATILE FIELDS

Early Improvement Anticipated — Car Shortage Felt — Heavier Domestic Movement — Tide Tonnage Declines.

New River and the Gulf

New River production was hardly up to the level of recent weeks at the outset of October. Prices, even for prepared sizes, had declined to such a point that some smokeless was competing with high-volatiles. Tide shipments were small, but some coal was going to Inland East points with prepared sizes moving west under pressure. Slack was in even worse condition and ranged $1.25@$2. Cars were none too plentiful, indicating that a shortage might come before long.

Gulf producers generally anticipated an early improvement, but the output continued at the low rate of 40 per cent of capacity. It was, of course, the small Tidewater movement that made for the dullness, with the majority of the mines still shut down.

Pocahontas and Tug River

Pocahontas production exceeded 300,000 tons for the first time in recent weeks. The spot demand was picking

up somewhat, as had been anticipated. Car shortage losses amounted to 15,000 tons. Prepared coal movement was better, but at weaker prices and there was also an increased demand in Philadelphia and other Eastern markets.

Tug River tonnage was sustained at about 85,000 tons, the rate being better than in any other smokeless field. The improvement in the steel industry was contributing to the better demand for coal. Difficulty in securing equipment retarded production slightly.

HIGH-VOLATILE FIELDS

Heavier Buying of R.R. Fuel — Over-Production of Slack Continues — Car Shortage Appears.

KANAWHA

The daily output was about 14,000 tons in the week ended Oct. 1. A slight car shortage was noted although this did not affect the market. Prepared coal was in better demand, but slack was in distress, having a tendency to depress all prices. Lake orders were being filled rapidly.

LOGAN AND THACKER

After a brief period of demand, Logan conditions again relapsed into dullness. Notwithstanding this, production continued at the rate of 40,000 tons daily. An encouraging feature, however, was the heavier buying of railroad fuel.

Thacker production continued at about 50 per cent of normal. The output was sustained largely by contracts and increased railroad fuel tonnage, although the domestic market was slightly stimulated. The spot steam trading was quiet and slack was decidedly off-color.

NORTHEASTERN KENTUCKY

The output was still depressed to about 35 per cent of normal, but there was a general improvement to the market tone. The domestic demand was the strongest, at a wide price range of $3.25@$3.75.

VIRGINIA

The greater number of mines remained in idleness because of the poor demand, not more than 20 per cent of the producers being at work. Contract orders were just holding their own affording a run of 50 per cent of normal.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Record Tonnage Being Produced — Prices Low But Outlook Improved — Domestic Trade Good.

More coal is being shipped from this section than ever before, and with industry getting slowly but steadily on the way to recovery and winter almost here, the outlook is better than any time during the year.

It is true that prices are low, in some cases below cost of production, but with a better demand for domestic and with a general improvement in conditions around industrial centers, steam, as well as domestic should soon increase in price. In most cases, best grades of block have already been advanced 25c. and the increase seems to be holding so far.

West

UTAH

Domestic Demand a Question of Temperature—Prices Uncertain, with Upward Trend.

Although many people are placing storage orders, the majority are buying from hand-to-mouth. Prices are becoming unsteady again although it is but two weeks since they were revised. The tendency is upward now, but no definite information concerning the proposed increase is obtainable at this writing.

The car supply is excellent, as is also the labor situation. Mines are averaging around 65 per cent, with one or two of the medium-sized companies running full time

News Items From Field and Trade

COLORADO

Fire in the Nushaft mine of the **Colorado Fuel and Iron Co.**, near Florence, raged for nearly forty-eight hours and spread over a forty foot surface of the face of the mine before it could be put under control. A miner encountered the shaft of an abandoned oil well which had been driven through the mine, and the supposition is that oil and gas from the well were ignited by the miner's torch.

ILLINOIS

The entire output of seven mines of the **Springfield District Coal & Mining Co.**, has been taken over by the **Peabody Coal Co.** The mines are located at Auburn, Cora, Riverton, Springfield and Taylorville. The Peabody Coal Co. opened up a branch office in Springfield in order to facilitate the handling of the shipments from these mines.

Following is the itinerary of the **Illinois Mine Examiners Board** for the month of October as announced by Robert Medill, Director of Mines and Minerals of Illinois: Harrisburg, Oct. 4; Herrin, Oct 5; West Frankfort, Oct. 6; Sesser, Oct. 7; Belleville, Oct 10; Staunton, Oct. 11; Springfield, Oct. 12; Lincoln, Oct. 13; Danville, Oct. 14; Pontiac, Oct. 15; Peoria, Oct. 17; LaSalle, Oct. 18.

Over 600 men were thrown out of work recently when the **Illinois Coal & Coke Co.**, at Girard and the **Standard Oil Co.**, at Shoper closed their mines down until the market took a change for the better.

The Appellate Division of the State Supreme Court has handed down an interesting decision in a case brought by the American Steel Spring Co., Chicago, against the **Bell & Zoller Coal Co.**, of the same city, upholding a verdict rendered in favor of the coal company by a lower court, in the contention that coal furnished by the company carried no guarantee against ignition by spontaneous combustion. In its decision, the court says that a general agent to sell coal has no implied authority to warrant that it will not ignite by spontaneous combustion, and whoever relies on such a warranty must either show express authority to make the warranty, or a custom to give such warranty in making such sales, before the principal, or coal company represented, will be bound. In the case at issue, there is no evidence that it was usual for coal salesmen in taking orders for coal to warrant that it would not ignite by spontaneous combustion, and the plaintiff failed to make out a case.

C. M. Wasson of Harrisburg has returned to his home after spending some time at his summer home in Michigan. He is connected with the Wasson Coal Co., operating in Saline County.

John S. Reiner, president of the Reiner Coal Co., Chicago, recently returned to his office from an inspection trip through the coal fields in southern Illinois.

The mine of the **Pana Coal Co.** at Pana has been temporarily shut down on account of a fire which broke out in one of the main entries of the mine recently.

The Illinois Coal & Coke Corporation is now planning to sink a new mine in Jefferson County near Waltonville. It will be modern in every way and the company will lay out a townsite near the mine.

The Producers Coal & Coke Co., has been organized with offices at 29 La Salle St., Chicago, to handle Eastern and Western steam and domestic coal. Chas. A. Klotz is president, and Norman D. Birkland and Frank A. Warren are vice-presidents.

The Big Four R.R., has announced that it will place a limit on the supply of coal cars available to each southern Illinois mine. The round-robin system by which different companies are given available cars strictly in rotation has been adopted.

INDIANA

Walter C. McLoud and **Edward Shirkie**, both coal operators of Terre Haute, are named as directors of the Coats Steamers, Inc., a company organized for the manufacture of steam automobiles.

Suit for $40,000 damages, charging breach of contract, and for $21,755 on account, has been filed in superior court, Indianapolis, by the **Black Comet Coal Mining Co.** against the Indianapolis Street Ry. Co. The plaintiff says it entered into a contract in September, 1920, to ship from twenty to thirty cars of mine run each week to the defendant company until April 1, 1921. The plaintiff says the defendant received and paid for coal shipped in October and November, 1920 but did not pay for 6,043 tons received by it in December, 1920, and January, 1921. The $21,755 suit on account is based on this claim. An official of the street railway company said it secured priority orders for freight cars to ship coal from the Black Comet company, and that the mining company used the cars for shipment to other places forcing the Street Railway Co. to buy on the open market at prices in excess of the contract figure.

Dr. W. N. Logan, geologist under the Indiana conservation department, and field party consisting of several scientists on the faculty of Indiana University, have completed a systematic survey of the coal-bearing rocks of the northern portion of the coal area of Indiana, according to announcement made by Richard Lieber, conservation director. The area studied includes the whole or portions of Clay, Vigo, Vermillion, Parke, Fountain, Warren and Benton counties, and adjoins on the north the area surveyed last year.

Glenn Van Auken, George M Barnard and Edgar M. Blessing, members of the Indiana Public Service Commission, and A. B. Cronk, attorney and freight rate expert in the employ of the commission, will conduct a hearing on the petition of the Chicago & Indiana coal railway division of the Chicago & Eastern Illinois to abandon the division. R. B. Coapstick, attorney for the State Chamber of Commerce, intends to put on between sixty and seventy witnesses against the abondonment proposal, the commission has heard. The commission will hear the case for the interstate commerce commission, to which the petition was addressed.

The Big Four Mine at Boonville has been worked out and machinery is now being moved to the new Liberty mine, northeast of Princeton.

The Peoples Ice & Fuel Co., Vincennes, has increased its capital from $10,000 to $50,000.

KENTUCKY

The Millers' Creek Excelsior Coal Co., has been incorporated by H. W. Fraight, president; T. B. Lane, vice-president and general manager.

The Northeast Kentucky Coal Co. which is under the active management of Henry LaViers of Paintsville has hit upon a most novel plan for utilizing the rock and slate taken out of its mines. Near the tipple a rock crusher has been installed and the slate and rock after being crushed is loaded into cars through a bin and is used in the construction of roads so that the company is realizing even on what would ordinarily be considered a waste product.

The Ellaura Coal & Coke Co., recently organized in Kingsport, is arranging for the operation of coal properties in Lee County. The company will issue bonds for $30,000, the proceeds to be used for the purchase of equipment for installation at the site. It is proposed to construct a railroad, about two miles long, to reach the mines. James L. Nixon is president, and Charles J. Kesner, secretary-treasurer.

Colonel Wolf, of New York, president of the Kentucky King Coal Co., a large operation on Wallins Creek, has been visiting the mine.

D. S. Riddle, of the Riddle Coal Co., Chattanooga, was in Pineville recently.

James Gatliff, of the Southern Mining Co., Knoxville, was a recent visitor in Pineville.

Hal Mould, general manager of the Peabody Coal Co., Syndicate No. 2, with headquarters at Pineville, was chosen as governor of the Tennessee-Kentucky Kiwanis Club at convention held in Memphis. The delegation attending the convention, included the following Kentucky coal men: **W. R. Morrison**, of the Utility Gas Coal Co; **T. R. Ware**, interested in Straight Creek operations; **W. L. Moss**, of the White Moss Coal Co. and **Richard Barker**, of the Boone Trail Coal Co.

MINNESOTA

Dean W. R. Appleby of the state university school of mines and **Professor W. H. Emmons**, of the geological department, recently returned from an investigation of the coal and iron deposits of Manchuria.

Ivan Bowen, member of the Minnesota Railroad and Warehouse Commission, has been named chairman of a committee appointed by the joint congressional commission of agricultural inquiry. This committee is to analyze the marketing and transportation of coal. Mr. Bowen with five other utility commissioners will conduct a nation-wide inquiry into the coal trade.

NEW YORK

J. E. Gaskill, of the Southern Coal Corporation, with headquarters at Fairmont, has been in New York on business.

The Wyoming Valley Coal Co. is the reported purchaser of a plot of ground containing 45,000 square feet at the southeast corner of Sixth street and Second avenue, Brooklyn. This property adjoins the company's present plant on Gowanus Canal and on it will be erected large coal pockets equipped with modern machinery.

Joseph Mehr, formerly with *Coal Age*, has been appointed fuel engineer and manager of the coal department of the Adria Steamship & Commerce Corporation, 17 Battery Place, New York City.

J. B. Roberts will represent the Nicholson-Smith Coal Co. of Cleveland in Buffalo. The company is opening an office in the Marine Trust Bldg. He was formerly vice-president of the P. O. McIntire Coal Co., of Cleveland.

OHIO

P. H. Henry, president of the Kentenia Coal Sales Co., recently renewed old acquaintances in Cincinnati. He is now located in the New York office.

E. M. Poston, president of the New York Coal Co., and one of the best known operators in Ohio, was appointed a member of the national unemployment conference by President Harding.

W. R. Chatfield, general manager of the Paragon-Elkhorn Coal Co. in Pike County, Ky., visited the Cincinnati market recently.

Effective Oct. 1, the **Elk Coal & Coke Co.** will handle its West Virginia and Kentucky business from the Columbus office, at 805 Ferris Building.

A recent visitor in the Cincinnati market was **Quin Morton** of Charleston, president of the Wood-Morton Fuel Co.

Recent charters issued to coal producing companies were: **Pleasant Valley Coal Co.**, Cleveland, $75,000, E. M. Kossin, M. B. Pennell, A. W. Bell, George O. Willett and L. E. Geil; **Humphrey Coal Co.**, Cincinnati, $25,000, J. M. Humphrey, E. C. Humphrey, Thomas Dew, Thomas L. Tallentire and David Lorbach; **East Richland Coal Co.**, St. Clairsville, $60,000, W. J. Walker, W. R. Thompson, Jennie Thompson, Walter Gongola and Lewis Dryceek.

Notices of dissolution of the partnership of the **Packard Coal Mining Co.**, and also the **Franklin Mining Co.**, have been filed. The partnerships have been succeeded by a corporation styled the **Packard Coal Co.**, with offices at Columbus. M. L. Yuster is at the head of the corporation which takes over the properties, located in the Hocking Valley.

George H. Baker, vice-president of the Maynard Coal Co., has been named a trustee of the Ohio Wesleyan University of Delaware, to succeed the late Z. W. White of Columbus.

The B. C. Tucker Coal Co., Cleveland, was recently incorporated at $100,000. B. C. Tucker, formerly president of the Lake City Coal Co., is president of the new concern, and John Keefe and Harry Abels, formerly with the Lake City Coal Co., are associated with Mr. Tucker in his new enterprise.

Suit has been entered at Athens by the **Hocking Coal Co.**, against the **Carbondale Coal Co.**, claiming $320,000 damages for the removal of 650,000 tons of coal from the plaintiff's property and other acts which are construed as damages.

W. J. O'Toole, president of the Central Pocahontas Coal Co., with headquarters at Welch, W. Va., was in Cincinnati recently on a business trip.

The Mullins coal mine of the **Underhill Coal Co.** of Cleveland has resumed operation, after being idle since April 1 for repairs, overhauling and equipment costing $15,000. One hundred men returned to work.

OKLAHOMA

Two men have been arrested and placed in jail at Henryetta, following what is believed to have been an incendiary fire that destroyed several buildings and mine property of the **Consolidated Fuel Co.**, at its No. 3 mine, near Henryetta. The loss is estimated at $10,000.

The Hotton Coal Mining Co., has been organized at Henryetta, with a capital stock of $10,000. The incorporators are: R. F. Wise, Earl Wells and H. B. Wise, all of Henryetta. The company owns some coal land leases near Henryetta which it is planning to develop.

The Hailey Okla. Coal Mining Co., has opened a new mine near Haileyville. This mine is really a continuation of an old operation which was worked through a shaft in the heart of the town of Haileyville. The new shaft is about one mile west of the old one.

PENNSYLVANIA

The forestry department of the **Philadelphia and Reading Coal and Iron Co.** announces that great success is being met with in the planting of pine and Norway spruce trees in the Pottsville region. The company intends to reforest its entire tract, comprising nearly half of the Schuylkill coal region.

The manslaughter case against **Thomas Elliott**, of Brownsville, on account of having run over a little girl with his automobile and killing her on a street of Brownsville several months ago, has been dismissed. Mr. Elliott is president of the Lilley Coal Co., operating a large mine near West Brownsville.

Chief Button, of the State Department of Mines, is compiling a list of all anthracite collieries which have suspended, giving the Kohler mine cave legislation as the reason.

The Girard Mammoth Coal Co. lost its $1,000,000 suit against the **Raven Run Coal Co.** when the court recently dismissed the bill of injunction granted the Girard company and refused to direct specific performance of a contract. The case involves the ownership of lands of the Raven Run company, worth $1,000,000. It is alleged the Raven Run company agreed to sell out to the Girard company, but the deal was called off when the question of some of the land titles became involved. As a result, the Raven Run company held the $20,000 deposited as a guarantee. Efforts were made by the Girard company to go through with the deal with the Raven Run company.

Coal shipments by the Monongahela River in August were 893,700 tons, an increase of 102,400 tons over July.

Thomas F. Gilbride has sold his interest in the **Blakely Red Ash Coal Co.** Payment for his share of the property is to be made in royalties running from 50 to 75c. a ton.

State charters issued include those for the following companies: **Clearhill Coal Mining Co.**, Burnside, capital stock $150,000; treasurer, William C. Browne, Burnside. Incorporators: William C. Browne, Burnside; M. H. Makey, Altoona, and George A. Potter, Altoona. **Brinkley Coal Co.**, Youngwood; capital $25,000; treasurer, S. J. Silliman, Youngwood. Incorporators: W. S. Brinkley, E. M. Bennett and Frank Brush, Youngwood.

Jesse W. Powell, treasurer, has notified the Secretary of the Commonwealth that the capital stock of the **Silver Lake Coal Co.** has been increased from $5,500 to $300,000.

The Public Service Commission has dismissed the complaint of the **St. Clair Coal Co.**, Schuylkill County, against the Eastern Pennsylvania Light, Heat & Power Co. The complainant filed objections to increased rates of the respondent, effective in 1919 and 1920. In an order the commission finds that the power company rates are not unreasonable and not unjustly discriminatory, as claimed.

TENNESSEE

The Black Mountain Coal Products Co. of Pittsburg has purchased 50,000 acres of coal land near Spring City, Tenn. about 60 miles from Chattanooga, and will spend about $1,900,000 in the development of the property to a capacity of 15,000 tons a day.

O. P. Pile, Chief Mine Inspector, for Tennessee, announces that he will hold an **examination for mine foreman** in Knoxville, from Oct. 18 to 20 incl. This examination will be held in the assembly rooms of the Atkins Hotel.

James M. Adams, secretary of the Sewanee Fuel and Iron Co., of Chattanooga, and James M. Wills, Southern sales representative of the same concern, have applied for charter for **Sewanee Coal Co.**, authorized capital $25,000, to be located in Atlanta Ga., and are opening offices there for wholesale handling of coal and coke.

TEXAS

J. B. Robinson, of Rockdale, has organized a company among coal operators of Pittsburgh, Pa., and Baltimore, Md., which will soon enter the field of lignite mining at Rockdale. The company has secured a 50-year lease on 306 acres of land in Milam County and work of building a spur track to the property and erecting handling facilities is now under way.

Formal petition for a permit for the erection of a coal and fuel bunkering plant on a 20-acre tract at Manchester on the Ship Channel near Houston, has been filed with the City Commission by **W. C. Hogg** and **V. H. Borsodi**. The plant will be equipped for supplying ships that call at Port Houston, and also for handling coal cargoes that are shipped in.

WASHINGTON, D. C.

The House Committee on Rivers and Harbors will give a hearing on Oct. 25, on bills to prevent the discharge of oil and other waste into navigable streams, which affect discharges from coal mines. It is said that in a former Congress the measure was defeated by a Pennsylvania representative on the committee who objected to its application to the coal industry. Representative Strong, of Pennsylvania, a member of the present committee, represents a coal mining district and will probably look out for coal interests which might be affected.

Representative Herrick, Oklahoma, has introduced a bill proposing a standard wage and commodity price which he claims will solve the unemployment problem and prevent strikes. He proposes that a special committee of the House shall report a proposed law for consideration by Congress.

WEST VIRGINIA

Under authority granted by the secretary of the state the name of the **Ryan Coal Co.** has been changed to the **Clarksburg Gas and Coal Co.** and hereafter the general office of this company will be at Wheeling instead of Fairmont.

There is strong possibility of the construction of a new railroad through Gilmer County, which will open the rich coal resources of that county. The county court has authorized a special election to vote on the question of issuing $100,000 in bonds for the purpose of doing preliminary work on the railroad. If the railroad is built it will follow the river route, often impassable in winter. It is proposed to build the road from Gilmer station, where connection would be made with the Charleston Division of the B. & O. for a distance of 16 miles to Glenville, the county seat. It is also planned to extend the road through Gilmer and Wirt counties to Palestine in order to effect a juncture with the Ohio and Little Kanawha.

At a time when there has not been so much activity in the production of coal the **Lake Superior Coal Co.** of Superior, in the McDowell County field, has relined its shaft at No. 2 mine. This was accomplished without in any way suspending or retarding the use of the shaft for the mining of coal.

Organization of the **Brooke County Coal & Coke Co.** with a capital stock of $430,000 presages the development of coal lands in Brooke County. Wellsburg is to be the headquarters of the company in which R. L. Ramsey, J. R. Elson, W. S. Wilkin, S. S. Hodges, all of Wellsburg are interested, together with C. M. Warden of Beech Bottom.

The Dixie Pocahontas Coal Co. of Huntington has been organized. This company is capitalized at $100,000. Leading figures in the organization were James F. Poindexter, Joseph Maloney, John S. Marcum, J. H. Marcum and C. D. Poindexter, all of Huntington.

Construction work on an extension of a spur from Norton to one of the mines of the **West Virginia Coal & Coke Co.** has been completed.

Lee Hutchinson, in charge of the Cincinnati branch of the company was at the general offices in Fairmont recently.

Judge William S. Bennet, chief counsel in Chicago of the Edward Hines Lumber Co., owning much coal property in Marion County, has been visiting in Fairmont.

W. D. Boone, of Lookout, well known in smokeless circles, spent a few days in Charleston recently.

M. L. Hutchinson, of Fairmont, president of the Hutchinson Coal Co., was in Philadelphia on a business mission recently.

Harry Whyel, one of the well known operators of the Uniontown section, who recently returned from a trip to Europe, was a visitor in Fairmont recently.

Roy H. Cunningham, of Huntington, manager of sales for the Twin States Fuel Co. was in the Detroit market recently.

H. D. Everett, manager of sales of the Smokeless Fuel Co. of Charleston, has returned from a business trip to Chicago.

O. W. Gardner of Lynchburg, Va., president of the Chesapeake & Virginia Coal Co. was a recent visitor at the Huntington office.

WISCONSIN

The Consolidated Fuel Co. of Chicago has entered the Milwaukee market and is storing coal on one of the docks of the Kanawha Fuel Co.

The Maynard Coal Co., of Columbus has made extensive repairs and improvements at its docks at Superior. The new capacity will be in the neighborhood of 1,000,000 tons. The improvements will be completed by the opening of navigation in 1922.

Traffic News

The Clay County (Ky.) Coal Operators' Association complains to the commission against unreasonable rates on coal from mines on the Cumberland and Manchester R.R. to various interstate destinations and asks for rates the same as apply from Barbourville, Ky. and other contiguous stations.

The Little Fork Coal Co. of Willard, Ky., complains against unreasonable rates on coal from Willard to Cincinnati and other points in C. F. A. territory.

Reduction of Coal rates has been announced by the **O. S. L. R.R.** This means that the coal of Kemmerer, Cumberland and Rock Springs, Wyo., may be shipped to Utah on the same basis as that which comes from Castlegate district in Utah, as far as the smelter district from Sandy north, including the International, is concerned. Rates on coal were last advanced 25 per cent, when the I. C. C. authorized such an increase and this increase is to be taken off. Utah operators are not averse to the competition which will result from the heavier shipments of Wyoming coal into the Utah field, but feel there should be an equitable adjustment in the other direction. As it is, Wyoming coal can be shipped to Idaho, Oregon and other points cheaper than Utah coal. Unless the railroad company changes its plans it is stated that any application it may make to alter its rates on coal coming from Wyoming to Utah will be resisted. It is held that the Utah mines should now be placed on a parity with Wyoming operations.

Application of the Bamberger Electric R.R. which was made to the Utah Public Utilities Commission for an order to compel the **Utah Ry.**, the **D. and R. G.**, and the **Salt Lake Route** to establish joint through rates on coal from the Utah Railway terminals and points to Ogden by the Bamberger line, has been dismissed by the commissioners. It was held that there was no necessity for such action.

In telegrams addressed to members of the Portsmouth and Cincinnati sales agents for coals originating on their lines, the **Norfolk & Western** has asked for possible business anticipated by their companies for the next month. These telegrams say that the increase in business has been such as to force them to make a call on connecting lines for empties.

The Crookston Gas Co., has complained to the I. C. C. against unreasonable rates on coke from St. Paul, Minn., to destinations in Minnesota.

In the complaint of the **Michigan Paper Mills Traffic Association**, involving rates on coal from the Ohio and inner and outer crescent fields to points in Michigan and Indiana, the commission has authorized the **Grand Rapids Association of Commerce** to intervene.

During the second quarter of 1921 the I. C. C. reports that 435,046 cars of 21,254,080 tons of anthracite coal, 1,284,931 cars of 65,908,865 tons of bituminous coal and 45,776 cars of 1,563,567 tons of coke were transported by railroads.

In the complaint of the **Michigan Paper Mills Traffic Association**, involving rates on coal from the Ohio and inner and outer Crescent fields to points in Michigan and Indiana, the I. C. C. has authorized the Kalamazoo, Mich, Chamber of Commerce to intervene.

The complaint of the **Illinois Coal Traffic Bureau** has been assigned for hearing at Chicago Oct. 25 and the complaints of the **International Coal Products Corporation** has been assigned for hearing at Washington Oct. 18.

The American Smelting and Refining Co., has requested the commission to reopen for argument and rehearing its case in which the commision recently decided that the demurrage charge and average free time at Baltimore on coke for export in 1918 was not unreasonable.

Association Activities

National Retail Coal Merchants' Association

The executive committee and directors of the association met recently at Indianapolis. The meeting of the committee was called devise an immediate plan to convince the public of the importance of buying coal early. Should Indianapolis feel inclined to extend an invitation for the next national convention, the city would have no trouble obtaining it, it was said.

Northeast Kentucky Coal Association.

Officers and directors of the association piloted 150 members of the Ashland Chamber of Commerce on a trip, made by special train, through the coal territory adjacent to the Big Sandy River, a coal territory in which $30,000,000 has been invested within the last eight or nine years and where 180 mines are now in operation, although limited railroad facilities have confined the development of the Miller's Creek and Elkhorn Byproduct seams to the western side of the Big Sandy.

Ashland being to the Big Sandy field what Huntington, W. Va., is to Logan, a trading center for the Big Sandy, it was desired by the Chamber of Commerce not only to learn something of the richness of the region tributary to Ashland but also to better acquaint the mining communities with the possibilities of Ashland.

Recent Patents

Power Shovel for Use in Mines. Clyde S. Corrigan, Norwood, Ohio, 1,389,421. Aug. 30, 1921. Filed July 15, 1920; serial No. 396,391.

Rock Drill. Thomas Turner, Ottumwa, Iowa, assignor to Hardsocg Wonder Drill Co., Uttumwa, Iowa, 1,389,539. Aug. 30, 1921. Filed April 4, 1918; serial No. 226,754.

Power Shovel for Loading Mine Cars. C. S. Corrigan, 504 W. 158th St., New York, N. Y.; 1,389,421, filed July 15, 1920. Serial 396,391.

Lamp-Supporting Attachment for Miner's Caps. William Israel, Kingston, Pa., 1,383,721. July 5, 1921. Filed June 21, 1918; serial No. 241,305.

Miner's Breastplate. W. H. Davis, Accoville, West Va., 1,383,909. July 5, 1921. Filed May 21, 1920; serial No. 383,197.

Mine-Car Wheel. Frank E. Johnson, Salt Lake City, Utah, 1,383,309. July 5, 1921. Filed Nov. 10, 1919; serial No. 336,956.

Universal Coal-Cutting Machine. A. L. Chopin, Paris, France, 1,384,236. July 12, 1921. Filed July 7, 1919; serial No. 309,127.

Method of Transporting Coal. William E. Hamilton, Columbus, Ohio, 1,385,447. July 26, 1921. Filed Feb. 8, 1919; serial No. 215,995.

Miner's Drill Holder. Christopher Devenish, Bossburg, Wash., 1,385,523. July 26, 1921. Filed April 24, 1920; serial No. 376,342.

Apparatus for Coaling Ships. Louis Lombi, North Bergen, N. J., 1,373,436. April 5, 1921. Filed July 17, 1919. Serial No. 311,444.

Coming Meetings

The National Industrial Traffic League will hold its annual meeting Nov. 9 and 10 at the Sherman Hotel, Chicago, Ill. Executive secretary J. H. Beek, Conway Building, Chicago, Ill.

Kanawha Coal Operators' Association will meet on Oct. 20 at Charleston, West Va. Secretary, D. C. Kennedy, Kanawha Valley Bank Building, Charleston, West Va.

Harlan County Coal Operators' Association will hold its next meeting on or about Oct. 19 at Harlan, Ky. Secretary, E. R. Clayton, Harlan, Ky.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The twenty-fourth annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

The Coal Mining Institute of America will hold its annual meeting at Pittsburgh, Pa., Dec. 7, 8 and 9. Secretary H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

An Industrial Relations Conference for all industries in the State of Pennsylvania has been arranged for October 24 to 27 at Harrisburg, Pa., by the Commissioner of Labor and Industry, C. D. Connelly.

American Gas Association. Annual convention Nov. 7 to 12 at Congress and Auditorium Hotels, Chicago, Ill. Secretary, O. H. Fogg, 130 E. 15th St., New York City.

The Illinois Mining Institute will hold its fall meeting in the City Hall, Springfield, Ill., Saturday, Nov. 19. Secretary, Martin Bolt, Springfield, Ill.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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Self-Help Still the Best Help

SHOULD nothing else come from the unemployment conference in Washington but the assurance that the estimate of the Bureau of Labor Statistics that unemployed in this country numbered little less than six million is preposterous, the effort were well worth while. The situation is difficult enough without the shock of such an alarming report, a shock which it is considered has been sufficient to set back the Christmas trade to an extent realized by few. To get at the truth in this matter, there have been assembled in Washington for three weeks the best-informed men and women in the country and we are now advised that the actual measure of unemployment is around 4,000,000, of which no more than 1,000,000, and probably less, will be necessitous, the remainder having sufficient savings to tide them over until next spring.

The conference, however, has accomplished much more than compile a reasonably correct estimate of idleness. Instead of paralyzing the country with an unwarranted alarmist report the conference has proceeded on sound lines to organize the people for combating idleness and taking care of the needy. The biggest idea that has been put over is that not to the Federal nor the state nor the county governments should we look for relief but to each community. The remedy for unemployment is employment and the application must be local. Look not to the government at Washington but organize at home is the injunction, and to this end the Mayor of every city and hamlet is under pressure, where pressure is required, to lead his people in helping the jobless with what work there may be and with succor if need arise.

The conference has done its part and adjourned. It now remains for the people to use their good American sense and grapple in good American fashion with the problem which still lies ahead. Unemployment at bituminous coal mines has been and will continue to be one of the largest single problems for which there is no obvious solution. When there are no orders for coal there can be no work for the mine labor. Development work cannot be pushed ahead indefinitely. Some properties have already been opened up so far in advance of needs that there is danger of losing sections of the mines because of trouble with the roof.

Because such a large portion of coal-mine labor lives away from cities and towns in unorganized mine settlements caring for the necessitous may fall heavily on the coal operators during the coming winter. Where work cannot be provided it goes without saying that hunger and misery will not be permitted. It has been truly said that in a country with a surplus of food, fuel and clothing, no one should be permitted to suffer. It is plainly as much the responsibility of the coal companies to provide for whatever relief is necessary in isolated camps as it is the responsibility of city officials in organized communities. The conference in Washington defined the scope of the problem and has outlined the only way out—self-help. The conference was a success. May those on whom the country looks to carry on, bring to fruition the plans that have been so ably drawn.

Bituminous Committee Report Disappoints

WE ARE frankly disappointed in the report of the Sub-Committee on Unemployment in the Bituminous Coal Industry. All their report does is to "pass the buck" to the railroads. Assailing the assigned car appears to be the one thing on which coal operators and union labor can get together. The report, quite brief, is plainly aimed only at questions of permanent relief and refers to possible future conditions rather than the present emergency. Assigned cars are no factor in the situation this year.

The railroads, after being assailed for their past and prospective future indulgence in assigned cars, are asked to buy and store five months' supply of fuel coal, thus not only to relieve present unemployment but to protect themselves against any future trouble—a plain hint on the possibility of a suspension next spring.

The mining committee concurs in the recommendation, common to most of those reporting, that Federal funding of the railroad indebtedness be hastened. It is a striking thing that the opposition to this helping hand to the railroads is meeting its strongest and only serious opposition from labor, which stands to gain most from it.

One has but to scan a bit of history of the past few weeks to understand why the report of the Sub-Committee on Unemployment in the coal industry is sterile. One of the principal members, John Lewis, was detained at Indianapolis until the end of the second week of the conference, which accounts for much of the delay. One of the first moves when he arrived in Washington was to advance the suggestion that the best interests of the country demanded that the coal operators and miners should agree in advance to arbitrate their possible differences over wages when the present contract expires next spring, thus assuring no suspension or strike. It is understood that after some hesitancy the operators agreed, but John Lewis said he would not, for he believed he should not forfeit the right to strike.

It did not remain even for the Coal Committee to include in its report a statement of what unemployment it found in coal and why there is any. To have done so would have disclosed the differences between union and non-union fields—the non-union now working more days and producing more tons than this time last year, earning less per day but much more per week, and the union men idle, almost as if on strike.

Three-Shift Breaker Operation?

SIDNEY J. JENNINGS, vice-president of a large metal-mining, smelting and refining company and president of a coal-mining concern, at the American Institute of Mining and Metallurgical Engineers advocated the lowering of overhead at anthracite breakers by the introduction of three-shift operation. Like most matters brought up thus unannounced, it did not get the full consideration it deserved. Mr. Jennings was not dogmatic. He was willing to believe that he might have been precipitate in his decision; still it is always well to listen and to consider one's problems as they are reflected in the mind of a stranger to the industry, for Mr. Jennings, though a coal-operating official, is in charge of bituminous, not anthracite, mines.

Three-shift operation of the breaker with single-shift operation of the mine would involve the use of extremely large storage bins near the breaker. A plant that would treat 4,000 tons in an eight-hour day would need, if the preparation ran steadily at that rate for twenty-four hours, a storage of 8,000 tons, which would require a larger bin by far than that which is supplied at the Lynch mine for a tonnage expected to run between 8,000 and 16,000 per eight-hour day. This 5,000-ton bin is believed to the biggest in the United States for the storage of coal at the tipple, but it would be inadequate for a 4,000-ton breaker running on a three-shift basis if the mine supplying it ran on a single shift.

It was pointed out that with triple shifting the size of the breaker might be reduced, which is quite true. The size of the bin might likewise be reduced so as to hold possibly one-third of 8,000, or 2,700 tons. But even with such a reduction the bin would still be large and of such size as to result in much degradation of the coal and in the introduction of much machinery to reduce that degradation to its lowest limits.

The expense of a big storage bin with the necessary feeders and conveyors for its discharge and the much-needed contrivances for filling it with coal without breakage possibly would be comparable with the cost of the breaker. The expense of operation would be much increased by the intervention of this intermediate provision between mine and breaker, and it would seem that, disregarding the damage done to the coal, it would leave the operating company just where it is.

The big bin at the Lynch operation is placed at an exceptional mine. The size of the fuel produced is no object, except in cleaning the coal. The only reason for its being sized is so that the dirt in the nut coal will not be overlooked in the passage of the lumps. The coal after cleaning is dumped into a large bin without regard to size except that excessively large lumps, which might block the gates, are placed in a certain section of the bin. The fine coal is in a degree to be preferred to large, as the material is to be used for coking.

At an anthracite mine the frequent presence of crushers may induce a belief in some minds that no care is taken to maintain the coal unbroken. This is not so. The public demands a medium size. The coal must not be too large or too small. Therefore it must be treated with consideration. The medium-sized coal and the fine coal must not be degraded or broken; the larger sized coal must be broken in the manner best calculated to produce the sizes desired, which in each case is the largest size which the public can be induced to take in quantity and without price concession.

To dump the product of the mine into a large bin or onto a stock pile, as coking-coal operators and metal-mill men do, would be a most wasteful proceeding. The degradation would add considerably to the cost of operation. For these reasons it is hardly likely that breakers will ever be run night and day. The Sunday rest has been recognized as a great national need. As important perhaps is the night's rest and it is to be hoped that it never will be invaded by the triple shifting of breaker operation.

Its bad effect on the homes of the workers is not to be overlooked. With men entering and leaving the house at night and the children and others keeping the people awake during the hours of the day there is no rest or quiet day or night in most of the homes of the workers wherever the triple shift is in operation.

Where concentrators and smelters are placed a long way from the mines it is necessary to provide several days' storage in order to defend the operation against the uncertainties of railroad delivery. As has been seen, there is no objection to doing this, for the ore is not adversely affected by it, but the coal-mine conditions are different, and although the question of Mr. Jennings should be duly considered the answer does not seem likely to be in accord with the point of view that he presented.

Another proposal might be made. Both mine and breaker might be triple-shifted. In that case the tonnage of the anthracite region might be increased, if under the Gallagher law that end could be attained, which is perhaps doubtful. The operators of the anthracite region would welcome such an innovation, doubtless, no less than would the purchaser. Furthermore with triple-shift operation the mine would provide coal as fast as the breaker could handle it and pockets would be used only as today, with the idea of steadying the operation of the jigs. In fact the small pockets now used might be reduced, as there would not be then the peak load of dumping that occurs in the morning under present methods of mining.

Triple shifting was not the custom before unionization. It would be almost impossible to induce the mine workers to accept it today with the large amount of union control. To the coal operator it would appear almost childish to advocate it after years of operation without it, for night work is not favorably regarded by the mine worker. Only the cutters, scrapers and gangway men have been induced to work at night. The loader is not so accommodating; a change in methods such as this would undoubtedly find him adamant. Such a change would involve immense development if the output were raised proportionately unless indeed three shifts were worked in a single room, which with piece work would occasion much trouble, as H. G. Davis pointed out at the session. It is difficult in some localities to get two men to work together in a room. Triple shifting would group together no less than six.

If triple shifting were to be adopted without increased production, it might be possible to work a different section of the mine each shift in the day and thus remove the difficulty. The mine would be triple-shifted, but the individual chambers would work only single shift. The mine therefore would not receive the benefit of the triple shift except as to locomotive, cars and hoisting equipment. Most of the outlay would still have to be made below ground, though much would be saved on the surface.

Suggestions as to the Design of a Tipple to Suit Ordinary Market Conditions of the West*

Spaces Between Railroad Tracks Should Be Ample—Feeder Increases Capacity of Screens and Enables Them to Screen More Accurately—Loading Booms Should Be Lowered and Raised by Electric Motor

By Benedict Shubart
Denver, Colo.

TO SOME the subject of this paper may seem in a degree threadbare. If, however, I repeat what already is well known, just smile to yourself and think how much wiser you are than your neighbor. for it is amazing how many tipples are erected that violate the elementary fundamentals not only of good design but of practical operation.

Possibly a coal-screening plant is a simple installation. If so, it receives treatment similar to that accorded many other simple things. Most people treat it entirely too lightly and fail to take into consideration, not only the changes that may come with the lapse of time and the conditions that necessarily have to be met as competition changes, but even the elementary physical conditions that exist at the tipple site.

If statements here made appear excessively positive, don't blame me, but consider some of the heart-breaking experiences encountered in correcting certain omissions, trying to make a tipple do merely what it was designed to do, when the builder tied everything up in such a constricted space, that no room was left to get the results that circumstances demanded. Some of the equipment here advocated may look expensive.

Do not conclude that it cannot be afforded. Much of it the owners cannot afford to do without, and when it is considered that a tipple is put up for possibly twenty years of operation, the operator cannot justify financially the omission of any reasonable precaution not only to meet the demands of the present, but to anticipate those of the future.

West Demands at Least Five Sizes of Coal

First consider a tipple screening plant, suitable for Western conditions, capable of handling approximately 2,500 tons per 8-hr. shift. The largest screened sizes must be loaded into either open or box cars, and arrangements provided for preparing and loading not less than five sizes of coal—lump, egg, nut, slack and dust or any reasonable combination of these sizes. As only the preparation of the coal is under discussion, references to the method of haulage, pit cars and means of dumping will be omitted and consideration of coal will begin after it has been deposited in the dump hopper.

The track arrangement will frequently be determined by the ground layout. The sizes and tonnage assumed can be loaded on three tracks, but four are preferable. The two outer tracks should be reserved for loading lump coal, No. 3 track for egg coal, and No. 4 track for nut, slack and dust. Where a fifth track can be provided it should be held open for run-of-mine coal only or should be kept as a place of storage where emergency coal can be run should there be any delay in the operation of the screening equipment or in changing cars.

Track No. 1 should be used solely for loading lump coal into box cars. Track No. 2 should be used only for loading that same size of coal into open cars. This second track may or may not have above it a picking table, loading boom, or both. Where picking is necessary, a table can frequently be put between the two lump tracks, heading down track, provided with a pivoted loading boom that may be raised or lowered to feed either open or box cars. With such an arrangement coal can be loaded into box cars on both tracks Nos. 1 and 2, and in that way a large tonnage of coal can be put into box cars.

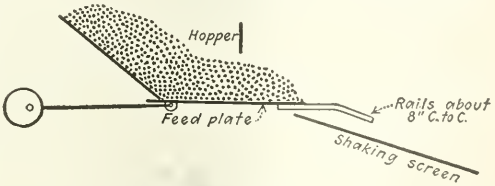
Main Loading Tracks Set at 22-Ft. Centers

There is a tendency to place the loading tracks too close together. Tracks Nos. 1 and 2 should be not less than 20 ft. apart center to center—22 ft. would be better still. Tracks Nos. 2 and 3 may then be placed on 16-ft. centers, except possibly where the railroad demands, as it does in some instances, that the distance be 18 ft. Tracks Nos. 3 and 4 should be not less than 18 ft. apart on centers, and if a fifth track is provided, tracks Nos. 4 and 5 may be 16 ft. apart. In other words, between each pair of tracks sufficient space should be provided to accommodate either a picking table, elevator, or such other apparatus the addition of which may be desired as conditions change inside or outside the mine.

At the point where the coal begins its journey through the tipple a feeder must be installed to feed the coal onto the screens. Not only will such a device increase the capacity of the latter from 50 to 100 per cent, but it will better the quality of the product by giving the screens a better chance to perform their work.

Two general types of feeders are in use—the flat reciprocating plate and the steel-apron conveyor. Either is good. For a mine of large output, the apron-feeder conveyor is preferable as it has unlimited capacity. It also possesses the advantage of rolling the coal over as it delivers it to the screens, permitting the smaller sizes to fall underneath and jarring loose such small pieces as tend to hang to the larger lumps.

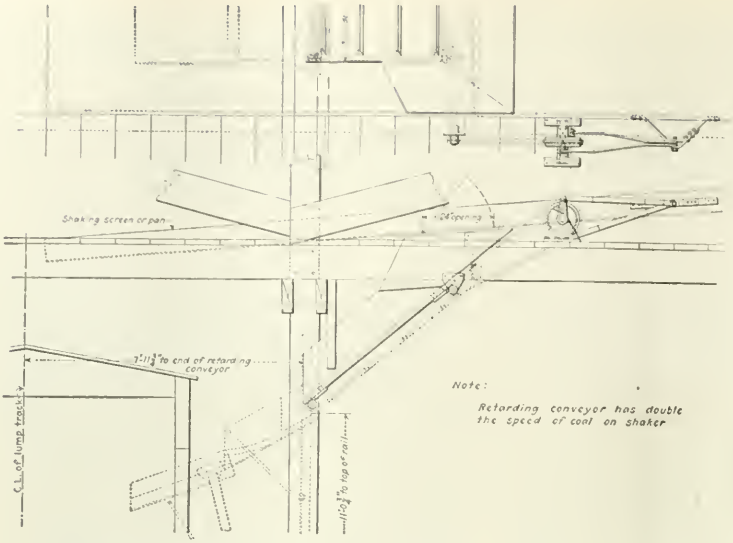
For an operation of the capacity we are considering,



HORIZONTAL RECIPROCATING FEEDER PLATE

By use of a feeder the coal is delivered to the screens in accord with their capacity and not at the uncertain rate which the dumping of the coal provides. The fingers at the end of the plate roll the coal over and prevent fine coal from riding safely over the holes in the screen perched on the back of some large lump.

*Article entitled "Screening and Preparing Coal at the Tipple" read before the June meeting of the Rocky Mountain Coal Mining Institute.



Retarding Conveyor for Box Car Loader

Where the coal goes from the screens to the box-car loader direct a retarding conveyor should be used. This can be made with a perforated bottom to remove undersize and may be driven through ratchet and chain from the shaking screen as shown in the illustration.

my preference would be for the reciprocating feeder. It has less mechanism, is thoroughly reliable, and any mine mechanic can repair it if it goes wrong or improvise another in case it is entirely destroyed. This feeder should be provided with extension fingers placed on about 8-in. centers and possibly 24 in. long made of mine rails, the function of which is to turn the lump coal over and allow the material to pass down to the screen at the earliest possible moment. If the feeder is to be expected to perform its proper function the plate should not be set on an inclination but horizontally. When inclined such a feeder is more apt to act as an accelerator than as a retarder.

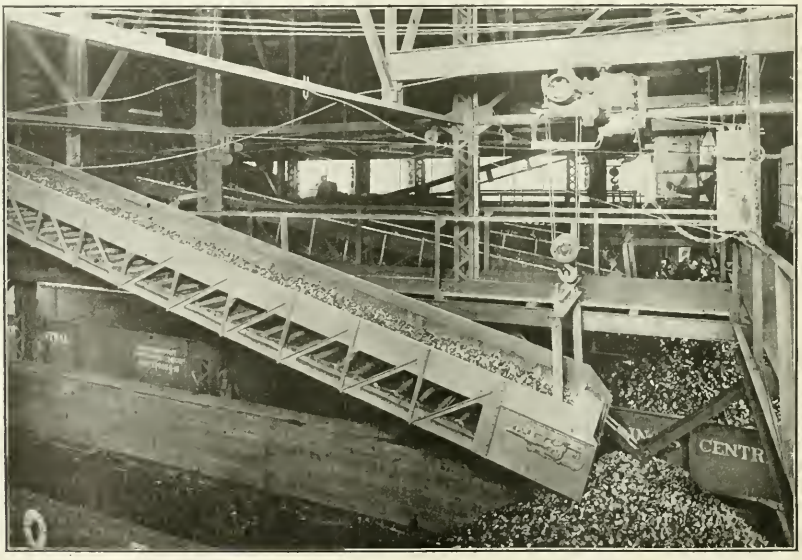
Where coal is passed direct from the screen into a box-car loader, a retarding chute should be interposed. This can be provided with a perforated bottom so that the coal delivered to the box-car loader will be free from undersize.

Pivoted loading booms are frequently installed with a hand winch for raising and lowering. This is a mistake. Men simply will not take the time nor exert the effort necessary to properly adjust such a boom. Small electric hoists are made especially for this purpose. They are inexpensive, quick in action, and even more dependable than the hand winch.

For the main screen, a width of 6 to 8 ft., and a length of 12 to 16 ft. will complete the segregation of the larger coals, leaving the nut, slack and dust to go to the rescreening plant. An attempt should be made to keep the screening section as wide and as short as possible.

Pivoted Boom and Electric Hoist

A loading boom that is not lowered into the railroad car is a mere waste of money. Most men have the loading booms up so high that they will not have to be adjusted as the car fills. The tipple man does not want to expend the labor necessary to raise the boom, but with an electric motor to do the work he is quite willing to make the adjustment, and the coal accordingly is saved the drop. It fully exemplifies the dictum that if you want anything to be done don't do it yourself but have a machine by which it can be done without labor.



This lessens degradation. So far no screen has been designed that in point of simplicity and efficiency will equal the common type of inclined shaker. From the standpoint of economy, it has the advantage of getting the coal over the perforations with little abrasion, and inasmuch as the larger sizes constitute the high-priced coal, a difference of one or two per cent in the amount that may be lost to the smaller sizes is no inconsiderable item.

Screens are frequently set at pitches as high as 16 deg. My preference is for approximately 13 deg. with a rather rapid motion of the driving shaft, such as 100 to 120 r.p.m. This requires better machinery and a stiffer structure than the steeper-pitched slower-moving shakers, but it prepares the coal more scrupulously.

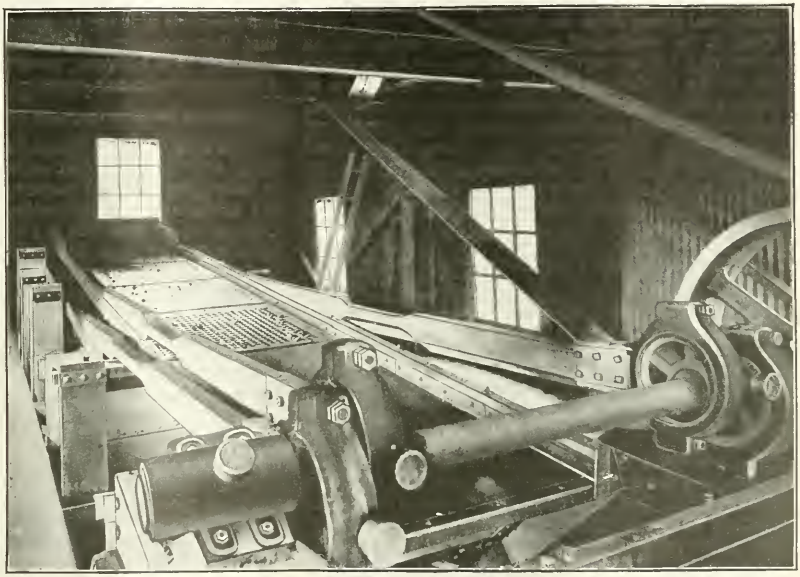
There appears to be no satisfactory method of eliminating the waste from Western coals, except by picking.

Where a comparatively large quantity of coal is to be shipped, loading can frequently be facilitated by the use of a gathering or transfer conveyor. This is a new development, and consists merely of a conveyor running parallel with the screens to mix several sizes of coal after they have been prepared, delivering them on some track that may not be working at that time. It is convenient too, at times when lump coal is being loaded into open cars, and it is desired to load egg or nut coal into box cars. In such cases, where two lump tracks are provided, one with a box-car loader, the smaller coal can be transferred to the track equipped with the loader.

With some coals and when serving some markets, it is a good plan to use a section of perforated plate or a lip screen just before delivery is made to the car so as to remove the last trace of small material. These lip screenings are permitted to fall to the ground to be

Flexible Screens

Note that the eccentric arms are of wood and that the supports for the screens also are of wood, giving maximum flexibility and absence of jar. Screens tend to break the coal. Pieces nearly small enough to go through stick in the perforations and are held there till the hammering of other pieces which themselves are abraded causes the coal caught in the screen to break up and go through. For this reason screens should be just long enough to do their work and no longer.



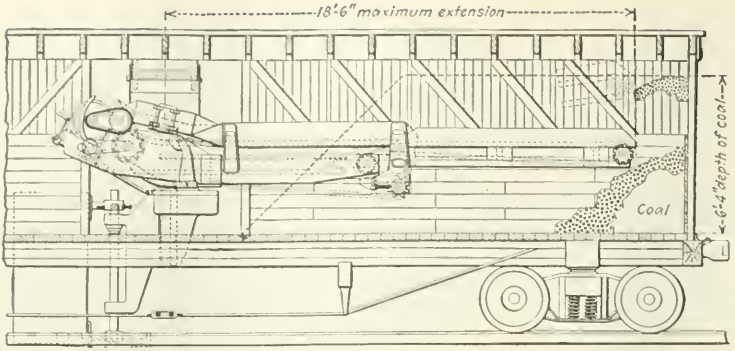
Under certain conditions washing the smaller sizes has proven exceedingly efficient. It gives a beautiful product, and is a simple process where sufficient water is available. These conditions are so infrequently found in the West, however, that it is safe to assume that picking is the only method available for treating the great bulk of the coal. A number of devices are in use for automatically cleaning the mine product, but so far none has been found practical under existing conditions. One mine is now preparing to spiralize its coal. Spiralizing demands the separation of the material treated into a large number of even-sized fractions. Furthermore, the coal must be even texture and substantially dry. I question the commercial success of this installation.

Disposal of waste is frequently a serious problem. Where any appreciable amount of this material must be removed—more than about two tons daily—it may prove economical to install conveyors to take the waste to a bin. Such a conveyor can frequently be placed under the tracks so that the waste as picked may pass to it by gravity without rehandling.

cleaned up later, but where their quantity is great and a rescreening plant is installed, a simple conveyor can usually be arranged to take this material to the rescreened coal elevator or to a conveyor that will deliver it to the fine screen.

Nut and Smaller Should Be Rescreened

Now let us take up the second unit of the plant, the rescreening equipment. In my opinion, for the quantity of coal under consideration, there is actual economy in treating all sizes of nut and smaller in the rescreening plant. The installation of such an equipment may appear like a heavy additional expense, but when consideration is given to the material it replaces, the extra outlay is not great. First, the rescreens themselves merely replace similar pieces of equipment that are omitted from the main structure. The additional expense involved is really that necessary for the elevator and the bins. Offsetting this is the possibility of omitting one or two loading tracks. For in a properly arranged tipple, three of the small sizes, nut, slack and dust, can be loaded on the same track without delay in



Extensible Box-Car Loader

This loader has an extension conveyor that can be used when the loading of the car begins. The drawing shows near the roof of the car the level to which the loader can be tilted so as to fill the car almost to the roofing boards. When the extension is withdrawn the coal can be loaded at the center of the car.

operation, while this same track may be utilized for loading coal direct from the screens.

Coal to be rescreened can be lifted either by an elevator or a belt conveyor. If the bins are to be placed close to the tipple (in which case they should be as close as possible) a vertical elevator should be employed, preferably of the continuous bucket type carried on double strands of heavy-bar link chain. This should have not less than 50 per cent over-capacity, and should run slowly—say at a maximum speed of 70 ft. per min. A well-designed elevator can be relied on to give absolutely no trouble.

Rescreens Should Be Remote from Tipple

For several reasons, it is preferable to place the rescreen bins at some distance from the main tipple structure. Not only will this diminish the fire risk, but it facilitates the placing and loading of cars. In such a case, a belt conveyor should be used for elevating the coal. The bins should be built preferably not less than 120 ft. from the center line of the tipple structure. A distance shorter than this will not permit the proper handling, spacing, and loading of the cars.

Each bin must have a capacity of not less than one and one-half to two cars of its particular size of coal. They may be arranged also so as to load railroad cars either from the bin side or from its bottom, or both. It is preferable to draw the coal from the bottom, so that open cars may be loaded rapidly. Where, upon occasion, nut coal must be put into box cars, it is well to place the box-car loading arrangement at the side of the bins. Where this is done a box car can be spotted at the bin, loaded quickly and run out of the way of any other cars that may be loading other sizes of coal on the same track.

Bin Best Filled by Spiral or Telegraph

Nut coal discharged from the screens should be deposited in the bin by means of a spiral or telegraph chute so as to avoid breakage. Here again, where coal is friable, the loading chute should be fitted with a perforated bottom.

Rescreening screens are limited to two types. The first is the rotary or revolving screen which gives excellent results under many conditions but has a tendency to break down the material handled and increase the amount of small sizes, causing a decrease in selling value. The second is the flexible-hanger type of screen. This is simply a flat shaker screen peculiarly supported and provided with a light flexible ash or hickory frame. It is actuated by the usual eccentrics, but at a somewhat higher speed than the common shaker. The hangers, and eccentric rods are so connected to the flexible frame that they give a peculiar creeping motion to the coal, rolling it over and over, handling it gently, yet securing a complete screening effect.

Shaker Screen Spreads Coal Over Wider Area

This type of screen is apt to yield better results with damp coal than does the rotary screen although either is satisfactory in this respect. The shaker screen has the advantage of distributing the coal over a wider expanse of bin area and is apt to be somewhat lower in installation cost than the revolving type. I am inclined to believe, however, that the upkeep will be slightly greater, although this may be offset by the better preparation secured.

A number of "freak" screens have been designed, some of which do good work. So far, however, none of them has equalled the simplicity or the general efficiency of the devices here described.

Gravity in Tipple Most Expensive of Means

Screened sizes cannot be moved satisfactorily by gravity. This force is entirely too uncertain, dependent upon the weather, the condition of the mine, the condition of the coal, and on a dozen and one other things, making its effect decidedly undependable. A chute that at times permits coal to go down like a mill race, at others will clog up and require the attendance of several men to keep the material moving. Coal should be moved mechanically, not dropped or slid. And in designing a tipple it should be borne in mind that there is no advantage in making a good preparation, and then permitting the coal to be broken just before or when it is being loaded into cars for shipment.

An Elementary Treatise on Coal Mining Physics and Chemistry.—J. W. Whitaker, certified colliery manager and lecturer in the mining department, University College, Nottingham, England, has set down in 268 pages what he believes the coal-mining man should know about physics and chemistry. What he has written, Longmans Green & Co., Fourth Ave. and Thirtieth Street, New York City, has published and it makes quite a readable and valuable book. Those who want an elaborate treatise may be warned that this book starts at the beginning and gives the full range of necessary subjects in less than 250 pages. It gives them, however, succinctly and well, making the book quite valuable to the rank and file of mining men. It measures 5 x 7 ½ in.

Gas Mask, Developed by Bureau of Mines, Absorbs Carbon Monoxide from Inspired Air

Oxides of Manganese and Copper in Grains About Size of Rice Absorb Carbon Monoxide—Useless Where Oxygen Is Deficient—Subordinate Use in Rescue Work—Possible Protection in Mine Disasters

By Guy H. Burrell*

HOPCALITE, the new absorbent of carbon monoxide, is named from Johns Hopkins University and the University of California, where the scientists who developed the material carried on their work. Although carbon monoxide is high in the list of poisonous gases it was not used as a war gas because it dissipates rapidly in the open air and is difficult to produce in lethal quantities under battle conditions. The weight per unit volume of carbon monoxide is so close to that of air that, when a quantity of carbon monoxide is released in the open, diffusion is extremely rapid and the percentage of carbon monoxide present quickly falls to a harmless point. In low percentages of the gas, exposures must be over a period of some time to be effective, and it is only in confined or semi-confined places that higher percentages are apt to be encountered. For this reason the regular troops had no need for carbon-monoxide protection.

However, early in the war much difficulty was experienced in the closed gun turrets of our men-of-war when the guns were in heavy action. Carbon monoxide from the burning powder accumulated rapidly at times in these places, and the men operating the guns were apt to be severely affected. No relief was at hand, as the only protection available was in the form of oxygen breathing apparatus.

Sought for Use of Men in Gun Turrets

Inasmuch as the efficiency of the gunners was dependent on the rapidity of their movements it was entirely impracticable to equip them with oxygen breathing apparatus and an appeal was sent to the U. S. Bureau of Mines, then conducting all research into the questions of poison gases and protection therefrom, for a lightweight apparatus, preferably built along the lines of the army gas mask, which would protect the gunners effectively from carbon monoxide.

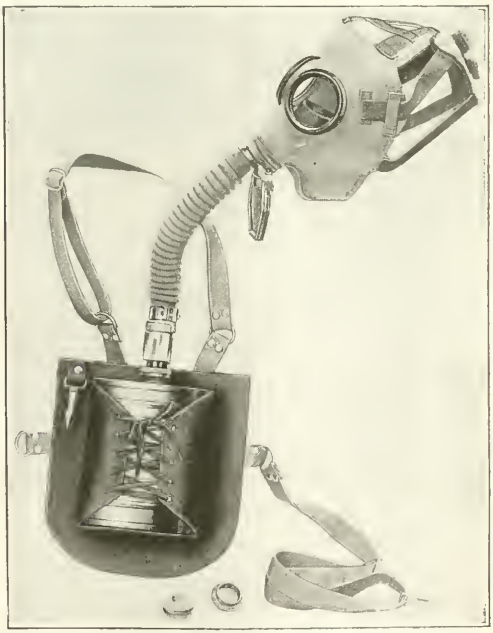
The big advantage of the regular army gas mask, of course, was its light weight. The problem resolved itself into finding a substance to use inside the canister which would destroy or absorb carbon monoxide. With the oxygen breathing apparatus the wearer is entirely independent of the outside air. He gets the necessary amount of oxygen to sustain life from the oxygen bottle which is a part of the apparatus. On the other hand, with the gas mask the oxygen is obtained from the atmosphere in which the wearer works.

Upon inhalation air is pulled through the canister, the poisonous, obnoxious gases being absorbed, leaving nothing but the pure air to pass through into the face piece and into the lungs of the wearer. It was much easier to find suitable absorbing materials for the ordinary war gases than to find a material suitable for use in a gas-mask canister which would absorb, or otherwise destroy, carbon monoxide. The few substances which would absorb that gas were entirely unsuitable for use in a canister and at best were inefficient.

The research work on war gases and gas masks carried on by the U. S. Bureau of Mines under my direction was divided into sections. A group of scientists in each section worked upon one or two problems. When an important and apparently difficult problem came before the bureau, a group of scientists who had specialized on work of a cognate character were selected. They devoted their entire time to finding a solution.

The scientists to whom fell the task of finding an absorbent for carbon monoxide were Dr. A. B. Lamb, Harvard University; Professor J. C. W. Frazer, Johns Hopkins University; Dr. C. C. Scalione, University of California, and their assistants. After over two years' research, gas masks were produced for use in the navy which would give protection against carbon monoxide.

Hopcalite is a mixture of oxides of manganese and copper. It is brown in appearance and, in the form



DETAILS OF CARBON-MONOXIDE GAS MASK

For many purposes this mask will replace oxygen-breathing apparatus, compared with which it is light and compact. As the oxygen by which the wearer breathes must be supplied by the air the mask is not fitted for work in atmospheres having any marked oxygen deficiency.

*Mine Safety Appliance Co.

in which it is used, consists of hard granules about the size of rice. Physically it is thoroughly suited to gas-mask canisters as in use it retains its form and does not give off any noxious vapors or fumes. After the war the U. S. Bureau of Mines continued its researches into the industrial uses and limitations of carbon-monoxide gas masks. Though the Bureau of Mines has not yet published any of the results of its work, certain data have been obtained from other sources which indicate the possibilities of carbon-monoxide gas masks around blast furnaces, as well as in mining.

For example, at a recent mine fire in the Pittsburgh district, carbon-monoxide masks were used to supplement oxygen breathing apparatus. In this particular case all exploring was done with oxygen breathing apparatus. In several cases, however, it was necessary to put up stoppings in a smoky, gaseous atmosphere where unprotected men would have been greatly handicapped. The problem was simplified by the use of gas masks, which protected their wearers against carbon monoxide and smoke. Inasmuch as the masks are light in weight and give full protection, the work was carried on with much greater speed and comfort than if oxygen breathing apparatus had been used exclusively or if the men had been required to work in short shifts unprotected. Under such conditions the gas mask can be used wherever a safety lamp will burn, indicating sufficient oxygen in the atmosphere to sustain life.

MASK IN POSITION

The mask is used as subsidiary to oxygen breathing apparatus in mine-rescue work.

The carbon-monoxide mask will be useful to shotfirers, who are frequently subjected to carbon monoxide from burning powder. A mask of this character will give them full protection both from carbon monoxide and from the fumes which the blasts create. Looking farther into the future it appears likely that a self-rescue mask will be perfected. This will take the form of a small pocket-size canister fitted directly to the mouth, which would give twenty to thirty minutes' protection to men caught by fires or explosions underground. Unless the atmosphere were depleted of oxygen, which is not usually the case, the men when equipped with pocket self-rescue masks would have twenty to thirty minutes' time to work their way out, and it is the experience of the coal-mining industry that in this time a man under stress of circumstance can travel a considerable distance.

The problem of giving protection to all the many men engaged in fire fighting underground has always been acute. Men equipped with oxygen breathing apparatus are called upon to do the initial exploring work and to chart conditions of the atmosphere in the mine where the work is to be done and to keep ahead of the working force. Notwithstanding all the precautions that are taken to get definite knowledge of the character of the mine atmosphere, some men are almost sure to be exposed to bad air, and if they are not protected they are liable to be adversely affected.

The carbon-monoxide mask will be of greatest value in supplementing the work of oxygen breathing apparatus crews. It can be used, as it were, to protect the secondary operations, after the oxygen breathing apparatus men have determined the conditions that must be met.

With the achievements of the Bureau of Mines and the men above mentioned as a basis, the Mine Safety Appliances Co., of Pittsburgh, Pa., has been making a parallel investigation into the fundamentals of the carbon-monoxide mask, but on a commercial plane. The refinements realized have permitted placing it upon the market as a practical safety apparatus, which will be a great boon to the mining industry and also to other industries and employments where dangerous gases are encountered.

How a Manager Saved Gathering Expenses

IN PARTS of Kentucky each man insists on a room to himself, so that what he mines and loads is his and does not have to be divided with another man who may not be as diligent at his work as is his fellow. This is a great annoyance to a mine manager, for he has to provide twice as many places, and each place involves more development, superintendence, ventilation, wiring for the heading, rail and so forth.

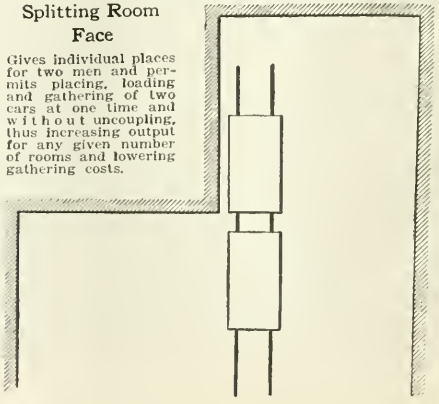
Confronted with this difficulty, R. A. Walter evolved a scheme for the coal operations of the Wisconsin Steel Co. in which the face of each room was stepped the length of a car at the central line of the room. The cutters readily moved the machine back to the face of the step and found cutting easy there, as there was no need to sump owing to the loose end.

Two men were willing to work in the room together, for each man had a place of his own—one took the left face, the other the right. The coal of one man went into one car, the coal of the other man into another car. The advantage was that as one face was a car length ahead of the other, two cars could be put in at one time and could be loaded promptly and without uncoupling.

As a result the gathering cost was halved and development was reduced, as well as the other charges enumerated above. The men were well pleased with the change, for they had the advantage of each other's company without merging one another's earnings. The cutters also found that it added but little to the work to move back one step in the course of the cut.

Splitting Room Face

Gives individual places for two men and permits placing, loading and gathering of two cars at one time and without uncoupling, thus increasing output for any given number of rooms and lowering gathering costs.



Why Not Save Timber Above and Below Ground by Use of Creosote Oil?

ALL OPERATORS have a number of surface structures which would be made vastly more durable by use of a liquid creosote oil such as Carbosota, which once applied arrests decay even more completely than paint, for the latter is merely a surface application which loses its value as soon as it cracks or peels off. Plank and boards impregnated by creosote oil do not need painting; in fact cannot be painted successfully. Fence posts of durable woods such as cedar or chestnut, which resist decay when dry, need treatment only from the base to a point about 6 in. above the ground. The best way to treat them is to immerse the butts in a bath of oil at 175 to 200 deg. F. for four to six hours. The oil is allowed to cool to a minimum temperature of 50 deg. F. for from six to eight hours. The temperature during this second process should not exceed 100 deg. F.

The non-durable species, such as ash, basswood, butternut, beech, birch, cottonwood, elm, sap or second-growth cypress, gum, hickory, red oak, maple, sap yellow pine, Western pines, sycamores, willows and like woods should be treated for their entire length but not so thoroughly as at the butt end. Of course, the bark must first be peeled, as indeed it should be whether the timber is treated or not. With the material removed should be included the fine inner skin of bark that sometimes adheres after peeling. Such posts should have their butt ends immersed in the creosote oil for about an hour, after which the whole piece should be immersed in the liquid for thirty minutes.

May Be Creosoted by All Three Methods

Mule barns and wooden sheds or such portions of them as are not to be coated with paint, should be covered with creosote either by dipping, spraying or brushing, the first being preferred as more thorough. Spraying is better than brushing, as the penetration is greater. When sap pine, cottonwood, ash, beech and birch are treated the cost of the wood per year of service—and that is the right method of calculating cost—is cheaper by 50 per cent, and the woods will have an annual cost 20 per cent lower than that of untreated cedar. All timbers and planks should be treated. Wagon bottoms and bridge plank should also have their natural life extended in that manner.

Before it is treated, however, the wood should be seasoned so as to give the liquid an opportunity to enter the fibers. The natural moisture of unseasoned wood resists the entry of the protective fluid. In brushing with oil it is difficult to get the liquid to enter cracks and joints. With a spray this desired end can be better achieved. Where wood is in contact with the ground or with concrete, brick, masonry or other wood, it is likely to decay and a preservative is more needed at this point than at any other. A place needing particular attention is in the mortise-and-tenon joint so frequently used in framing.

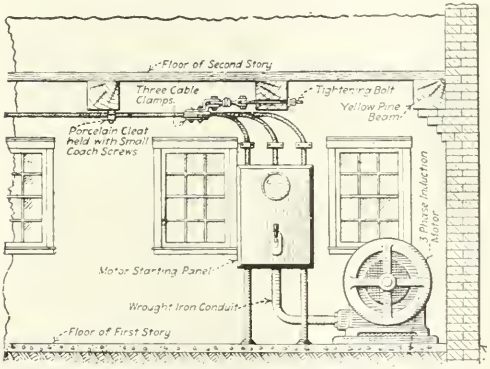
With the top-coat brush treatment a gallon will protect 100 sq.ft. of surface; with two-coat spraying 50 per cent more fluid will be required, and with dipping, for from five to fifteen minutes, one to one and a half gallons will be needed for the same surface area. The creosote oil when applied by brushing or spraying should be heated to about 150 deg., and with dipping, as has been stated in regard to fence posts, the temperature should be between 175 and 200 deg. F. Carbosota, which flows freely at 41 deg. F., should not be applied unheated unless the atmospheric temperature is above 60 deg. F.

Underground, the germs to be counteracted are of a different character from those on the surface, but the treatment is just as much needed. In view of the fact that decay is promoted by the presence of much timber and that the germs are readily carried by the air current, the need is greater. In fact the cost of timber renewal is not measured alone by the timber, the framing and the actual labor involved but also by the work of removing loose rock, timbering unnecessary falls and the hampering conditions under which the replacement must be performed during the operation of the mine or around pumps and cages which must often be kept going when the mine itself is idle.

How Large Insulated Conductors May Best Be Dead-Ended on Floor Timbers*

By Roy J. Turner
St. Louis, Mo.

A CONVENIENT and economical method of dead-ending large conductors, covered with heat-resisting or slow-burning insulation, to wooden beams is shown in the accompanying illustration. In this instance the timbers are the floor beams of a frame building and are directly above a motor switchboard.



TO TAKE UP STRAIN OF BIG CONDUCTORS

The conductors are attached by cable clamps to two Z-shaped irons which are themselves bolted to a rod which passes through floor beam of the second story. A strain insulator in the line prevents the wire grounding to the floor timbers.

The same method could, however, be applied with equal efficacy in other locations.

Cable clamps of the type here shown in combination with an eye-bolt provide a means whereby the conductors may be drawn taut and held firmly. Their application renders unnecessary any "making up" of the heavy conductors. It should be noted that no copper is wasted in making such a termination.

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Bradstreet's Index Number Advanced 0.9 Per Cent Between Sept. 1 and Oct. 1.—An increase of 0.9 per cent was noted in Bradstreet's index number as of Oct. 1, compared with the level of the previous month. On the first of the current month the number was 11.1879. On Sept. 1 it stood at 11.0868. Seven groups of commodities advanced during September, these including fruits, textiles, metals, coal and coke, naval stores, building materials and miscellaneous products, while six, breadstuffs, live stock, provisions, hides and leather, oil and chemicals and drugs, went lower.

Danger of Opening Black Blasting Powder Kegs with Wooden Tools*

Remove the Slide Which Covers the Bunghole—Do Not Seek to Make a New Hole—Eighteen Men Killed by Neglect of This Rule

By S. P. Howell†

THE Bureau of Mines has repeatedly called attention to dangerous practices in the transportation and opening of kegs of black blasting powder. In 1914 Edwin Higgins ("Prevention of Accidents from Explosives in Metal Mines," Miners' Circular 19, Bureau of Mines, p. 15) stated "canisters should always be opened by removing the bung. To use a pick or other sharp tool for cutting a hole in the canister is dangerous. After the necessary amount of powder has been taken out, the canister should be kept closed. The powder should always be handled at a safe distance from an open light."

In 1919 George S. Rice (Monthly Statement of Coal Mine Fatalities for June, 1919, Bureau of Mines, pp. 16 to 18) called attention to the dangers that arise in underground transportation and handling of explosives, and called special attention to the danger of hauling explosives in motor trips; the unnecessary risk involved in hauling men on the trip at the same time, and the necessity of keeping open lights away from black blasting powder.

In 1919 the writer ("Sensitiveness of Explosives to Frictional Impact," Technical Paper 234, Bureau of Mines, pp. 12, 15) called attention to the fact that black blasting powder is not as sensitive to frictional impact as the nitroglycerin dynamites and the gelatin dynamites, but black powder may be ignited by direct impact and without the presence of any preliminary spark. It is well known, however, that black blasting powder is very sensitive to ignition by spark flame or heated materials, and these may be produced by an electric current, by an open light, by incandescent particles from a pipe, cigar, or cigarette; by tearing of metal sheets or scraping of metal against metal, and possibly by other means.

Three Accidents Prove That Danger Exists

The above discussion will serve to introduce a newly-recognized hazard—the ignition of black blasting powder by the forcible opening of kegs with wooden tools. The details of three accidents in which kegs of black blasting powder exploded instantly when a wooden tool was driven forcibly through the top of the kegs are as follows:

(1) In 1915 a powder man employed by a coal-mining company stated that he was opening a 25-lb. keg of black blasting powder by driving a hole in the top with a wooden sprag when the powder in the keg he was opening ignited. This caused the ignition of fifty-two additional 25-lb. kegs of the powder, and the fatal burning of this and another powder man. The man making this statement lived five hours after the explosion.

(2) In 1917 an explosion of forty-one kegs of FFF black blasting powder occurred on the track bench of a cement quarry. This explosion occurred the instant that the workman, who was opening the keg with a wooden moil (made from a pick handle), had driven it through the keg with a machinist's hammer. The workman who was opening the kegs lived long enough to state that when he hit the moil with the hammer, "Puff! everything went up." This explosion caused the death of eight men.

(3) In 1920 a powder magazine containing over twenty 25-lb. kegs of black blasting powder exploded, killing eight men, six of whom lived for several hours after the explosion. This magazine was used as a station for distributing explosives to the miners, and this fact accounts for most of the fatalities.

The verdict rendered by the coroner's jury was that when striking a keg of powder with a mallet it caused a spark which ignited the powder. It was customary to open the kegs with a wooden mallet and wooden pins, and these were found after the explosion.

Difficult to Explain How Ignition Occurs

It has not been definitely established just how opening a keg with a wooden spike, wooden sprag, or a wooden mallet causes explosions, as it appears to be very difficult to strike a spark with wood against metal, but it may be that in breaking the keg, the sharp points of the sheet iron would be driven inside of the keg; that two or more of these points may have been made; and that in rubbing over one another, these points or the edges of the strips may have caused a spark, or it may be that the strips or points may have been driven forcibly against the side of the keg and produced sparks, or it may be that the wooden tool was covered with a gritty substance, thus facilitating sparking, or it may be, and the possibility of this has been demonstrated at the explosives experiment station of the Bureau of Mines, that the fine particles of black blasting powder remaining in the angular groove of the chime, or rim, of the keg received the impact from the wooden tool and this impact ignited the particles.

Regardless, however, of just how a spark may be produced, the evidence presented above clearly condemns the opening of kegs of black blasting powder with wooden tools by punching a hole through the top of the keg. The usual 25-lb. black blasting powder kegs are provided with a bunghole and a cap for closing it, and in all cases the powder should be poured from the keg through this bunghole.

The excuses for not doing so are usually that the bunghole is so small (diameter, $1\frac{7}{8}$ in.) that too much time is consumed in getting the powder out of the keg through this bunghole, or that the bunghole is so far from the chime ($1\frac{1}{2}$ in.) that all the powder cannot be poured out of the keg.

In view of the danger of using other methods of opening the kegs, these excuses cannot be given serious consideration. A keg of FFF black blasting powder can be emptied through the bunghole in 40 to 50 seconds, leaving less than 100 grams (about $3\frac{1}{2}$ oz.) of explosive in the keg, and it is not difficult to get all but half an ounce of the powder out of a keg by shaking.

Eighteen men were killed by the three accidents just recounted, and the fatality rate was high either because the magazine was used for a distributing station or because too many men were in the danger zone or both.

The Bureau of Mines therefore recommends that kegs of black blasting powder be not opened with any tool, whether of metal or wood, and that the keg be emptied only through the bunghole provided for that purpose.

*Article published as part of "Reports of Investigations of U. S. Bureau of Mines," and entitled "The Menace of Opening Kegs of Black Blasting Powder with Wooden Tools."

†Explosives engineer, U. S. Bureau of Mines, Washington, D. C.

Coal-Loading Shovel with Jaws That Close Horizontally Will Build Packwalls

THE machine shown in the accompanying illustration, for which a patent has been granted, but which has so far not been constructed, is an attempt to utilize the general principles of steam-shovel construction, power and reliability to use underground. It is a radical departure, however, from ordinary steam-shovel construction in that the scoop or dipper is built in halves that open and close with a horizontal instead of a vertical movement. This enables the work of digging to be performed in places restricted as to height. The shovels themselves may be made quite flat so as to require no more space above the car than is necessary for hand loading.

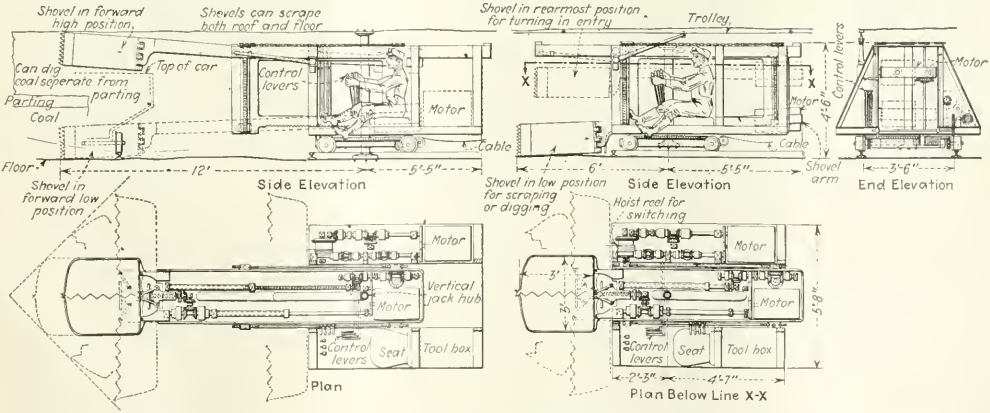
Essentially this machine will consist of a low truck provided with a revolving platform upon which the shovel arm will be mounted. The arrangement will be such that this arm can be moved both vertically and horizontally. The shovel proper is designed to be built in halves each of which is pivoted so as to swing horizontally from a point near its rear inner corner. In action these halves open and close like two jaws. They are provided with tusk or extension teeth at their forward edges while their bottoms are serrated or saw toothed. The inventor, who has had experience in steam-shovel work, feels assured that they can be made to bite coal out of the solid or scrape it clean from the floor.

For this consummation the machine, being comparatively light in construction, must be anchored firmly in place; otherwise it would not be able to exert sufficient force on the coal. In other words, the weight of the machine alone would be insufficient to hold it to its work and other means to accomplish this end would have to be provided. Accordingly a heavy jack will be mounted in the center of the revolving table. When this is set up in place the whole upper mechanism of the shovel will revolve about it as a pivot, the jack furnishing ample support for all operations of the machine. Great force may thus be exerted by the shovel when in operation.

Either electric current or compressed air will be used to actuate this machine. In either case one motor mounted on the main platform will provide power for swinging the machine, for self-propulsion from place to place, for longitudinal movement of the shovel-arm cage and also for a cable reel whereby cars may be moved in case no locomotive is available for this purpose. A second motor will open and close the shovel jaws and raise, lower and extend the shovel arm. All operations of the machine will be controlled by levers or push buttons within easy reach of the operator when seated.

In operation the inventor expects to open the shovel jaws, crowd them against the coal and then close them. Where excessively hard material or large lumps are encountered the jaws will be repeatedly opened and closed quickly or snapped, thus forcing the teeth through material otherwise impenetrable. In discharging after being opened the jaws will be given a quick jerk, thus jarring their contents loose. With jaws closed the shovel will be used as a ram for pushing cars or for moving back the topping thereon. Packwalls also will be built up by this machine, it being first used to shovel the pack material into place, after which it may be firmly tamped against the roof by using the shovel when closed as a ram. As this machine is full-revolving, it will be able to load cars upon either its own or a parallel track, thus tending to obviate the greatest difficulty that hitherto has beset mechanical loading, namely, keeping cars to the machine. The machine was invented by S. C. Corrigan, a civil engineer of New York City.

ONE HUNDRED AND EIGHTY-TWO FEET OF COAL.—The Oliphant-Munson mine in Alberta, Canada, is one of the most remarkable mines in the world. The main excavations have been along the outcrop, said George Sheppard, in an address befor the Institution of Mining Engineers, Stoke-on-Trent, Sept. 14, and despite long continued operations in this area there are still many millions of tons of good grade coal in sight. Two complementary seams (originally forming the flanks of a small anticlinal fold) have been faulted together at the apex, thus producing a workable deposit 182 ft. thick. The daily output is 1,000 tons.



DESIGN FOR A HORIZONTAL OPERATING STEAM SHOVEL FOR LOADING COAL

The dipper stick of the shovel is not planed to dip but goes forward horizontally. The bucket is to open horizontally, and when closed to be used as a ram to drive rock packing into place, should longwall advancing be the method of mining. The shovel is to be provided with upward and downward play so that it can scrape roof and floor. A heavy jack at the center of the shovel structure will hold the machine in place

Two Thousand Five Hundred Members Attend Sessions Of National Safety Council's Congress in Boston

Haulage Costs in Metal Mining Greatly Exceed Those in Coal Mining—Large Car vs. Small—Blasting in Hillside to Extinguish Mine Fire—What Deprivation of Oxygen Will Extinguish Fires in Mines?

By F. H. Kneeland*

UNPRECEDENTEDLY successful was the Tenth Annual Safety Congress of the National Safety Council, held in the Boston State House, Sept. 26 to 30. About 2,500 persons attended. The whole of New England exhibited the keenest interest. Boston opened the State House to this convention, breaking thereby a long-established precedent, for never before has the building been so used, and New England declared a Safety Week in honor of the occasion.

Beyond a statement that Arthur Young was elected president of the Council for the coming year, no further reference will be made to the business of the general sessions, the interest of the readers of *Coal Age* centering in the mining section, which began its meeting on Tuesday morning with B. F. Tillson presiding. The session was devoted to the general subject of "Underground Transport" and papers were presented on the following topics: "Storage-Battery Locomotives (in metal mines)," by E. V. Daveller, general superintendent, and R. E. Renz, chief electrician, of the Butte & Superior Mining Co., Butte, Mont.; "Trolley Locomotives," by Frederick W. Whiteside, chief engineer of the Victor-American Fuel Co., Denver, Col.; "Compressed Air Haulage," by Guy J. Johnson, safety engineer of the Homestake Mining Co., Lead, S. D.; and "Storage-Battery Locomotives (in coal mines)," by Charles E. Stuart, consulting engineer, of New York City.

What Is Safe Is Usually Also Efficient

Questions relating to the use of the storage-battery locomotive evoked animated discussion. In presenting the subject for consideration Mr. Tillson remarked: "Safety and efficiency are interrelated and in a measure interdependent. The safe way of doing anything, usually, if not always, is the efficient way."

The question was raised by Mr. Stuart why haulage cost is greater per ton-mile in metal mines than in coal mines? Several reasons were advanced to account for this fact. It was brought out that the mining methods pursued by the two sections varied widely and that the workings of metal mines not infrequently spread over comparatively large areas. Existing metal mines seldom are laid out and operated in such a manner as to permit storage-battery locomotives to work to the best advantage. Like loading machines they find the mines developed to suit another and earlier form of operation. One man stated that the average costs of transporting ore ran from 35c. to 70c. per ton-mile. Mr. Johnson said, however, that the Homestake Mining Co., operating on fifteen levels and producing 1,500,000 tons of ore per year, was able to transport it by means of compressed-air haulage at a cost of 14c. per ton-mile.

Why Metal Mines Adhere to Small Cars

Short hauls are, of course, more expensive per ton-mile than long ones, while hand tramming when practiced, even over short distances, adds greatly to the cost. Metal mines as a rule use smaller cars than do coal mines, which practice tends to increase the cost of haulage.

Is the small mine car of the metal mine a necessary evil? One instance was cited of where a mine with a 24-in. track gage is using a locomotive that is 42 in. wide. Coal mines often have developed from small to large operations, but in general the cars have been increased in size as the mine has grown. Why has not the metal mine followed the same process of evolution? This may be partly attributable to the fact that in metal mines much hand tramming is still practiced. A man can push a 6-ton load around a sharp curve on a narrow track gage but could not perform the same operation, or at least not with equal ease, if the gage were wide.

Someone stated that an increase in the size of car and the weight that it carried was almost invariably accompanied with an almost corresponding increase in the number and severity of the accidents sustained. Thus safety is almost diametrically opposed to size, or varies inversely with it. Succeeding speakers appeared seriously to doubt this statement. One said that large wide cars increased some hazards but decreased others. While they facilitated tonnage production they augmented the danger of roof falls, and, furthermore, a small car may be readily stopped by its brake, whereas a large one cannot be so speedily brought to a standstill. Inability to stop a car or a trip promptly is the cause of many accidents. Furthermore wrecks of large cars are more serious and costly than those of small ones.

On headings clearance along the sides of the track may be kept ample even though the cars be large, but in rooms this is a more difficult matter. This is particularly true of the room timbers, and there seems to be a fairly definite relation between the size of the car and the number of accidents occurring at this point. If the cars are moved mechanically, however, and no hand tramming is performed this is not strictly true.

Denies That Small Cars Are the Safer

Another speaker averred that, other things being equal, the large car was safer and more efficient than the small one but that track gage and track workmanship were important considerations. Small cars, being lighter than large ones, are more subject to wrecking. The track must be made of a size and weight to suit the cars handled. In some metal mines roof pressures are abnormally high and this in some cases limits the size of the entries, which in turn limits the track gage and size of car that can be used.

New coal mines use large cars and small locomotives and have comparatively many accidents. As the operation grows the size of the haulage units is increased and the frequency of accidents diminishes. Immunity from mishaps, however, depends largely on the human element and the safety inspector must teach the men to handle the size of equipment used.

At the afternoon session D. E. A. Charlton presided, and E. L. Soloman, mechanical engineer for the Kingston Coal Co., read a paper on "Animal Haulage in Anthracite Coal Mines." He prefaced his paper by stating that the safety committee of his company had adopted a "safety calendar" that had given good results. This calendar contains photographs of various operations performed in the everyday routine of mining. Under these pictures is printed the mine law pertaining to that particular operation. The basic idea of these calendars is that, being distributed freely among the miners, they will be taken home and hung up in a prominent place. Although the miner possibly cannot read English himself some of his children doubtless can and they immediately ask their father if he does the kind of work shown in the picture in the manner prescribed. This "starts something" that results beneficially to all concerned.

Discussion following this paper brought out the fact

*Associate Editor, *Coal Age*.

that a mule or other animal, like a man, renders a measure of work in approximate proportion to the care and common sense bestowed upon him by his employer. The mine mule's "general cussedness" is in large measure the result of abuse or neglect.

R. W. Magraw not being present, his paper, which also dealt with animal haulage, was read by the secretary, R. H. Seip. The next paper, on "Block Signal and Dispatching Systems in Mines," by R. T. Murrill, in the absence of the author was presented by Mr. Charlton. This paper, while dealing exclusively with metal mines, described the various signal systems that had been tried and found successful. It was well illustrated with photographs that were passed around through the audience while the description was being read.

At the conclusion of this paper C. B. Hodges in discussing it stated that the tipple of the mine where the automatic block-signal system described was in use looked much like a railroad terminal except that more trains were handled, while the tracks resembled those on the main line of the Pennsylvania Railroad. Here twelve compressed-air locomotives delivered 22,200 tons of ore per day, each trip consisting of twenty 5-ton cars. These were discharged five at a time in a rotary dump. Compressed-air haulage had been selected at this mine on account of its safety.

Air Locomotives Take Up Heading Clearance

Further discussion brought out the fact that the width of air locomotives reduced the clearance alongside them, the tanks being from 30 to 36 in. in diameter. These sometimes filled the heading to the danger point. Furthermore the exhaust of these machines not infrequently caused an objectionable fog in the entry. As the exhaust is made at about 60 deg. below zero it lowers the temperature of the heading air below the saturation point, resulting in the formation of a mist or vapor.

No limit can be set on the availability of the storage-battery or any other type of locomotive. In this respect each installation is a problem in itself, and must be treated accordingly. In substituting mechanical for animal haulage the locomotive often is called upon not only to transport a much larger tonnage than the mules have been hauling, but to move it over much greater distances. It is no wonder then that haulage and gathering motors sometimes fail to do all that is expected of them, or, rather, all that some oversanguine official hopes that they will do.

Wednesday morning's session, at which Mr. Tillson presided, was devoted to the general subject of "Mine Fire Prevention and Fire Fighting." It was treated in its relation to anthracite mines by W. L. Jacobus, of the Susquehanna Collieries Co., of Wilkes-Barre, Pa. Mr. Jacobus dwelt chiefly on the advisability of sealing as a means of fire fighting and gas analysis as a means of determining when the fire is extinguished.

The second paper was on the same subject and was written by H. H. Otto, of the Lehigh Coal & Navigation Co., of Lansford, Pa. In the absence of the author this paper was read by Mr. Tillson. The next two papers, by Joseph W. Reed and G. M. Gillette, respectively, both of the Consolidation Coal Co., dealt with fires and fire fighting in bituminous mines. The latter paper was illustrated with lantern slides of a fire in a remote new mine in Letcher County, Kentucky. In this case when flames were issuing from the main slope, so that the erection of a stopping in it was impossible, the opening was closed by blasting down the mountain side, which rose precipitously above the slope mouth. The fire was brought under control and finally extinguished after a hard fight, which, however, lasted only a few days.

The concluding paper of the session, treating of fires in metal mines, was written by H. M. Wolflin, of the California Industrial Commission, San Francisco, Cal. This paper, unfortunately, held little interest for coal men. It was read by Mr. Tillson in the absence of the author.

Discussion on all papers was reserved until all had been read. This discussion while not lengthy brought out several interesting facts. Thus the question was asked, "How low must the percentage of oxygen in the air be in order to extinguish a fire?" The answer was made that one fire that had been burning for about two weeks was extinguished by an atmosphere that contained 16 per cent of oxygen. No gas was present in the section of the mine affected and the open lights employed went out. Farther inbye the atmosphere contained only 7 per cent of oxygen. In quelling a fire at Sunnyside, Utah, the mine was sealed for thirty days and the oxygen content of the air reduced to 4 per cent. In this case dead air within the sealed workings was circulated in order to cool down the hot area.

Another question then asked was: "Has air depleted of oxygen, such as flue gases from a power plant, ever been used to smother a mine fire?" No one knew of such a case but the suggestion may be a valuable one nevertheless. It was stated by one speaker that a little fire in a large area presented much greater difficulties than a big fire in a small area. Some fires have been purposely allowed to burn themselves into sizable proportions before final sealing was attempted. In the Georges Creek region an old fire of vast extent has doubtless been smothered repeatedly only to break out again with the admission of air. This is on account of the heat of the coal and the surrounding strata.

Shallow Mine Fires Are Fed From Surface

Bratticing to smother a fire is ineffective where the ground is badly crushed, as air finds its way to the fire through these openings, rendering the stopping of little value. In sampling gas from a fire the place where the sample is taken is important. For this purpose air that has passed the fire should invariably be taken and not merely air at some point behind the fire.

Water sometimes is poured onto a mine fire by means of boreholes drilled through from the surface. Silting also may be performed successfully sometimes through such holes, care being taken to use incombustible material such as tailings or crushed rock for this purpose. A passage, such as a heading, that is full of caved material cannot be relied upon to exclude the air sufficiently to extinguish a mine fire.

After the election of officers to serve during the ensuing year the meeting adjourned. B. F. Tillson was re-elected chairman and R. H. Seip, secretary. G. M. Gillette, John L. Boardman and A. M. Connibear were elected as first, second and third vice-chairmen, respectively.

Thursday morning's session was devoted to the general subject of "Maintaining Interest in Safety." The first paper dealt with the question of maintaining this interest among executives and was to have been presented by W. H. Moulton and William Connibear, superintendent and safety engineer respectively of the Cleveland Cliffs Iron Co., of Ishpeming, Mich., but in the absence of both authors it was read by Mr. Tillson.

The second and third papers, on "Maintaining Interest Among Foremen and Shift Bosses" and "Among Miners," respectively, were written by Thomas Cowperthwaite and N. D. Hubbell, respectively. In their absence the papers were read by Mr. Seip and Mr. Johnson. A fourth paper was then presented, on retaining the interest of the miner himself. This was by John T. Bradley, of W. J. Rainey, Inc., of Uniontown, Pa. Mr. Bradley not being present, his paper was read by Mr. Tillson.

Safety Inspectors Accompany Shift Boss

Discussion was led by Mr. Johnson. The question was asked: "Should safety inspectors make their inspections in the company of the shift boss?" Mr. Seip stated that he invariably made his trips in this manner. It is much more advantageous to follow this procedure, as in such a case any dangerous condition found can be taken up immediately and in a personal way, so that no hard feelings will result. If the safety inspector, on the other hand, goes on his inspection trips alone the operating official is likely to conclude that he is "snooping" around for the sole purpose of finding fault and with the idea of "putting something over on him."

"How about prizes and bonuses?" was asked. Mr. Seip replied that with the company for which he worked (New Jersey Zinc Co.) every shift boss that has a clear acci-

dent record for a month gets a bonus of $5. In addition to this there is a semi-annual bonus of $20 if his record shows not more than one accident per 2,000 shifts or 1,600,000 man-hours worked. Another annual bonus of $20 also is provided on the same terms. In addition to all of these another bonus of $20 is paid on a time-lost basis. In order to win this latter bonus the men under the foreman or boss must not lose more than 0.4 per cent of their total working time through accident or injury sustained from accidental cause. If a man wins all the bonuses possible he receives $140 of extra money per year.

As these various bonuses are reckoned on the basis of a percentage of the time lost and of the accidents per unit of man-hours worked, there is no advantage to the man who has charge of only a few men as compared to the one who has a big gang. The bonus as paid on this basis is a powerful stimulus to safer working methods. One day or more of lost time arising from accidental cause is considered as an accident.

The question was asked if accident records were ever padded. Reply to this query was in the negative. When a man is injured he is sent to the hospital and may not return to work until he is given a release from that institution by the house physician. Thus neither the man himself nor the foreman can pad the accident record in any way.

Pays to Advertise Safety to Mine Workers

Bonuses, suppers, banquets and the like are in reality only one form of advertising. It matters little what exact shape this advertising takes so long as it keeps the subject of safety constantly before the men and the bosses. One speaker related that his company once tried the experiment of giving a safety bonus to the men themselves. This took a somewhat peculiar and what to some might seem a ridiculous form. The men were working in gangs and each month that a gang got through without an accident they were treated to cigars "on the company." These were passed out by an official higher up than their foreman, who made it his business to talk pleasantly with the men and "jolly" them about their record. After a few months the men began to look forward to their "safety smokes" with no small degree of pleasure. But one day one careless youth smashed his finger. The joshing and general tormenting that he was subjected to as a result was sufficient to cure not only him but all other members of the gang of taking needless risks. In many instances a man fears the taunts of his fellows far more than he does either the displeasure of the boss or his own personal inconvenience.

Bonuses may take other forms than cash payments. One company pays the expenses of some of its men to the congresses of the National Safety Council and to various meetings of a similar character. The men are anxious to win these free trips and the rivalry between them is keen. It was suggested also that a bonus when paid in cash might well be distinguished in some way from money received as regular wages. Thus wages might be paid either in check or in ordinary currency, and bonuses might be paid in gold.

Chase Men from Hospital to Better Record

A bonus may become a curse if records are in any way padded and injured men are not promptly sent to the physician for his attention. Some foremen have been accused of chasing a man out of the hospital in order to maintain a good record.

Miners often "buck" safety measures because they believe that they are prompted by base, selfish, or mercenary motives. In this connection miners' safety committees are highly advantageous. Contract miners usually like to avoid work on such committees but day men welcome the change from their daily routine.

Following the discussion of the above papers, C. L. Colburn of the U. S. Bureau of Mines, co-operating with the mining section of the National Safety Council, presented an interesting paper on his observations in various coal- and metal-mining camps. This paper was well illustrated with lantern slides and showed safe and unsafe methods of performing many everyday operations both above and below ground.

Friday morning's session, over which Mr. Tillson presided, began with a paper by Mr. Seip on "Travelingways and Signs." This took up the various means of exit from a mine and the methods to be employed for marking them so that a man could readily find his way out quickly in case of accident. So far as possible wordless signs should be adopted, as the men who may need the signs most are often those who cannot read English or read it only with difficulty. Not only should the roads leading outward be plainly designated but they should be safe in themselves—that is, they should, if possible, be routes used for no other purpose than the passage of men.

In the discussion following this paper the question was asked if it was customary to take new or "green" men through the mine in order to familiarize them with the routes of egress. This was answered in the negative. Such a practice was unnecessary as the experiment frequently had been tried of taking utter strangers into the mines and asking them to find their way out. This they unfailingly did without difficulty. It was considered that if those unaccustomed to mines and mining could find prompt egress, men who made mining their business would be able to do at least as well.

Richard Maize, of Uniontown, Pa., a district mine inspector, called attention to the inadvisability of the promiscuous use of the danger sign and cited several instances where this sign had been used at points where real danger either did not exist or was present only periodically. The employment or posting of the danger sign at such points tended only to cheapen its warning and render the miner callous or incredulous when he saw the same sign displayed at some point of actual and obvious peril. He believed, therefore, that no sign at all should be used except at places where real and continuous danger was present. In substantiation of this belief Mr. Colburn stated that in his travels through the mines of the country he had observed that the word "danger" was often employed where "caution" was really meant. He suggested, therefore, that this word be substituted at points where peril was present only periodically or required the presence of the man and the locomotive in order to exist at all.

Piping Drinking Water Below Ground

Provisions for drinking water, particularly underground, was the subject of the next paper, which was written by C. B. Yates, superintendent of the Homestake Mining Co., of Lead, S. D. This described a somewhat elaborate system of water piping and drinking fountains installed underground. At Lead it is the endeavor to bring water to within 500 to 600 ft. of the men when at work. To this end bubbling fountains are placed at the shaft bottom and at the more important points throughout the mine. Some of these are as far as 1,500 ft. from the bottom of the shaft. Most of the men travel the necessary 500 or 600 ft. to get a drink of fresh water. Some, however, prefer to carry the water to their working places and drink it there.

In the discussion following the presentation of this paper it was brought out that one large bituminous coal company apparently pays more attention to the provision of drinking water for its mine mules than for its men. Drinking places are provided for the mules but none for the men, they being expected to carry their water into the mine with them. This, of course, is no particular hardship on the miners, as water taken into the mine warm soon becomes cooled to a palatable temperature. As for town supply this company periodically inspects all springs in the vicinity of its camp, any source found infected is promptly contaminated by filling it up with rubbish or other refuse to such an extent that no one would think of using the water from it for potable purposes.

The third paper of the morning was by Dr. R. R. Sayers, chief surgeon of the U. S. Bureau of Mines, and had for its subject first-aid stations underground. The author strongly advocated the combination of first-aid stations and refuge chambers. Such a place should be of sufficient size to hold fifteen to twenty men without overcrowding,

should be provided with a concrete floor and, if possible, with whitewashed or cement-coated walls and a white-washed ceiling. It should be built, if practicable, immediately adjacent to the underground office of the mine foreman or some other responsible official. In addition to the requisite first-aid supplies, it should contain, if it is to be used as a refuge chamber, a keg or barrel of water. The contents of this cask should be changed at least once a week and the cask be kept sealed in some manner. Doors of ample width should be so made as to close practically airtight and if compressed air is used in the mine a pipe fitted with a valve at its extremity should lead into this chamber. If possible, also, a telephone with an independent line leading upward through a borehole to the surface should be provided.

In time of disaster men could go to this room, shut themselves in and wait for rescue. They would be provided with a supply of drinking water and if a borehole through the roof were part of the equipment of the station they could communicate with the surface, and in an emergency food could be lowered down the hole. Air might also be supplied either through the air pipe as above suggested, or, if this was not present, through a small pipe or hose lowered through the borehole.

Discussion following this paper brought out several interesting facts, only a few of which can be repeated here. Some physicians object strenuously to going underground to treat a patient, even though they might make observations on the patient's condition that would be highly valuable in later treatment; others, and these are in goodly number, almost insist upon going into the mine and reaching the patient at the earliest possible moment.

Many mines supposed to be well provided with first-aid equipment and material are found in emergency to be utterly devoid of the necessary supplies. This is the result in most cases of petty pilfering on the part of the men employed. It is for this reason that it is recommended that first-aid stations be placed immediately adjacent to the underground office of some responsible official.

Where Should First-Aid Stations Be Placed?

Some diversity of opinion exists as to the advisability of administering first aid underground, some believing that it is better to transport the injured man to the surface, where good light conditions prevail, than to attempt any treatment in the darkness of the mine. As a rule, first-aid training is given on the surface, but if more underground stations were maintained the men would receive more of their training under usual working conditions.

Several methods have been tried to prevent the theft and consequent lack of first-aid supplies. One company places this material in a tin box on which is pasted an inventory of the various items that that box should contain. Each month an inspection is made by the man held responsible for this box and its contents, whereupon a list of the material actually found in it is sent to headquarters or to the central supply man, who immediately returns the articles necessary to bring the box up to standard condition. No large quantities of first-aid supplies are stolen at any one time. Such thefts are all petty and the value of the material stolen in any one month throughout any mine seldom exceeds $10 or $15.

Another company makes a practice of paying $1 to each man who treats an injured person using the contents of his first-aid package, which is, of course, supplied free by the company. This keeps all those entitled to carry and use such a package on the alert for an opportunity to use it. The result is that no such man is without his little pocket first-aid kit for any appreciable length of time. Providing each shift boss with a locked tin box containing the first-aid supplies, for which he is responsible, is another means of preventing the theft of first-aid material. Placing a trained nurse at the first-aid station on the surface adjacent to the mine mouth relieves the company physician of much work. Such a nurse can treat the majority of injuries sustained within the mine as skillfully and efficiently as can the physician himself.

The next subject taken up was that of underground latrines and refuse disposal. The several means for disposing of refuse were discussed and the advantages and disadvantages of each pointed out. At the conclusion of the paper Mr. Seip, of the New Jersey Zinc Co., exhibited an experimental latrine of the pail or bucket type which had been designed and will be tested out by his company. Apparently this device has many advantages. It consists essentially of a pail or bucket provided with a detachable cover, seat, and bail. The whole device is of metal, is extremely simple and substantial in construction and apparently sufficiently heavy to withstand the hard usage and abuse to which it will undoubtedly be subjected.

In use the bucket latrine is placed within the mine at suitable points within easy reach of the miners. The pails are partly filled with sawdust to absorb liquids and usually some form of disinfectant is added to keep down odors. At periodical intervals full pails are removed and new or cleaned ones substituted. As a rule a bucket remains in use not longer than about one week. When brought to the surface the contents of these latrines may be disposed of in any suitable manner, such as dumping into sewers or septic tanks, burying or incineration. Some system of this kind is a vast improvement over the entire lack of sewage disposal under which many, if not most, mines are operated.

The attendance at the Safety Congress was probably the largest in the history of the council. Between 2,000 and 3,000 people participated in the various sessions. For the first time in the history of the Commonwealth of Massachusetts, the State House was thrown open for convention purposes. This speaks well for the esteem in which the National Safety Council is held by the lawmakers of New England.

Numerous Coal Cases to Be Heard by Supreme Court During Fall Term

A NUMBER of coal cases are on the docket of the U. S. Supreme Court, which reconvened for the autumn term Oct. 3. The call of the docket began Oct. 4 and on Oct. 10 arguments in cases began. Chief Justice Taft is presiding.

Decison may be handed down early in the term of the court in the case of the United Mine Workers of America, who seek to reverse decisions of Arkansas courts assessing the union treble damages in the sum of more than $200,000 for damages to property of the Coronado Coal Co. during a strike.

Coal cases pending on the docket are:

Western Fuel Co. vs. Antone Garcia, from the Ninth Circuit.

Marine Ry. & Coal Co. vs. the United States, from the District of Columbia Court of Appeals.

Morrisdale Coal Co. vs. the United States, from the Court of Claims.

Pine Hill Coal Co. vs. the United States, from the Court of Claims.

Northern Coal Co. vs. the Boston, Cape Cod & New York Canal Co., from the First Circuit.

Lambert Run Coal Co. vs. the Baltimore & Ohio R.R., from the Fourth Circuit.

Alexander Howat vs. the State of Kansas, from the Kansas Supreme Court, growing out of the Kansas coal strike and attacking the Kansas Court of Industrial Relations.

American Coal Mining Co. vs. the Special Coal and Food Commission of Indiana, from the Indiana District Court.

Corona Coal Co. vs. the Southern Ry. from the Northern Alabama District Court.

Hillsboro Coal Co. vs. E. C. Knotts, District Attorney, from the Southern Illinois District Court.

Colonial Beach Co., owners and claimants of the steamer St. John, vs. the Quemahoning Coal Co., from the Fourth Circuit.

Peninsular Portland Cement Co. vs. the Consolidation Coal Co., from the Sixth Circuit.

Problems of Operating Men

Edited by James T. Beard

Tapping Body of Water in Adjoining Mine

Shortwall Machine Cuts Into a Mining Not Shot Down Advance Borehole Gives No Warning of Danger— Light Pressure Head Avoids Disaster Water Accumulated in Slope Removed by Bailing or Pumping

READING the inquiry of a Kentucky superintendent, *Coal Age*, Aug. 18, p. 262, asking for advice in respect to tapping the water accumulated in a slope, by driving an upraise from the mine workings, reminds me of an experience I had in tapping a large volume of water accumulated in an adjoining mine that had been abandoned.

We had no accurate knowledge in regard to the position of the old workings that we were approaching, as no reliable survey of the old mine was available. Fortunately, however, the old works were practically level and, being a drift mine, little danger was anticipated by reason of any great pressure head.

The entry approaching the old workings had taken a slight rise, which suggested caution, and a 12-ft. borehole was kept in advance of the face of the heading as required by the state mining law. In addition to that, all arrangements had been made to avoid a possible flooding of the mine when the water was tapped. It was hoped we would be able to control the flow and drain the old mine gradually.

Precautions Taken To Insure Safety Prove Unavailing

Seemingly, every precaution had been adopted for safety. We had even called in consultation men of known experience and ability to get the benefit of their advice. But, as Robert Burns has said in his ode "To a Mouse,"

"The best laid schemes o' mice and men
Gang aft a-gley,
And lea'e us naught but grief and pain
For promised joy."

It so happened that the old workings we were approaching had been mined with punching machines, and a place had been cut some 8 ft. in depth, but the coal had never been shot down. We were using a shortwall Goodman machine with a 6-ft. cutterbar. Under these conditions, it is easy to imagine what happened.

The 12-ft. borehole, which we kept in advance of the face of the coal, did not reach far enough to give any warning of danger before our machine cut into the old mining, since the total depth of the 6- and 8-ft. cuts was 14 ft. But again fortune favored us inasmuch as the machine opened only a small hole in one corner of the cut.

Nevertheless, the flow of water through that small hole was sufficient to wash aside the machine and threatened to flood the mine. We worked hard, it may be imagined; but our first attempts to plug the hole with brattice cloth and a pine post met with as little success as might be expected had we attempted to dam the Atlantic.

The Trouble Overcome

Finally, we succeeded in setting posts a few feet back from the face and nailing boards on each side of the posts. That being done, the space between the boards was filled with clay, which was well packed. By this means the flow of water from the break was controlled and we had no further trouble.

That experience, however, causes me to say that I would think twice and then again some, before attempting to drive a place up from the mine workings to tap the body of water accumulated in a slope where the pressure is estimated as being about 1,500 tons bearing on the coal at the foot of the slope.

My advice is to bail the water from the slope in the manner suggested in the reply to this inquiry. Apparently there is nothing to prevent removing the water in that way and it is the only safe method to adopt.

Pikeville, Ky. GEORGE EDWARDS.

ANOTHER LETTER

REFERRING to the question of draining a slope filled with water, by tapping it from below, as suggested by a Kentucky superintendent in *Coal Age*, Aug. 18, p. 262, allow me to add a few words endorsing what has already been said in the reply to this inquiry.

The slope is described as having an inclination of 45 deg. and 700 ft. long. The calculation given in the reply shows that the pressure of the water at the foot of the slope is 1,515 tons, or nearly 215 lb. per sq.in. That being the case, the proposition of tapping the water from the bottom is entirely too dangerous to be considered.

It would seem to me strange if any practical miner could be prevailed on to undertake the work of driving a place up under this great lake of water. My experience is that no man could be found who would be willing to undertake such work; nor would any miners stay in the mine below if it was to be attempted.

In the first place, let me say, this slope should not have been abandoned and allowed to fill with water, when only 100 ft. remained to be driven in order to reach the mine below. The superintendent should have foreseen the situation that he now is facing, in reference to unwatering the place.

Safety First and Always

However, the present problem is to find the most effective means of getting the water out of the slope. Let me say that the editor has handed this superintendent "safety first" in the reply he has made to the inquiry. Probably the best and cheapest method that can be adopted is to use a sheet-iron skip, as he has suggested.

If there is any reason why a skip cannot be installed for bailing out the water, it only remains to set up a pump at the surface and start pumping the water from the place. In adopting such a plan, means should be used to ventilate the slope as the water is removed, as there is every chance for blackdamp to accumulate in the place and make it unsafe for any one to enter for the purpose of adjusting the line of pipe and lowering the pump as the work proceeds. OSCAR H. JONES.

Crawford, Tenn.

Driving Entry on a Curve

Simple and practical method of driving a curved entry in a mine—Entry first laid off on paper and offsets to survey line scaled to find distances to ribs at each five-foot station on survey line.

REFERRING to the method of laying out a track curve in a mine, *Coal Age*, Aug. 25, p. 302, kindly permit me to give what I consider the simplest way of driving the entry, on such a curve, and keeping the entrymen on line, so as to avoid any bad jogs in the ribs.

After experimenting for a number of years with various schemes and even preparing a table of deflections for curves of various radii, I have concluded that the simplest way of laying out the work and keeping the entrymen on the desired line of curvature is to follow the method that I would call the "Sidenote method." This method will be found described on page 33 of McCrystie's book on Mine Tracks.

Regarding the offset method by tangent and chord deflections, described in the reply to this inquiry, great care is required in the alignment of the sev-

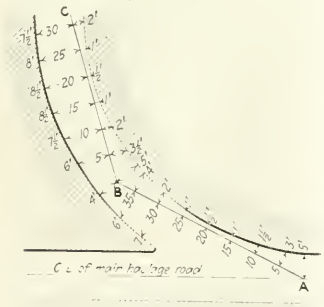
eral points. To insure accurate measurements and alignment, in the use of that method, it will be generally necessary for the engineer to set each chord point himself.

My practice has been to plot the desired curve on a large scale, in the office, drawing the entry ribs and line of survey, as shown in the accompanying figure. The map may be drawn to a scale of 5 or 10 ft. to the inch. The center line is also laid off on the main entry and a point *A* located on it where the curve is to start.

Platting the Curve in Office

After drawing the entry ribs, the next step is to lay off, on the map, the survey lines *AB* and *BC*, such as to clear the inner rib of the entry by a few inches. Five-foot stations are then marked on these lines and offsets measured at right angles to each rib, as indicated in the figure. The offset measurements as scaled from the map are marked just outside of each rib.

If the radius of the curve is short, or the central angle less than 90 deg.,



MEASUREMENTS FROM SURVEY LINES

it may be possible to establish a single survey line that will clear the inner rib and extend through to where the curve stops or reaches the other entry. Otherwise, it will be necessary to employ two or more survey lines, *AB* and *BC*, as shown in the figure.

Having drawn such a plan, a copy is made to a reduced scale, letterhead size, on thin paper so that a blueprint copy can be made and given to the foreman, while the original is attached to the copy of the letter of transmission and placed on file in the office for future reference. This makes a complete record of the matter where it will be always available.

On the same drawing can be shown the location of the frog and switch for use of the trackmen when laying the switch for this cut-off. It is well to observe, in closing, that care will be required, in this method also, to measure the offset lines perpendicular to the survey lines. These offset lines often make considerable angles with the ribs, and it is all the more necessary to use care in taking these measurements.

H. M. Kanarr.

Punxsutawney, Pa.

Why Shoot Coal Off the Solid?

Practice permitted by special provision in the Bituminous Mine Law of Pennsylvania—Dangerous from being liable to cause blownout shots—Shooting the so-called "loose end."

I AM quite in accord with the opinion expressed in the letter signed F. W. S., *Coal Age*, Aug. 25, p. 302, regarding the practice of shooting coal off the solid, which the Bituminous Mine Law of Pennsylvania allows, "in districts in which it has been the common practice." This clause of the law it seems to me must refer to some isolated conditions unfavorable to pick mining.

In West Virginia, the mining law prohibits shooting coal off the solid, except in some extraordinary cases where permission is given by the Department of Mines so to do. The law reads (Sec. 36) as follows:

> In any mine in which solid shooting is done, the district mine inspector is authorized to prescribe the condition under which such solid shooting may be done; any operator or mine foreman who causes or permits any solid shooting to be done therein, without having first obtained a written permit from the district inspector, or any miner therein who shoots coal from the solid, without first having obtained permission so to do from the operator or mine foreman, shall be guilty of a misdemeanor and, upon conviction, shall be fined not less than ten nor more than fifty dollars, or be imprisoned in the county jail not less than 30 nor more than 90 days, in the discretion of the court.

In making this provision, the West Virginia law assumes that, in some cases, it is nearly impossible to mine the coal economically with a pick. It is true that even then, in the majority of cases, it could be mined by machines. Such being the case it is only reasonable that the mine inspector, guided by his judgment, should allow the coal to be shot off the solid, pending the installation of machines.

Shooting Off the Solid versus Blasting a Loose End

The meaning of the expression "shooting off the solid," or "solid shooting," should not be obscure. To my mind it has always referred to the blasting of coal that has not been properly undercut, centercut, topcut, or sheared by pick or machine. One writer on this subject (July 28, p. 142) has referred to blasting the coal on a "loose end" as not requiring the mining of the shot. In my opinion, that is nothing more or less than shooting the coal off the solid.

A practical miner can always arrange to have an open or loose end in the face of his breast, just as easy as when drawing back a pillar. It matters little to him if the face is squared or gouged; he calls it a loose end and fires a shot on the solid. Whether it is actually a loose end or not will depend on the depth and location of the hole being such that the powder can break the coal before blowing out the tamping.

The danger of this, or any other form of solid shooting, arises from the liability of the charge not being able to break the coal and the result is a blownout or a windy shot, the force of the powder being then expended wholly or in part on the air, instead of breaking down the coal.

Dangers in Solid Shooting

For a shot to blow its tamping is dangerous, either in a gaseous or a non-gaseous mine, as a disastrous dust explosion may be the result. I have observed the flame of such a shot fill a room for a distance of many feet when there was no gas present in the place.

Again, solid shooting requires the firing of a much larger number of shots than where the coal is properly mined. This keeps the mine atmosphere and the air current laden with the smoke of the gases produced. The miner who is forced to breathe this unhealthy atmosphere is unable to work with the same efficiency.

Perhaps, one of the greatest dangers in solid shooting consists in the weakening of the roof by the force of the shot. This not only requires additional expense and labor in the setting of timbers to support the shattered roof, but the miner working under it is more liable to be caught when least expecting danger. Many a miner has been injured or killed by reason of these conditions, which he failed to realize.

Loss and Damage Resulting From the Practice

Considered from an economical standpoint, the practice of solid shooting should be avoided for the reason that the coal is broken into small fragments and its market value reduced. If the coal contains slate, bone and other impurities it is almost impossible to keep these out of the coal. Much damage is often done by timbers being discharged, brattices torn down and the ends of cars stove in, all of which mean extra expense and labor.

There are conditions, it is true, that make the practice of shooting coal off the solid more excusable and even permissible, with due regard to safety. It is probable that the practice became more widespread during the war when the extraordinary demand for coal led miners to adopt every means to increase their output. In the mining of anthracite coal, also, the practice of solid shooting is rendered more permissible, because of the hardness of the coal and the lesser inflammability of the dust produced.

What Is Not True

It is not true, however, as I have often heard miners say, that it is impossible to mine certain seams of coal in any other way and make a living at it. Several years ago nobody ever thought of shooting coal off the solid or dared to make the attempt. It was all pickwork and the miner had no trouble to make a living then.

After all has been said in regard to our mining laws, safety requires that mining officials, in close touch with their own situation and requirements,

shall use their judgment in making and enforcing such regulations and rules as will make the mining and preparation of coal most economical and safe.

Thomas, W. Va. SAFETY FIRST.

ANOTHER LETTER

IT has always seemed strange to me when reading the Bituminous Mine Law of Pennsylvania that it should permit coal to be shot off the solid. I was glad to see this subject mentioned in the letter of F. W. S., *Coal Age*, Aug. 25, p. 302. The matter is surely one worthy of careful consideration.

It has never been my fortune to be employed in a mine where this practice was permitted and I cannot understand why it should be thought a better method to employ than mining the coal before firing the shot. There is no doubt in my mind but that the practice is dangerous.

Speaking of the Pennsylvania bituminous law, it appears that the lawmakers saw clearly enough that to blast coal off the solid was not a safe practice. This is shown by the fact that the law provides (Article 4, Sec. 14) that wherever coal is shot off the solid the work must be done by shotfirers, after all the men have left the mine.

DOES THE LAW DISCRIMINATE?

The object of this provision seems to be that, in case of accident resulting from the practice, there would be a fewer number of victims. The work must be done after all the miners have departed and the only persons in the mine are the men whose duty it is to fire the shots.

Now, if it is dangerous to shoot coal off the solid when the men are at work in the mine, it is clearly just as dangerous after the men have gone home and only the shotfirers remain. Should not the law provide as much for their safety as for that of the men?

What is strange to me is that the law should thus discriminate in favor of the many and against the few, by allowing a practice that is admittedly dangerous. Certainly there is no reasonableness in making a provision of this kind, unless it is necessary to take such risk in order to obtain the coal. Let us hope that this law will be changed and the practice of solid shooting abandoned.

Avella, Pa. P. MOLANI.

THIRD LETTER

REGARDING the question of shooting coal off the solid, as I look at the matter it is largely a thing to be determined by the surroundings and the condition of the place where the shots are to be fired. There is all the difference in the world between the blasting of coal in pillarwork and the firing of shots in the solid coal at the face of a heading or room.

In Art. 4, Sec. 9, of the Bituminous Mine Law, I take it that the requirement that the coal must be "properly mined," which is explained as meaning that it "shall be undercut, centercut, topcut, or sheared by pick or machine," applies to cases in which a solid face of coal is being mined and no opportunity is given for a shot to work free, except it is mined as stated in the law.

On the other hand, let us suppose a case where the pillars are being drawn back in a series of rooms. Say the pillars are 12 or 14 ft. thick and divided into sections by breakthroughs 75 ft. apart. This is clearly pillarwork in which it is common practice to fire shots without any previous mining. If the question is asked, "Why?" I answer: Because the work is surrounded on all sides by open space and every shot is free and not bound in the solid.

MANY WILL TAKE CHANCES

It is of course true that some men, even under these conditions, will take chances and attempt, by the use of more powder than is safe, to make a single shot do the work of two. This, however, is aside from the question. It is quite common for a miner to lay a shot in very solid coal if he is reckless or uses poor judgment; but that is no reason why a good shot must be mined in working a pillar.

Before deciding the question of safety in solid shooting, let us inquire what would be the effect in many mines if this custom were to be prohibited altogether by law. If I am correctly informed, much coal is shot off the solid, today, in mines in the West, and even in England.

In my opinion, solid shooting may often facilitate the production of coal, without working an unnecessary hardship on the miner, or exposing him to danger. However, it is my belief that this work should be done by a thoroughly competent person and all shots fired by an electric battery, after the men have left the mine.

Where the conditions are favorable to solid shooting and the work is performed in this manner it appears to me that the chances for accident or injury to anyone will be reduced to as safe a working point as can reasonably be expected. My aim is always to provide for the utmost safety, with due regard for a maximum production of coal.

A few years ago, I remember, there were numerous prosecutions for the violation of the law prohibiting solid shooting. Later, it was seen that the practice was indispensable in certain districts, commercially speaking, which may have led to the modification of the bituminous law.

We must realize that conditions, today, are different from what they were formerly. This is a day of machine mining and the loader has for his kit of tools one shovel, one pick, and one breast auger. Formerly, the practical miner took with him into the mine five or more picks and drills, besides having in his place a drilling machine and other useful tools for breaking down and loading his coal.

Gans, Pa. R. W LIGHTBURN.

Inquiries Of General Interest

Drying Feeder Gas for Heating and Lighting

Moisture in Natural Gas Seldom Enough To Reduce Its Efficiency for Heating and Lighting—Entrained Water Separated by Baffle—Gas Dried in Condenser

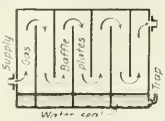
A DRILLHOLE in this vicinity is giving off a large amount of gas that we desire to use for the purpose of heating and lighting. The gas contains, however, a considerable amount of water, which it is feared will reduce its efficiency and give poor service.

I want to ask if it would not be advisable to dry this gas before using it for such purposes in a residence. Please explain the cheapest and best method of separating the water from the gas, so as to obtain the best results.

Paxton, Ind. INQUIRER.

It seldom happens that natural gas issuing from a drillhole contains sufficient absorbed water to interfere seriously with its efficiency when used for the purposes of heating and lighting. It may be that, in this case, the gas coming in large quantities from a wet drillhole carries with it some entrained water, which would of course be objectionable and should be separated before using the gas for the purposes mentioned.

The simplest way of separating entrained water from gas is by means of baffle-plates arranged in a suitable receptacle through which the gas is passed. At the bottom of this receptacle a trap is provided to drain off the water that would otherwise collect.



THE SEPARATOR

A simple form of such a separator is shown in the accompanying figure. The gas enters at a point near the bottom and above the water level. In its passage through the separator, its course is indicated by the arrows. Much of the entrained water is separated from the gas coming in contact with and striking against the plates.

As fast as the water collects at the bottom, it escapes through the trap, which serves the double purpose of an overflow and a seal to prevent the escape of the gas.

Another form of separator is one where the gas is passed over some loose porous substance, such as coke, broken brick or other material held in a container. Such method, however, is far less effective than the separation by baffle-plates.

Where the use of the gas is on a larger scale and it is desired to dry it as much as possible, the common practice is to employ a condenser. It is stated that a pressure of 10 lb. per sq.in. will remove from 60 to 65 per cent of the moisture in the gas, and a pressure of 20 lb. per sq.in. will yield almost a perfectly dry gas.

Horsepower of Steam Turbine

Steam turbines the result of empirical design. Power of machine rated in kilowatts, not estimated by formula.

PLEASE state if there is a formula that will express directly the horsepower of a steam turbine in terms of its dimensions and speed. In books to which I have referred, tables are given from which the horsepower can be calculated for different machines. It seems to me, however, that there should be a formula expressing the power of a given machine directly.

Knoxville, Iowa. STUDENT.

Steam turbines are the result of empirical design. That is to say, the machine has been designed and developed by means of a series of experiments and tests made to determine the form of blade or impeller, kind and size of nozzle, dimensions and general arrangement of all parts throughout that will afford the highest efficiency in transforming the energy of the steam into mechanical energy for driving other machines.

There is no formula for calculating the power of a steam turbine that will apply to the different types of these machines. Before leaving the shop, every steam turbine is given a rating in kilowatts. The kilowatt is 1.34 hp. Practically, three kilowatts are equivalent to four horsepower.

If it is desired to study the design and construction of steam turbines we would refer this correspondent to the following books: "Design and Construction of Steam Turbines," Harold Medway Martin, Longmans Green & Co., New York; and "Steam Turbines," Carl C. Thomas, John Wiley & Son, New York. These books are reliable and give a fund of information regarding steam turbines.

Examination Questions Answered

Miscellaneous Questions

(Answered by Request)

QUESTION—*What method would you recommend for timbering working-places, keeping in mind the safety of the workmen and the recovery of the greatest amount of coal?*

ANSWER—The mine foreman and the superintendent, in connection with the district mine inspector, should decide on a systematic method of timbering that is best adapted to the conditions in the seam. This can only be determined by a close study of the nature of the roof, floor and coal, depth of cover, thickness and inclination of the seam, and the kind of mining employed. In general, the posts should be set in rows parallel to the face of the coal and at specified distances apart. Strict regulations should then be enforced to compel each miner to timber his place promptly and in accordance with the plan adopted.

QUESTION—*(a) State how you would proceed to move a large body of firedamp and what precautions you would take; also say what dangers there would be in doing this work. (b) Under what conditions may afterdamp become explosive?*

ANSWER—(a) Before taking any steps to disturb or remove a large body of firedamp, notify and withdraw all the men working on the return of that current. It may be advisable also to remove the men working in adjoining places on the intake side and, perhaps, from the entire mine. This being done, safeguard all entrances to the return airway by placing reliable men at such points with instructions to prevent any one from entering the return airway. Having increased the quantity of air in circulation in this section of the mine, approach the place where the gas has accumulated, on the intake side, using only approved safety lamps and taking every precaution not to advance more rapidly than the gas is removed. It will generally be necessary to erect brattice to deflect the air current against the body of gas.

In performing this work there is danger of a possible fall of roof driving the gas back on the men and causing its ignition on the lamps by blowing the flame through the gauze. Or, the gas may be ignited by a defective lamp or one that is not properly handled, or by a spark struck with a pick or hammer.

(b) Afterdamp may become explosive by the addition of fresh air. It often happens that the afterdamp contains much unburned methane, which forms firedamp on mixing with air.

QUESTION—AAQ *Compute the horsepower of an engine 18 x 36 in., steam pressure* VVJ *lb. per sq.in.* ABQ *What weight can be lifted by this engine with an 18-in. crank on the shaft of a 6ft. drum?* AEQ *With the same length of crank and a 12-in. spur or pinion geared to a 6-ft. drum, what weight will the engine lift?*

ANSWER—(to) To compute the horsepower of an engine, it is first necessary to know at what point of the stroke the engine cuts off steam, and from this to calculate the mean effective pressure in the cylinder. Assuming a two-thirds cutoff, the mean effictive pressure is calculated by the formula

$$M.E.P. = 0.9\,[0.917\,(p + 14.7) - 17] = 0.9\,[0.917\,(110 + 14.7) - 17] = 87.6\ lb.\ per\ sq.in.$$

The diameter of the cylinder being 18 in., its sectional area is $0.7854 \times 18^2 = 254.47$ sq.in. The length of stroke is 3 ft. (36 in.). Unless otherwise specified, it is customary to estimate on a piston speed of 600 ft. per min. in which case this engine is making $600 \div 3 = 200$ strokes per minute. Then, assuming an efficiency of 85 per cent, the horsepower of the engine is

$$H = \frac{p\,l\,a\,n}{k\,33{,}000} = \frac{87.6 \times 3 \times 254.47 \times 200}{0.85 \times 33{,}000} = 476.8\ hp.$$

(b) An engine will always lift a greater weight than it can hoist. In estimating the lifting power, the full steam pressure is used, instead of the mean effective pressure. In that case, the total force exerted on the piston is $110 \times 254.47 = 27{,}991.7$ lb., say 14 tons. The diameter of the drum being twice the length of stroke of the engine, the lifting power is one-half the total pressure of the piston, or 7 tons.

(c) The question states the diameter of the spur or pinion gear is 12 in. (1 ft.) but does not give the diameter of the drum gear. Assuming the latter is equal to the diameter of the drum, the ratio of gearing is 1:6. The length of stroke or diameter of the crank circle being 3 ft. and the total pressure on the piston 14 tons, the turning moment at the center of the crankshaft is $3 \times 14 = 42$ ft.-tons. Then the ratio of gearing being 1:6, the turning moment at the center of the drumshaft is $42 \times 6 = 252$ ft.-tons. Finally, the lifting force exerted at the circumference of the 6-ft. drum is $252 \div 6 = 42$ tons, which is the load the engine can lift at the moment when the force exerted on the piston is applied at right angles to the crankshaft. For numerous reasons, however, the engine will not hoist this load, as the effective power varies from a maximum to zero throughout the cycle of a revolution.

Distribution of Supplies Next in Importance to Labor In Efficient Keeping of Coal-Production Costs*

Without Detailed Apportionment of Those Items, Cost System Will Fail—Improved Accounting as Important as Modern Machinery—Division of Royalty Depletion, Depreciation and Obsolescence Charges

By R. W. Gardiner†

In the proper keeping of coal-production costs, the question that arises after analysis of the three main divisions of labor is the distribution of supplies. Supplies should be distributed in the same way as labor. Although it may not be practical in a small operation, it is unquestionably desirable that the superintendent have this information. He cannot very well cut down his consumption of supplies unless he knows what supplies are used and where they are used. The old method of handling supplies was to charge everything to a supply account when it was purchased and to keep no record of its consumption. Consequently, the superintendent was forced to work absolutely in the dark so far as this important element of his costs was concerned.

Labor and supplies are the two items that necessitate the greatest amount of clerical labor and that present the most difficult problems. But too much stress cannot be laid on the fact that without the detailed distribution of these two items any accounting system will fail to accomplish the principal purpose for which it should be used, namely, the reduction of the costs of operation. That is where the operator should get his real profit from a cost system. There are few operators who would hesitate to spend money for improved machinery. It is, however, a very difficult task to convince these operators that an investment in improved methods of accounting will yield actual returns in many cases even greater than they can obtain from improved machinery.

Items Included Under Overhead Expense

Overhead.—The first item of overhead is what may be called strictly mine overhead. It includes superintendence, engineering and mine-office expense. These items require no explanation. The next item of mine overhead is power.[1] Under this item should be charged the full expense of the power department, including all supplies used by that department. Boiler fuel is a subject that has given rise to a great deal of discussion, because opinions differ as to the rate at which it should be charged into the power account. It is obvious that if no charge is made to power for boiler fuel, and the amount of coal sold is considered as the total production, the cost of the boiler fuel will be absorbed. But it will be absorbed in a way that does not show the true cost of developing power. The best way, in the writer's opinion, to handle this item is to charge it into the cost of production in the current month at the average cost for the preceding month. This method will not be exactly accurate, as the cost varies somewhat from month to month, but in my judgment it is the closest approximation which can be used.

The items discussed above are those over which the mine superintendent has some control, and the cost figures for these items should be given to the mine superintendent each month. The other items of cost are those over which he has no control, and it is not necessary that he should have information in regard to them.

Royalty, Depletion, Depreciation and Obsolescence.—Royalty is a definite charge per ton. In some instances there is a specified minimum amount which must be paid whether an amount of tonnage sufficient to earn the minimum amount is mined or not. If this royalty is defined under the contract as advance royalty or as a payment on coal to be mined later, it can be carried as an asset in a deferred charge account, provided there is sufficient reason to believe that it can be worked out within the time specified. If, however, it is a definite payment by the month or by the year, with no possible chance of recovery, the minimum amount should be charged into cost, with the result that the royalty will be increased over the amount per ton required to be paid by the contract.

Depletion Charge Retained in Reserve

Depletion is a charge similar to royalty, except that the amount of money represented by the depletion reserve is retained by the business instead of being paid to some outside party. In this case the total cost of the coal lands less the value of the surface should be divided by the estimated recoverable amount of coal, the resulting figure giving the depletion charge per ton. This estimate should be a very conservative one, so as to insure that when the coal is worked out there will be no assets shown on the books.

Depreciation is another item which has been the subject of much discussion, and accountants differ widely in their opinions as to the way in which it should be treated. Most of them agree that the value of the plant and equipment when the coal is worked out is practically nothing. The problem, therefore, is how to charge the depreciation in such a way as to amortize the whole investment during the life of the mine. Some advocate determining the rate of depreciation in the same manner as depletion is determined—that is, at a rate per ton. The objection to this plan is, that where a considerable quantity of coal land is held, large parts of the plant may wear out or become obsolete long before the coal is exhausted.

Uncertainty as to When a Mine is a Mine

The answer to this objection depends largely on the question as to when a mine is a mine. Some people contend that a mine is a mine and that charges to capital should cease when you begin to hoist coal from the rooms. Others take the position that the mine is on a development basis until coal can be produced at a cost not more than the market price. The latter idea, I believe, is erroneous, because in periods of depression the mine may be fully developed, and yet may not be producing coal at the market price. Another method which, in my judgment, produces more accurate results, is to assume that the development period is over when a mine reaches a certain percentage of the output which the engineers have planned for that mine. If this method is followed, the tonnage method of charging depreciation can be adopted, but it is necessary that all charges for new equipment or replacements should be made against operating cost.[2]

*This is the second installment of a paper entitled "Coal Production Costs," delivered before the Pittsburgh Chapter of the National Association of Cost Accountants. The first installment appeared in *Coal Age* last week. Copyrighted by National Association of Cost Accountants.

†Commissioner, Pittsburgh Coal Producers' Association, Pittsburgh, Pa.

[1] In the system of the National Coal Association, power is treated at some length on page 13. It is stated that "the generation and transmission of power is about the only expense about a coal mine that is not in total directly chargeable to some one subdivision of operating work." "The cost of coal to the operator for his own consumption is what he could get for it in the market. If an unmerchantable product is used under the boilers, it should be charged at its cost of production. If cost of fuel is not included in cost of power, the accounts do not exhibit true cost."

[2] The system of the National Coal Association contains a discussion of depletion, depreciation and obsolescence, with excerpts from the Federal tax regulations bearing on these problems of accounting.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

THE inevitable readjustments from the artificial stimulation of the war boom and from the expansion of the period immediately following the war have been drastic and painful to this country, and their consequences continue to be felt, according to the October bulletin of business conditions issued by the Mechanics and Metals National Bank of the City of New York. "But, speaking broadly," the bulletin continues, "these readjustments have been toward health and not away from it, and the tangible good effects are making themselves apparent.

"This, of course, does not signify that we have definitely reached the bed-rock of reaction and that the upward swing is under way, needing only the free flow of credit to carry it into the fullness of prosperity. After a season of deflation, doubt and cross currents, the economic soundness of the country is asserting itself in a way that is sufficiently notable to command the attention and envy of the entire world. But trade as a rule improves in the fall of the year; October and November are months when men naturally take hold of things with vigor and seek to overcome the summer slack.

"The seasonal autumn expansion that always bears a favorable contrast to summer dullness should not, therefore, be mistaken this year for the beginning of a pronounced and substantial business revival. Improvement is under way, but a broad, general sweep forward is not immediately to be expected, for while domestic influences would seem to be contributing to a betterment in business, there are other than domestic influences that supply a governing element in our affairs, and it is these that must be adjusted favorably before the full tide of business health can make itself felt."

Railroads Taking on Many Men

According to an announcement by R. E. McCarty, general manager of the Central region of the Pennsylvania R.R., 450 men have just been put to work in the shops at Pitcairn, Pa., and 165 at the Conway shops. They are employed in car repair work. Approximately 760 others will be distributed among the local repair shops at Olean, N. Y.; Canton, Ohio; Dennison, Ohio, and Verona, Pa., on the following basis: Olean, 300 men; Canton, 150 men; Dennison, 150 men, and Verona, 160 men.

The number of employees on the Pennsylvania System increased 3,926 to 194,437 in the last month, it is reported by officials of the company. This was due to increases in repair gangs, but the total is still considerably below the peak of 279,599 reported on Sept. 15, 1920. The company's low point was reached on May 15, 1921, with 185,625. The force was not changed much in June, but it has been steadily increasing since that month. The average number of active employees on the system in recent years was reported as follows: 1919, 263,352; 1918, 241,114; 1917, 224,614; 1916, 215,266.

More than 1,200 men have been placed on the payroll of the Pittsburgh & Lake Erie R.R. in the last few weeks to take care of anticipated new business.

Freight Loadings Still Gaining

Loading of revenue freight on American railroads totaled 901,078 cars during the week ended on Oct. 1, compared with 873,305 during the preceding week, or a gain of 27,773 cars. While this was the largest number loaded during any one week since Nov. 13, 1920, it was 91,205 cars less than were loaded during the corresponding week in 1919. Except for livestock, which showed a slight decrease, and ore, gains were reported in the loading of all classes of commodities compared with the previous week, while for the first time this year loading of merchandise and miscellaneous freight, which includes manufactured products, eclipsed the total for the corresponding week last year.

Tire Makers Increase Output

Following the action of the Kelly-Springfield, Ajax and Lee tire manufacturing plants it is reported that the Goodrich company is increasing its production approximately 1,000 tires a day, which means that the company is now turning out on an average between 6,000 and 7,000 daily for this month. Akron is said to look upon the Goodrich change as a sign that the larger companies have swung into line for better business. Practically all the small rubber companies are operating at capacity or close to it.

Unfilled Steel Orders Gain

The United States Steel Corporation reported Oct. 10 that unfilled orders on its books amounted to 4,560,670 tons, an increase of 28,744 tons over the preceding month and the first gain in bookings since July, 1920, when the depression in the industry first began to get under way. The improvement that took place in September confirms the belief of trade authorities that the worst of the depression was felt in July and August. Recent reports from mill centers have told of increased buying and resultant price advances in most classes of steel products except rails.

Production of steel ingots in September by thirty leading companies, representing 84.2 per cent of the country's total, was 1,174,740 tons, according to figures compiled by the American Iron and Steel Institute. This was an increase of 36,669 tons over the August production and was a marked advance over the low point reached in July, when output was only 803,376 tons.

Moline Plow Co. to Resume

The Moline Plow Co., recently reorganized by a creditors' committee, plans to resume operations at its Rock Island plant, known as the Universal Tractor Co., where, after a year of idleness, motors for the Stevens six cars will be manufactured. It is planned that early in December 200 former employees of the Universal Tractor Co. will be placed at work.

Not Many Unemployed in Paterson

That Paterson, N. J., is not as hard hit by unemployment as many other large cities, was the opinion expressed by business men and manufacturers who were called in conference Oct. 10 on the employment situation by Acting Mayor J. Willard Deyo. While employment conditions are not as bright as they have been, it was pointed out that, aside from apparently temporary dullness in the silk and metal trades workers in Paterson are being kept fairly busy.

Canada's Imports of U. S. Bituminous Gain; Anthracite Nearly Stationary

PRELIMINARY reports from the Dominion Bureau of Statistics show, by months, imports of United States coal into Canada during the first half of 1921 and for the corresponding periods in the two years immediately preceding. Comparison shows that monthly imports of anthracite in the three years have been quite similar. Receipts of bituminous coal however, have in each month of 1921 exceeded those in the corresponding month of 1919, and only in March and April were receipts in 1920 larger than in the present year.

MONTHLY IMPORTS OF COAL INTO CANADA

(In Net Tons)

ANTHRACITE

Month	1919	1920	1921
January	399,686	359,427	328,853
February	347,866	294,903	307,671
March	179,754	440,222	384,373
April	76,958	263,077	274,502
May	461,791	338,321	458,841
June	450,812	472,157	506,592
Totals	2,020,777	2,168,107	2,260,832

BITUMINOUS

	1919	1920	1921
January	977,777	529,782	1,369,688
February	720,915	570,266	887,605
March	615,417	492,593	818,258
April	393,141	711,221	578,856
May	735,426	695,040	980,456
June	1,261,304	1,101,700	1,423,551
Totals	4,702,980	4,600,662	6,058,414

From the following table it is seen that imports of United States coal into Canada during the first six months of 1921 compare favorably with receipts during the corresponding periods in the past six years. Anthracite receipts, which totalled 2,261, 000 net tons, were larger than those of any recent year, exceeding even 1917, a year of heavy Canadian demand for hard coal. The bituminous tonnage imported—6,058,000 tons—has been exceeded only twice in the past six years, being 334,000 tons less than in 1917 and 1,682,000 tons less than in 1918.

IMPORTS OF ANTHRACITE AND BITUMINOUS COAL INTO CANADA, FIRST SIX MONTHS OF 1921, COMPARED WITH 1915-1921 (*a*)

(In Net Tons)

Year	Anthracite	Bituminous
1915	1,914,000	3,309,000
1916	2,097,000	5,848,000
1917	2,232,000	6,392,000
1918	2,180,000	7,740,000
1919	2,021,000	4,703,000
1920	2,168,000	4,601,000
1921	2,261,000	6,058,000

(*a*) For several reasons the statistics of imports from the United States kept by the Canadian Government and the American statistics of exports to Canada do not agree exactly, the quantities recorded by the Canadian Government usually being somewhat smaller. The Canadian figures are here used as they represent the rate at which coal was received for consumption in Canada.

Mortimer Elwyn Cooley Succeeds Hoover as President of Engineers' Council

MORTIMER ELWYN COOLEY, dean of the College of Engineering and Architecture of the University of Michigan, has been elected president of the American Engineering Council of the Federated American Engineering Societies. The Executive Board of the Council announced Dean Cooley's election at a meeting at the Cosmos Club Dean Cooley's election at a meeting at the Cosmos Club in Washington Sept. 30, stating that he would assume office at once and carry out an extensive program in the interest of the public and the profession of engineering.

Born in 1855, Mr. Cooley was graduated from the U. S. Naval Academy in 1878. In 1885 he resigned from the navy to accept the chair of mechanical engineering at the University of Michigan. In the same year Michigan conferred upon him the honorary degree of M. E. He became dean of the College of Engineering in February, 1904, and of the College of Architecture in 1913. He received the degree of LL.D. from the Michigan Agricultural College in 1907 and Eng.D. from the University of Nebraska in 1911. During the Spanish war he served as chief engineer of the Yosemite, a converted Morgan liner manned by Michigan State Naval Militia.

Mr. Cooley was vice-president of the American Association for the Advancement of Science in 1898, director of the American Society of Civil Engineers, 1913-1916; president of the Society for the Promotion of Engineering Education, 1920-1921, and president of the Michigan Engineering Society in 1903. He became a member of the American Society of Mechanical Engineers in 1881 and served as vice-president during the year 1902-1903, and in 1916-1917 as chairman of the Executive Committee, Detroit section. During 1918-1919 he was president of the society.

Supreme Court to Decide if Coal May Be Pro-rated in Pinch Despite Contracts

THE question as to whether a coal company is required in event of car shortage to complete orders under contract or to pro-rate its deliveries to customers has been presented for decision to the U. S. Supreme Court. The case in question is that of the Peninsular Portland Cement Co. vs. the Consolidation Coal Co., petition for review of which was filed in Court on Oct. 4. The cement company purchased 55,000 tons of coal from the coal company for delivery between April, 1916, and April, 1917, from West Virginia mines.

The coal company failed to ship 19,000 tons, and when sued for the shortage averred that it was entitled to prorate deliveries to all its customers because of a car shortage. The contract was silent upon this count but it excepted from the amount of coal to be shipped "such amount as said coal company is unable to ship on account of strikes, accidents, contingencies of transportation or navigation, or causes beyond the control of either party."

It was alleged by the cement company that the coal company contracted to deliver 25 per cent in excess of its usual output and made new contracts after the car shortage developed, and made large spot sales of a quantity sufficient to satisfy the cement company's requirements. The jury found for the greater part of the cement company's claim but the Circuit Court of Appeals held that the amount of unpro-rated coal was so large as to make it impossible to determine the extent to which the erroneous basis of recovery had affected the verdict. In other words, the court held that the right to pro-rate and actual prorating were the same thing and that the coal company was limited in its recovery to a mere recovery of the diverted and unpro-rated coal.

COAL CONSUMED BY THE RAILROADS, as shown by statistics just released by the Interstate Commerce Commission, increased from 7,473,050 net tons in June to 7,634,637 in July. This was to be expected because the amount of business done, as indicated by freight loadings, was greater. August and September are expected to show similar gains. Compared with last year, however, the decrease from month to month in coal consumption by steam locomotives has been marked. In July, 1920, the same roads used 9,823,269 tons, the record for July of this year showing a decrease of 22 per cent from that figure. In no one of the eight regions, either in passenger or freight service, was the coal consumed in July, 1921, as great as in the same month of 1920.

OPEN-PRICE ASSOCIATIONS exchange information on coal and coke, according to a survey made by the Federal Trade Commission by request of the congressional commission investigating agricultural conditions and prices. The commission received replies from 1,773 associations of a list of 2,750, largely manufacturers and wholesalers, and states that of these, 141 associations are collecting and exchanging price information among their members, covering a wide range of products, including coal and coke.

J. D. A. MORROW, VICE-PRESIDENT of the National Coal Association, will address the American Mining Congress at its Chicago convention instead of J. G. Bradley, president of the National Coal Association. Mr. Bradley has not recovered sufficiently from his recent operation to undertake a public address. He is much better, however, and has left the hospital. He is recuperating at his summer home at Mattapoisett, Mass.

United Mine Workers of America Charged with Fomenting the Mingo Rebellion*

By Carl Scholz†

QUITE recently when the newspapers were filled with descriptions of the march of the Kanawha miners the question was frequently asked by newspapers and people living within the mining district and otherwise well informed, "What is the difficulty with the coal industry and how can this march of 8,000 or 9,000 armed men in violation of county and state laws be explained?"

In answer it may be said this march is one of the incidents of the coal business which presents it to public attention passingly, to be, like many others preceding it, soon forgotten. The coal industry is beset with many vicissitudes, and the Marmet march is one of the spectacular commotions which momentarily attract public attention. Likewise, large mine disasters call for big headlines and condemnation of the careless coal operator who sacrifices the lives of his employees for self-gain. Or, again, if a strike develops at a time when coal is greatly in demand the mine operators are condemned because they are held responsible for the fuel shortage.

It does seem that the coal industry is entitled to public attention and consideration. This does not call for governmental investigation and regulation, but it is the duty of all coal consumers to take a continued and unbiased interest in the coal industry, because coal enters into our national welfare by affecting every household in the cost of food, clothing, transportation and all general activities.

It would be impossible to recite the history of the coal industry in a brief article, and no single individual is competent to do so. Unfortunately, in most cases the press depends upon its information contributed by reporters who enter a field where any particular trouble exists and in two days' time assume to grasp the entire problem.

Would Force Logan and Mingo Men to Join Union

The West Virginia disturbance, which became sufficiently important to demand the attention of the President of the United States, is the direct result of the activities of the United Mine Workers, who fomented this trouble for the purpose of forcing the miners of the Logan and Mingo County fields to join their ranks. This organization has a membership of more than 400,000, or about one-half of all the coal miners in the United States, and is further allied with the American Federation of Labor, and therefore has a very powerful influence.

Very little is known about the mine workers' organization by the citizens not living in the mining districts, and it is generally assumed that they concern themselves with welfare work and improvement of living conditions in the mining camps, but quite the contrary is true, the object of the organization being to extend its activities into every mining camp in the United States, primarily for the financial gain of its leaders.

It should be understood that in the organized mines membership is compelled, and once a mine signs a contract no one can be employed at the mine, excepting the officials, who is not a member, and everyone is compelled to pay initiation fees and dues. These dues must be collected by the employers from the payroll and paid over to the officials of the organization. These dues deductions take preference over the requirements of the worker for food and ordinary living expenses.

It is estimated that the annual income of the miners' organizations ranges between $18,000,000 and $20,000,000. If this money would be used for legitimate purposes no one would raise any possible objection, but relatively small amounts have been paid out even in strike benefits. The principal expenses incurred have been in forcing into submission such districts as are working on the open shop. Space does not permit of enumeration of employment conditions which are forced upon mines operating under the so-called voluntary agreement of collective bargaining.

The union dues collected represent about 6c. a ton of the coal produced, but this item is very small compared with the increase in cost of production forced upon the coal companies, which does not benefit the workers, but, nevertheless, represents a very large economic loss. However, attention should be called to the fact that Logan County, with a production of 10,000,000 tons of coal per year, has been made the vigorous point of attack, because it had the promise of yielding an income of $600,000 a year to the organization treasury.

Idleness Attributed to Long Wage Agreement

Another most damaging policy of the miners' organization has been the rule that wage contracts must be for long-time periods, during which no downward readjustments can be made, and this is one of the causes which led to the attempted Logan invasion. The high cost of production in the organized mines of the Kanawha district has resulted in much idleness, whereas the Logan field was able to operate continuously, due to a reduction in wages.

At that, the coal miners of West Virginia are a peaceful, quiet, well-behaved lot of men, and if individual expressions can be accepted, at least 80 per cent of the men belong to the union only because they have to. Under the leadership of radicals they become an infuriated mob, ready to commit any sort of depredations and even murder, as has been the case during the Marmet assembly. The miners receive public sympathy as "toilers who work in the bowels of the earth," but after all, work in mines is much to be preferred to work in the fields or on the railroad tracks on account of the difference in earning power, the elimination of unfavorable weather conditions and relatively low living expenses.

If this were not so it would be impossible to get men to work in the mines. Of this the public knows little, because, unfortunately, mines have to be located where the coal exists and usually the mining fields are remote from larger centers of population. The older camps may not contain attractive houses and frequently miners live in shacks, but the newer towns contain comfortable houses, equipped with water and electric lights, with the rental ranging from $1.50 to $3 per room per month; fuel is furnished for $1.50 per month; doctor's services for the entire family at $1.75 per month, and the company's stores sell their supplies at prices which compare favorably with other localities.

Coal Miners Seldom Own Their Homes

By reason of the topography and limited amount of surface for town sites, it is impractical for miners to own their own houses, but even where houses have been offered for sale very few of the miners buy them, because they feel that owning a house enslaves them to the particular company operating in that territory. This feeling exists in other states where ample town-site space is available.

The earnings of the miners in the organized field is a minimum of $7 per day for inside labor. Coal loaders earn on an average of $12 a day, ranging as high as $18 to $20 with the better workers.

Another and vital point which deserves attention is the complete political control which the union is striving to accomplish, and great strides have been made in this direction. The completeness of the organization can be seen when the arrangements in connection with the Marmet assembly are reviewed. The assembling, arming, transporting and feeding the 6,000 to 8,000 men which the miners mustered into service in three days has evoked comment from the military men which were sent into the field to

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†Vice-president and general manager, Raleigh-Wyoming Coal Co., Charleston, W. Va.

disperse the miners, and it is well known that these arrangements were carried on for several months and so carefully concealed that it came as an utter surprise to the State and the Federal Government was called upon to send troops at an expense estimated at $1,000,000 to quell this insurrection, at a time when every effort is being made to reduce governmental expenses in order to relieve the taxpayers from burdens which now shackle every industry.

The political strength of the miners is easily understood, because to every coal operator with perhaps five or six votes, including his official family, there are from 200 to 1,000 miners. The politicians usually listen to the greater number, and it is on this account that the attention of the citizens in non-coal producing states is invited to the study of this problem, because finally the coal operator is merely the intermediary between the worker and the coal consumer. The public therefore is vitally interested that the wages earned by the worker be fair to both sides.

Unless some check is made the recent situation will prove to be but a forerunner of other disturbances which will be far more serious.

On March 31, 1922, the contracts between the miners and operators with both the bituminous and anthracite mines will expire. Heretofore the contracts expired at different times, insuring the operation of one group of mines if the other should be idle. The announced object of the miners' leaders to obtain at the next wage conference are:

First. Higher wages.

Second. A six-hour day and five days per week.

But what the organization has pledged to its members to do is to demand:

Third. Nationalization of the mines, and

Fourth. Last, but most important, though not announced, control of the American Republic.

The question is, how long will the American people stand for it?

Conference Report on Bituminous Industry Disappoints; Strike Threat May Speed Up Production

By Paul Wooton
Washington Correspondent

ASKED for his opinion of the bituminous coal report made by the Committee on Mining of the Unemployment Conference, a leading economist said: "One of the most disappointing things of the whole conference was the report prepared by persons amply equipped to bring out something more constructive. The salient questions facing the industry come in for only negative reference, if mentioned at all. It is very disapointing that this array of intelligence could think of nothing to say."

It was explained that the only reason the conference did not adopt the report was that some members of the Transportation Committee objected to the reference made therein to assigned cars. The question is being asked as to why assigned cars were considered at all by a committee studying the employment situation. Certainly, assigned cars have had no influence on unemployment during the summer and autumn, as there have been large surpluses of cars. Even in times of car shortages the effect on employment is indirect and comparatively insignificant. The mines that have the cars absorb the labor.

Frenzied Efforts Likely to Follow Strike Talk

The report was referred to as supporting Senator Frelinghuysen's contention that the coal industry seems unable to unite on anything constructive but overnight it can perfect the closest co-operation to oppose legislation or to take any other step looking to its selfish interests. In that connection it is pointed out that nothing was done at the unemployment conference that promised any general relief from unemployment among coal miners. The various municipal activities do not reach to the coal fields. It just happens, however, that developments since the close of the unemployment conference make it seem probable that there soon will be work for any coal miner who cares to accept it.

In the face of a general railroad strike, frenzied efforts to get out the maximum amount of coal possible during October are expected. In the event of a strike, it is believed that coal will be moved if troops have to be used to bring the trains through. With the revival of manufacturing and the prospects for a much larger volume of business next spring, it is predicted that fuel supplies will be built up as a protection against a coal strike.

Information laid before the unemployment conference indicate that social unrest in the United States is much more widespread than has been realized generally. The men who thus interpret the data, gathered systematically from all parts of the country, are not those who trot out the bogey of Bolshevism. The prevalence of discontent is so widespread that the leaders in the conference agree that fundamental improvement of our social and economic system must begin at once. The fact that there are 4,000,000 men out of employment at this time is referred to as a disgrace of the first order and an outward indication of the need for inaugurating more intelligent economic policies. The recrudescence of coal-control bills in Congress is pointed to as an indication of the times.

In that connection it is known that some of the leading figures in the conference cannot disguise their disgust with the frequent demagogic charge that capitalism is the dominant factor in the United States. They point out that the United States is the outstanding example of all history of an individualistic country. Individualism and equality of opportunity are so emphasized that capital really comes in for little public concern. There seems to be no doubt that business as a whole suffers materially because the public is not sufficiently considerate of capital.

The unemployment conference has brought out with particular clearness the great lack of fundamental knowledge necessary to the intelligent conduct of business. Even in dealing with the immediate object of the conference, the whole opportunity of its being helpful has been jeopardized by lack of real statistics as to unemployment. By a process of elimination, more than anything else, the conference finally established that the unemployed certainly are not in excess of 4,000,000, revealing that business for months has had to withstand the shock and lack of confidence engendered by seemingly authoritative reports of 5,700,000 or more being out of employment.

The unemployment conference has not been carried away by the tendency toward centralization. The burden of the solution of the problem of unemployment has been thrown upon the communities. The Federal Government can help but the conference will do all in its power to see to it that Governors of states and Mayors of cities do not pass on unpleasant responsibilities to the Federal Government. State and community officials are being pushed into action and aroused to the necessity of carrying the country through the winter without suffering.

The conference necessarily brought up some discussion of employer and employee relationships. Among the thoughts brought forcibly to the attention of the employers was the one that control of labor by its less intelligent element must be avoided. Particularly favorable mention was made of shop councils. It is stated that there has not been a strike in an industry where shop councils have been established. If they have no benefit other than freeing labor of brutal and unjust foremen, the plan is worth while, it is contended.

From the information available at the Department of Commerce and at the unemployment conference, it may be

judged that the coal industry is in desperate straits. The importance of coal to all industries makes the attitude of the United Mine Workers of the greatest public interest. Since a threatened strike slows down business and has a general upsetting influence months in advance of the possible time of the strike, an effort was made to get the bituminous coal operators and the United Mine Workers to agree in advance to arbitrate any differences that might arise next spring.

For several hours on Saturday, Oct. 8, President Harding, Secretary of Commerce Hoover and Secretary of Labor Davis conferred at the White House, following luncheon, with members of the central committee of the United Mine Workers, including President John L. Lewis of the miners' union; Vice-President Philip Murray, President Lee Hall of the Ohio union; President John Hessler of the Indiana union; President Robert Fitzgibbon of District No. 5 of Pennsylvania and legislative agents John Moore and Walter J. James.

The object of the conference was the desire of the government to prevent a strike of bituminous miners next spring in event of disagreement between miners and operators over a new wage scale. It is understood, however, that the conference lacked definite results in view of the determination of the union at its Indianapolis convention last week to make its stand as to wages until February. The operators agreed but the representatives of the mine workers declined to agree to any such proposal.

Many have discounted the probabilities of a coal strike, but the unemployment conference was told that the situation is a serious one. It is made the more serious by the low level of consumers' stocks. The railroads owe more than $100,000,000 for coal already burned. Due to the failure of Congress to pass the funding bill, the railroads are in no position to buy coal to store. Instead of having fifteen days' supply on hand, they should have three months' supply. The members of the conference were urged to use their influence with the people to lay in three months' supply now. At any rate notice has been served on all consumers and the full responsibility of any coal shortage this winter has been placed squarely on their shoulders.

Wage Proposal Held to Be Vicious

In the discussion of the coal situation it was a generally-held opinion that it is vicious to attempt to build up a daily wage large enough to cover the idle time. If reserves were sequestered in the season of demand, to be used to provide for the period of unemployment, there is a feeling that efforts to increase the number of working days would have more encouragement. The plan of laying aside 10 per cent or some other proportion of earnings for hard times was described as being simply composite providence.

The mining committee prepared a series of five recommendations on the bituminous coal industry but they were not officially presented to the conference. This was due to the fact that the committee report was about to be presented late in the conference and the further fact that time did not permit of discussion of its recommendations on car supply with transportation heads, which was suggested by Mr. Hoover as a courtesy to the railroad men.

The recommendations of the mining committee on bituminous coal follow:

1. As our bituminous coal deposits are ample and the developed mine capacity is far in excess of the country's bituminous coal requirements, therefore safeguarding the public's coal supply is mainly a question of car supply and transportation.

2. As the preferential car supply was permitted to exercise its evil influence in 1920 with most disastrous results to our people, your committee respectfully recommends that the Esch-Cummins Act be hereafter rigidly enforced to the end that there shall be no preferential use or assignment of railroad cars in the coal industry. This practice has been condemned as an evil by the Fuel Administration in 1918, by the Presidential Coal Commission in 1920, and is prohibited by the Esch-Cummins law, all recognizing that it results in reducing coal costs to users of the preferential fuel cars only, and thereby unduly increases the cost of coal to the remainder of the coal-consuming public who do not enjoy the use of the preferential car. It has the further baleful effect of increasing both unemployment and irregularity of employment at the mines not enjoying the use of the preferential fuel cars; all resulting in the unnecessary pyramiding of coal costs upon all coal consumers.

3. As an aid to present unemployment, as a substitute for the assigned car and to avert the peak load at bituminous coal mines, your committee therefore further recommends that this conference memorialize the Committee of Railroad Executives and ask that they gradually accumulate and maintain along their lines of railway throughout this country a quantity of bituminous coal sufficient to take care of their requirements for a period of at least five months, as that quantity should provide for their requirements over any reasonable emergency that may arise, and permit the remaining fuel consumers to fully employ our transportation facilities.

4. Your committee further recommends that this conference memorialize Congress to the effect that the railroads be paid all moneys now owing them by the Federal Government.

5. Your committee further recommends that the per-diem charge made by railroads for cars used off their lines be materially increased and enough so as to insure their prompt return to the owning railroad, thereby materially increasing transportation facilities.

Kohler Law Declared Unconstitutional: Test Case Will Go to Higher Court

JUDGE HENRY A. FULLER, of the Court of Common Pleas of Luzerne County, has rendered a decision in which he holds that the Kohler mine-cave law is unconstitutional. The test case was brought by H. J. Mahon and wife, of Pittston, who sought to restrain the Pennsylvania Coal Co. from mining under the home they own jointly.

"It is clear that the decision of this case on the facts and legal contentions," said the court in the opinion, "hinges strictly upon the narrow question whether the Legislature, in the exercise of so-called police power and in a case where the public interest is directly concerned, can constitutionally give to a private owner of surface the right of support against an owner of the underlying coal, thereby depriving the latter of right to mine it without leaving support, and thus abrogating the very contract by which the owner of the surface acquired from the owner of the coal.

"Owing to the intellectual limitations of our old-fashioned mind and sitting in a court of equity, which is presumed to follow the fundamental law even when it conflicts with the comfort and security of individuals, we must confess our inability to perceive in the facts in this case any legitimate claim of the plaintiffs to the relief prayed. Sure it is that they would have no standing without the aid of the statute; equally sure is it that the statute applied to the case stated in the bill impairs the obligation of a contract and for the benefit of one takes the private property of another without compensation, and by a corollary almost too obvious for discussion it follows that the plaintiffs' claim for relief involves palpable breach of fundamental law. We decide the matter at this stage and dissolve the injunction on the sole ground that the statute in application to this case involves a constitutional impairment of the contract accompanied by the taking of private property for private benefit without compensation."

The case, of course, will be appealed at once to the State Supreme Court. The decision has been no surprise to state officials who were interested in the companion mine-cave bills during the legislative session.

At the time of the passage of the bills it was generally understood at the Capitol that neither was constitutional. As a matter of political expediency both were passed finally, and as Governor Sproul had given his word that he would approve them if they ever reached him he signed both. Both the Fowler and the Kohler measures were scheduled to die. The House passed them finally with the general understanding that they would end in Senate committees, but the factional fight at the closing of the session upset many plans and as votes were needed for other measures the mine-cave bills finally were put through.

Kenyon Bills Likely to Die Soon: Strikes May Provoke Half-Baked Legislation

SINCE the Senate unmercifully squelched Senator Frelinghuysen's effort to obtain even a mild form of federal influence in the coal industry, there seems to be little chance for serious consideration of the Kenyon bills. Senator Kenyon has expressed himself as favoring the Frelinghuysen coal-stabilization bill as a step in the right direction, but the stride does not attain the length which he desires.

With the increasing probabilities of railroad and mine strikes it is recognized that sentiment may change quickly with regard to this type of legislation. At the present time practically all members of the Senate recognize that there is no undue spread between the price of coal at the mine and the price charged by the retailer. All branches of the coal trade have had to face such depressing influences during recent months that most of the profit has been squeezed from each handling of coal. It also is generally recognized on Capitol Hill that conscienceless profit taking in times of emergency is confined to a minority. It is clearly foreseen that the threatened transportation and mine strikes have in them the making of conditions which lend themselves to profiteering operations, and there is a general desire to find a way to curb these predatory elements in the coal trade. One of the dangers of the situation which is now in the making is that there will be half-baked legislation which will do more harm than good.

The anti-profiteering philosophy revealed by Senator Kenyon's bill puts a premium on small-scale business and penalizes those having the efficiency of quantity operation. The bill would discourage the opening of large low-cost properties and would make it more profitable to operate in small units, with the accompanying increase in costs.

Wholesalers' Association Recommends Cut In Freight Rates on Coal and Coke

EMPHASIZING the necessity of lower freight rates if the prices of coal and coke are to be lowered, the American Wholesale Coal Association, through its president, W. R. Coyle, sent a telegram Oct. 15 to the Association of Railway Executives, in session at Chicago.

"Our customers, the consumers of coal, are asking why their coal remains so high," the telegram said. "You and we know that coal has come down and that lower prices to them can come only with lower rates.

"A considerable rate reduction is the only move at this time which will gain the entire support of the public for a further wage reducton. When the American public knows the facts, there will be no danger from a national strike.

"The people are impatient over the delay in adjusting rates. We recommend that you announce at once a sweeping downward revision of the rates on all coal and coke. If necessary, we recommend that you announce a further reduction in wages to take effect simultaneously with the new rate schedule. It is our opinion that such an announcement immediately made by you will be a great aid to business revival, as coal is an important factor in the operaton of every factory and a necessity in the heating of every home."

Howat Suspended from Union. Would Form Rival Labor Organization

EVENTS follow fast the declaration on Oct. 13, by John L. Lewis, president of the United Mine Workers of America, that Alexander M. Howat, district president in Kansas, be suspended from office and replaced by George L. Peck, a member of the executive board, whom he himself had suspended. Thomas Harvey, the ousted secretary-treasurer, is re-established in office.

The biennial convention recently held in Indianapolis ordered Howat to tell the striking miners of certain Kansas mines to go back to work. Howat refused to comply with the order. Concurrently he and August Dorchy, the vice-president of the district, were given a six months' jail sentence in the Cherokee County jail at Columbus, Kan., for violating the criminal section of the Industrial Court Law by calling strikes. Practically all the mine workers of Kansas quit work in protest against this imprisonment.

Howat left John Fleming, a lieutenant in sympathy with him, in entire charge of the situation, and on Oct. 15 Fleming announced the formation of a rival organization. Peck meanwhile is trying to get the men back to work.

Fleming asserts that the "rump" union will extend its operations in Illinois, where there are many disgruntled union men. The hard fight between the administration and Frank Farrington, Illinois district president, will long be remembered. Frank Farrington has been an insurgent within the union for years, and forces favorable to a disruption of the union are to be found all over that state.

W. E. Freeman, president of the Kansas Federation of Labor, appealed on Oct. 14 to the local unions of every kind to come to the support of the southern Kansas miners and described Lewis' order suspending the district officers as "traitorous desertion."

Operators report that 1,500 Kansas miners who had been idle since Howat and Dorchy went to jail returned to work Oct. 17.

Injunction Granted U. M. W. A. in Illinois Conflicts with Federal Case in Indiana

TAKING the coal operators of Illinois by surprise the judge of the Circuit Court of Franklin County, Illinois, has issued a writ of temporary injunction asked by the United Mine Workers of America, enjoining all operators and all associations in the state from "declaring the existence of the Twelfth District union unlawful, from in any way interfering with collecting the check-off, from in any way interfering with the union, from abandoning the check-off, from interfering with peaceful persuasion of miners to join the union and from in any manner treating the funds of the union as illegal accumulation." The effect of this injunction is exactly contrary to the contentions of the Government in the case before Judge Anderson, of Indianapolis, which declares the check-off illegal. This leaves Illinois operators in a quandary as to whether to conform to the contention of the state or the Federal court. The operators have arranged to meet in Chicago, Thursday, Oct. 20, to formulate a policy. It is not expected that they will oppose the ruling but let it alone. Some favor fighting it.

F. R. Wadleigh to Direct Coal Division of Bureau of Commerce

IN REORGANIZING the Bureau of Foreign and Domestic Commerce on a commodity basis, the selection by Secretary Hoover of F. R. Wadleigh to head the coal division of the bureau is especially timely. Mr. Wadleigh, an expert in matters pertaining to export coal markets, will direct the foreign staff of the bureau, interpreting the needs of the coal industry, and will develop the material received. In joining the bureau Mr. Wadleigh resigned his position as assistant to the president of the Tuttle Corporation, New York City. Prior to that connection he was with the Weston Dodson Co. and during the war served with the Central Bureau of Planning and Statistics in Washington as consulting engineer on coal.

District Convention Will Try to Induce Glen Alden to Operate Idle Mines

THE executive board of District No. 1 of the northern anthracite field on Oct. 11 issued a call for a district convention to meet in Scranton Oct. 24, to see if some means could be devised to persuade the Glen Alden Coal Co. to open six collieries now idle as the result of the Kohler Law. A strike vote is predicted. Probably, however, the mine workers will hesitate before officially committing themselves to such a violation of their contracts.

Committee of National Coal Association Indorses Plan To Lease Shipping Board Vessels for Coal Export

SECRETARY of Commerce Hoover has suggested to the Shipping Board that it lease idle vessels to coal exporters at $1 per month per vessel in order to provide employment at the mines and to increase the export trade. The Shipping Board announces that it will put the plan into effect if the idea is approved by private shipowners, to whom the matter will be presented by Secretary Hoover.

No agreement is yet in sight in regard to this proposal. Discussions between Secretary Hoover, Shipping Board officials and representatives of the operators are continuing. The following is from a memorandum referred to Mr. Hoover and the Shipping Board by a sub-committee of the Foreign Trade Committee of the National Coal Association:

"This committee has had under consideration for a long time the general bituminous coal export trade of the United States, and while most of those appearing before you this morning represent shippers from the Eastern coal fields we feel that our remarks pertaining to the subject are representative of the views of those interested in all coal fields from which coal can be exported.

"We are of the opinion that outside of a very small number who have recently engaged in the general coal and shipping business very few of our people realize the vital need of this particular trade to the nation. It is of unusual importance today because of the position occupied by the United States as a result of the re-establishment of her merchant marine.

"There are no two lines of trade activity in England that are so closely allied as the shipping and coal interests. The greatest merchants and minds of England are actively identified with these branches of trade, and in many cases shipping controls coal, and vice versa.

Export Market Natural Outlet for Surplus Coal

"If our mines are to be fully operated, giving employment to the maximum number of men that can be worked therein, furnishing the maximum freight to the railroads, taking the maximum amount of supplies of all kinds directly or indirectly affected by coal mining, increasing business activity to the utmost, some market must be developed for the surplus, and the only market available is the export trade. Without it the mines cannot be operated to anything like their capacity, nor can the merchant marine successfully compete with England. We cannot use the foreign buyers as a convenience. If we are to develop our export trade it must be done in a businesslike way and therefore it must be constant, and active efforts must be made to enlarge it.

"We are today in active competition with England, and our merchant marine is seriously involved. We think that we can make the statement without fear of contradiction that without a foreign coal trade the merchant marine cannot be operated successfully.

"Our interests have been seriously militated against by the manner in which a large part of the business was handled during the last year due to the abnormal demand both at home and abroad, so that it is going to be very difficult for us to overcome the prejudice against American exporters, and unless we are in a position to assure our foreign friends that we are in the business to stay, and that we will and can meet English competition, and that they can rely on us at all times, they will come to America only in the event they are unable to secure their supplies elsewhere.

"The coal operators who were seriously engaged in the exportation of coal recognized the seriousness of their position in foreign markets, and many of them have expressed a willingness to continue their efforts, even though they are obliged to take less than the cost of production for their coal, but the difference is so great that even this will not enable us to stay in the market. We must have some assistance or the American coal export trade will be irretrievably lost except in times of worldwide shortage. We have the coal, we have the facilities, we have the banking connections, in fact we have everything but the things that are absolutely vital for the promulgation of this trade, and that is cheap transportation. It seems to us that the importance of this business is so paramount that some arrangements should be made whereby the Shipping Board or the Emergency Fleet Corporation can make rates on coal that will enable coal operators to compete in foreign markets.

"We are not unmindful of the fact that the rates that would be necessary to enable us to do this will result in a loss in the operation of American vessels, but we believe that a smaller loss will be sustained by keeping the vessels in operation than by allowing them to stand idle.

"We have a long way to go before we can have any definite permanent export coal trade on which to rely, and we do not believe that the importance of this trade to our merchant marine can be exaggerated, and, therefore, we must consider from every possible angle if there is not some way in which we can all assist to the end that the trade will be encouraged and helped, as without it, regardless of the general resumption in other lines of business, our merchant marine cannot be possibly made effective to the general welfare of the nation. We have the merchant marine, and we must now devote ourselves to securing the trade so vital to its operation."

John Lewis Advocates Government Credit to Workers as Unemployment Aid

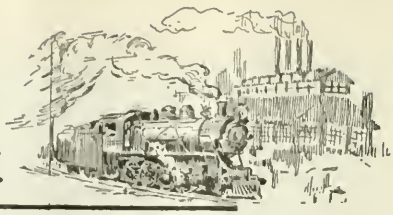
EXTENSION of government credit to working men and women as an emergency relief measure in unemployment crises is advocated in a statement given to the press by John L. Lewis, president of the United Mine Workers. Government credits are being used for the benefit of the farmers, the railroads and exporters, says Mr. Lewis, and he argues that it would be sound public policy to extend similar assistance to workers temporarily out of jobs. That it is not an extreme or revolutionary proposal, he says, is shown by the fact that the British Government has recently decided upon a similar measure of emergency relief.

"These credits by the most extreme estimates could not reach a total in excess of two and a half billion dollars," Mr. Lewis asserts. "Less than 10 per cent of the available credits of the banking system of the country would, therefore, be absorbed. By interest adjustments or commission charges all expense to the government would be eliminated. Through the availability of these credits the self-respect and dignity of the worker would be maintained. By the use of the credits, the purchasing power of our people would be greatly expanded, and this in turn would revivify trade and industry and reduce unemployment. With a return to normal conditions the loans could be repaid without great inconvenience.

"Credit has thus been extended to the farmer, the producer of raw materials, and to the exporter. Labor is our most important factor in production, and the success of our self-governing republic and our democratic institutions and ideals is fundamentally dependent on the living standards and economic welfare of our workers. The success of industry and trade, as well as public policy itself, therefore, point to the wisdom of these credits."

As further measures of relief for the unemployment evil Mr. Lewis recommends in his statement that every corporation, firm or individual engaged in interstate commerce be required to build up a reserve labor fund equal to one-half its annual payroll, this fund to be used to pay the wages of employees who would otherwise be dropped for lack of work in slack times, and he also urges a governmental investigation to determine the relation between labor costs and profits.

Production and the Market



Weekly Review

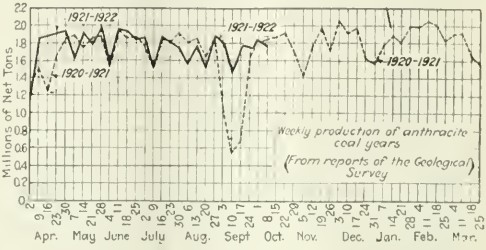
GRATIFYING signs of returning interest in the market have been shown this week by bituminous coal consumers. Buying everywhere is confined to small lots but that more coal is moving as the season progresses is shown by the report of the Association of Railway Executives, which says that on Oct. 1 there were only 98,048 surplus coal cars in the country, or a reduction of 12,328 compared with the week previous.

Railroads are issuing warnings of an impending shortage of equipment should the movement increase much further. The Pennsylvania is trying to rent 2,000 coal cars for use on its lines and the B. & O. mines are facing an early return of "car rationing" in view of the increase in coal traffic.

Consumers Discount Chances of Real Rail Tie-Up

Labor occupies the limelight today. The announcement of the rail union leaders ordering a strike effective Oct. 30 has caused no little anxiety on the part of all buyers. Prior to this notice the consumer had discounted the probability of a real rail tie-up but the action of the labor chiefs doubtless will send many buyers into the immediate market for protection. At the same time the consumer will not buy heavily. Hand-to-mouth purchases are the order of the day. The prospect of lower freights to come is so alluring that coal receipts will be kept to the lowest tonnage commensurate with actual current requirements.

Prices are more stable. Reports from all sections indicate a greater degree of firmness in quotations, and while screenings are still heavy where domestic production is strong, there has been a decided strengthening from the "distress" position of last week. Non-union mines are benefiting more from the increased ordering than union operations. This is shown in the Pittsburgh district, where, except for gas coal, the market is unimproved. Eastern Ohio reflects the improvement in the steel and tube industry. The domestic market is strong in the Midwest while cotton mills and allied industries in the South are taking more coal. *Coal Age* Index of spot prices was 90 on Oct. 17 as compared with 89 on Oct. 10.


1921-1922
1920-1921
Millions of Net Tons
Weekly production of anthracite coal years
(From reports of the Geological Survey)
Apr. May June July Aug. Sept Oct. Nov. Dec. Jan. Feb. Mar.

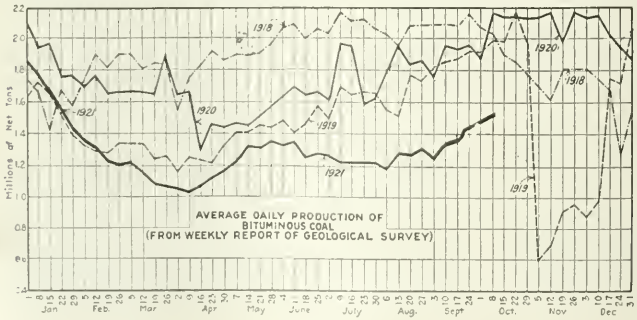
Demand for anthracite domestic sizes continues to increase with the cooler weather. As in bituminous, however, the householder is buying in smaller lots and distribution will be spread over a longer period than in normal times. The steam trade also is improving, especially in the buckwheats.

The recent increase in beehive coke production has proven too strong for the existing demand. Buying by the furnaces has not been up to anticipation and prices have suffered accordingly since the recent stiffening reported last week.

BITUMINOUS

Production continues to improve. The output during the week ended Oct. 8 was 9,105,000 net tons, according to the Geological Survey. This is the first time since last January that the weekly production has passed the 9,000,000-ton mark. When compared with the preceding week, this is an increase of 222,000 tons. Loadings for the first two days of the following week—Oct. 10-15—indicate a further increase in production.

The export markets continue inactive, due to the general industrial depression and also to the strong British competition in foreign markets. The English coal industry, how-



Estimates of Production

(Net Tons)

Week Ended	1921	1920
BITUMINOUS COAL		
Sept. 24 (*b*)	8,527,000	11,851,000
Oct. 1 (*b*)	8,883,000	11,350,000
Oct. 8 (*a*)	9,105,000	12,103,000
Daily average	1,517,000	2,017,000
Calendar year	306,457,000	412,039,000
Daily average, calendar year	1,291,000	1,732,000
ANTHRACITE		
Sept. 24	1,754,000	1,701,000
Oct. 1 (*b*)	1,832,000	1,855,000
Oct. 8 (*a*)	1,793,000	1,898,000
Calendar year (*a*)	69,324,000	67,791,000
BEEHIVE COKE		
Oct. 1 (*b*)	78,000	376,000
Oct. 8 (*a*)	80,000	400,000
Calendar year	4,192,000	16,470,000

(*a*) Subject to revision. (*b*) Revised from last report.

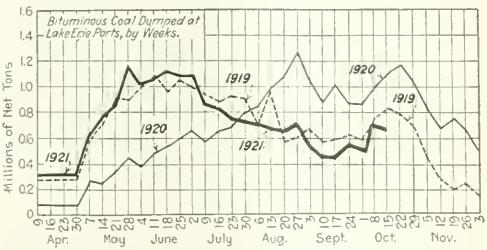
ever, is now faced with the necessity of a return to a more economic basis of operation, which will either result in a curtailment of production or an increase in prices. A line of inquiry for American coals is already developing which should lead to a resumption of the European and South American trading that has been markedly lacking of late.

Hampton Roads shippers are actively canvassing the New England outlet but stocks are heavy in that section and the only buyers are those who have delayed putting in a seasonal reserve. Dumpings at the piers for all accounts during the week ended Oct. 13 were 209,698 gross tons as compared with 146,350 the preceding week. September dumpings at all piers were 2,413,000 net tons. Exports were 88 per cent less than in June, the high point of the year.

TIDEWATER BITUMINOUS COAL SHIPMENTS FOR SEPTEMBER, 1921
(In Net Tons)

Destination	New York	Phila-delphia	Balti-more	Hampton Roads	Charles-ton	Total
Coastwise to New England	85,000	43,000	91,000	590,000		809,000
Exports		12,000	37,000	153,000	8,000	210,000
Bunker	263,000	24,000	31,000	171,000	3,000	492,000
Inside capes		157,000	96,000	26,000		279,000
Other tonnage	569,000	.....	.....	51,000	3,000	623,000
Total	917,000	236,000	255,000	991,000	14,000	2,413,000

Buying is gaining momentum in the Northwest and the cargo movement is due for a last minute rush, that shippers may avail themselves of the seasonal rate from the mines which expires Oct. 31. However, the Wheeling & Lake Erie and the Bessemer & Lake Erie roads announce that they will not cancel their low tariffs on that date. A reduction of 28 per cent in the freight rates on iron ore, effective at once and continuing until Dec. 31, will stimulate the movement of cargoes down the Lake. Dumpings of coal were 673,023 net tons in the week ended Oct. 10—648,876 tons cargo and 24,147 tons vessel fuel—as compared with 752,652 tons the week before. Cumulative tonnage for the season now stands at 20,268,823; in 1920 it was 18,471,593.



The rail strike may not materialize nationwide but instead be a series of outlaw tie-ups affecting terminals. Industries will be hampered, not so much by lack of fuel, as by inability to market their products.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	Sept. 13, 1921	Oct. 4, 1921	Oct. 10, 1921	Oct. 17, 1921†
Pocahontas lump	Columbus	$5 20	$4 75	$4 75	*$4 25@$4.75*
Pocahontas mine run	Columbus	3 15	2 80	2 75	*2.40@2.85*
Pocahontas screenings	Columbus	2 45	2 10	2 05	*1.75@2.15*
Pocahontas lump	Chicago	4 95	4 75	4 75	4 50@ 5 00
Pocahontas mine run	Chicago	3 10	2 65	2 60	**2 25@ 3 50**
*Smokeless mine run	Boston	5 00	4 90	4 85	4 75@ 4 90
Clearfield mine run	Boston	1 95	1 95	1 95	*1.75@2.15*
Cambria mine run	Boston	2 35	2 35	2 40	**2 10@ 2 75**
Somerset mine run	Boston	1 75	1 80	1 85	**1 60@ 2 15**
Pool 1 (Navy Standard)	New York	3 40	3 25	3 15	**3 15@ 3 35**
Pool 1 (Navy Standard)	Philadelphia	2 95	3 10	3 10	**3 00@ 3 30**
Pool 1 (Navy Standard)	Baltimore	2 90	2 80	2 75	**2 75@ 3 00**
Pool 9 (Super. Low Vol.)	New York	2 60	2 45	2 40	**2 40@ 2 60**
Pool 9 (Super. Low Vol.)	Philadelphia	2 35	2 40	2 40	**2 25@ 2 60**
Pool 9 (Super. Low Vol.)	Baltimore	2 50	2 65	2 45	2 35@ 2 50
Pool 10 (H. Gr. Low Vol.)	New York	2 30	2 15	2 15	**2 00@ 2 40**
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2 05	2 05	2 05	**2 00@ 2 25**
Pool 10 (H. Gr. Low Vol.)	Baltimore	2 20	2 45	2 30	*2.00@2.25*
Pool 11 (Low Vol.)	New York	2 15	1 90	1 80	**1 65@ 2 00**
Pool 11 (Low Vol.)	Philadelphia	1 80	1 85	1 85	**1 75@ 2 00**
Pool 11 (Low Vol.)	Baltimore	2 00	2 20	2 10	*1.90@2.10*
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1 90	1 90	1 75	1.60@ 1.95
Pool 54-64 (Gas and St.)	Philadelphia	1 70	1 75	1 75	1.65@ 1.85
Pool 54-64 (Gas and St.)	Baltimore	1 70	1 90	1 85	*1.60@1.85*
Pittsburgh sc'd gas	Pittsburgh	2 65	2 65	2 65	2 55@ 2 75
Pittsburgh mine run (St.)	Pittsburgh	2 25	2 20	2 20	2.20@ 2.25
Pittsburgh slack (Gas)	Pittsburgh	1 70	2 15	2 15	*1.85@2.00*
Kanawha lump	Columbus	3 45	3 25	3 20	3.00@ 3.35
Kanawha mine run	Columbus	2 15	2 00	1 95	**1 90@ 2 20**
Kanawha screenings	Columbus	1 35	1 20	1 20	*1.00@1.25*
Hocking lump	Columbus	3 20	3 25	3 20	3 00@ 3 40
Hocking mine run	Columbus	2 15	2 00	2 00	1 90@ 2 15
Hocking screenings	Columbus	1 25	1 10	1 05	*0.90@1.05*
Pitts. No. 8 lump	Cleveland	3 25	3 25	3 25	.....
Pitts. No. 8 mine run	Cleveland	$2 25	$2 05	$2 20	*$2.10@$2.20*
Pitts. No. 8 screenings	Cleveland	1 60	1 55	1 55	1.50@ 1.60
Midwest					
Franklin, Ill. lump	Chicago	3 65	3 65	3 80	**3 50@ 4 30**
Franklin, Ill. mine run	Chicago	2 95	2 75	2 70	**2 40@ 3 25**
Franklin, Ill. screenings	Chicago	1 95	1 70	1 40	*0.85@1.00*
Central, Ill. lump	Chicago	2 70	2 50	2 50	2.00@ 3.00
Ceatral, Ill. mine run	Chicago	2 40	2 25	2 25	1.75@ 2.75
Ceatral, Ill. screenings	Chicago	1 65	1 45	1 45	*0.60@1.75*
Ind. 4th Vein lump	Chicago	2 95	2 90	2 95	2.35@ 3.50
Ind. 4th Vein mine run	Chicago	2 55	2 55	2 55	*2.25@2.75*
Ind. 4th Vein screenings	Chicago	1 70	1 55	1 50	**1 00@ 2 15**
Ind. 5th Vein lump	Chicago	2 90	2 70	2 70	2.15@ 3.25
Ind. 5th Vein mine run	Chicago	2 50	2 50	2 50	2.25@ 2.75
Ind. 5th Vein screenings	Chicago	1 75	1 45	1 45	0.70@ 2.15
Standard lump	St. Louis	2 65	3 25	3 40	3.25@ 3.50
Staudard mine run	St. Louis	1 95	1 85	1 85	*1.75*
Standard screenings	St. Louis	0 75	0 35	0 55	**0 50@ 0 65**
West. Ky. lump	Louisville	2 75	3 00	2 95	**2 75@ 3 50**
West Ky. mine run	Louisville	2 25	2 25	2 25	**2 00@ 2.60**
West Ky. screenings	Louisville	1 30	1 15	1 30	**1 00@ 1.75**
South and Southwest					
Big Seam lump	Birmingham	3 75	3 75	3 75	3.25@ 4.25
Big Seam mine run	Birmingham	2 15	2 15	2 15	2.00@ 2.30
Big Seam (washed)	Birmingham	2 40	2 30	2 30	2.15@ 2.40
S. E. Ky. lump	Louisville	3 50	3 55	3 65	**3 50@ 4 00**
S. E. Ky. mine run	Louisville	2 15	2 10	2 20	**2 25@ 2 35**
S. E. Ky. screenings	Louisville	1 50	1 25	1 25	1.00@ 1 50
Kansas lump	Kansas City	5 75	5 75	....	.....
Kansas mine run	Kansas City	4 25	4 00	....	.....
Kansas screenings	Kansas City	2 50	2 40	....	.....

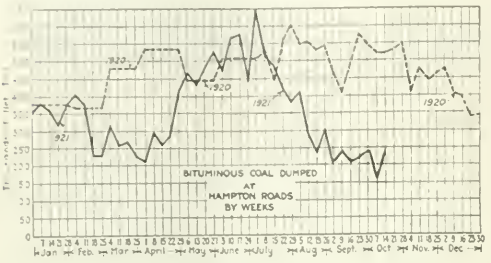
*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	Oct. 4, 1921 Independent	Oct. 4, 1921 Company	Oct. 10, 1921 Independent	Oct. 10, 1921 Company	Oct. 17, 1921† Independent	Oct. 17, 1921† Company
Broken	New York	$2 61	.....	$7.60@$7.75	.....	$7.60@$7.75	.....	$7.60@$7.75
Broken	Philadelphia	2 66	$7.60@$8.20	7.75@ 7.85	$7.60@$8.20	7.75@ 7.85	$7.60@$8.20	7.75@ 7.85
*Broken	Chicago	5 63	13.40	12.80	13.40	12.80	13.40	12.80
Egg	New York	2 61	7.75@ 8.00	7.60@ 7.75	7.75@ 8.00	7.60@ 7.75	**7 75@ 8 25**	7 60@ 7.75
Egg	Philadelphia	2 66	8.10@ 8.35	7.75@ 7.85	8.10@ 8.35	7.75@ 7.85	8.10@ 8.35	7.75@ 7.85
*Egg	Chicago	5 63	13.40	12.80	13 40	12.80	13 40	12.80
Stove	New York	2 61	8.25@ 8.75	7.90@ 8.10	8 50@ 8.75	7.90@ 8.10	8 50@ 8.75	7.90@ 8.10
Stove	Philadelphia	2 66	8.25@ 8.75	8.00@ 8.35	8.25@ 8.75	8 00@ 8.35	8.25@ 8.75	8.00@ 8.35
*Stove	Chicago	5 63	13.40	12.90	13 40	12 90	13 40	12.90
Chestaut	New York	2 61	8.00@ 8.50	7.90@ 8.10	8.25@ 8.50	7.90@ 8.10	8 25@ 8 50	7 90@ 8.10
Chestnut	Philadelphia	2 66	8.20@ 8.75	8.05@ 8.25	8.00@ 8.50	8.05@ 8 25	8 00@ 8.50	8.05@ 8.25
*Chestnut	Chicago	5 63	13.40	12.90	13 40	12 80	13 40	12.80
Pea	New York	2 47	5.00@ 5.50	6.05@ 6.45	5.00@ 5.50	6 05@ 6 45	**5 25@ 5 75**	6.05@ 6.45
Pea	Philadelphia	2 38	4.50@ 5.50	6.15@ 6.25	4.50@ 5.50	6.15@ 6.25	**4 75@ 5 50**	6.15@ 6.25
*Pea	Chicago	5 63	12.40	11.15	12.40	11.15	12 40	11.15
Buckwheat No. 1	New York	2 47	2.75@ 3.00	3.50	3.00@ 3.25	3.50	3.00@ 3.25	3.50
Buckwheat No. 1	Philadelphia	2 38	2.50@ 3.00	3.50	2.75@ 3.00	3.50	2 75@ 3 00	3.50
Rice	New York	2 47	1.80@ 2.15	2.50	2.00@ 2.25	2 50	**2 00@ 2 40**	2.50
Rice	Philadelphia	2 38	1.75@ 2.00	2.50	1.75@ 2.00	2.50	1 75@ 2 00	2.50
Barley	New York	2 47	1.25@ 1.50	1.50	1.25@ 1.50	1.50	1 25@ 1.50	1.50
Barley	Philadelphia	2 38	1.00@ 1.25	1.50	1.00@ 1.25	1.50	1.00@ 1.25	1.50
Birdseye	New York	2 47	.....	2.50	.....	2.50	.....	2 50

*Prices and freight rates, net tons; quotations f.o.b. cars, Chicago.
†Advances over previous week shown in **heavy type**, declines in *italics*.

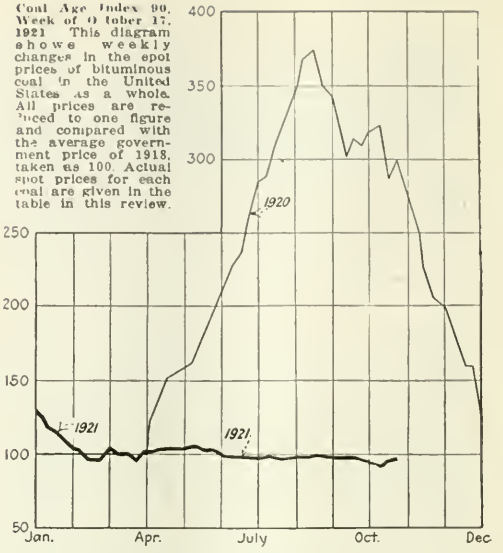
All-rail movement to New England is hard hit by the continued hammering of the Southern coals via the coastwise route. The movement over the Hudson during the week ended Oct. 8 was 2,595 cars, 300 less than in the preceding week.



ANTHRACITE

Production remained steady during the first week in October. According to the Geological Survey the output was 1,793,000 net tons. September shipments, as reported to the Anthracite Bureau of Information, were 5,519,412 gross tons, against 5,575,115 in August. Inability to operate certain mines in the Scranton district under the provisions of the Kohler Act caused a loss of more than 200,000 tons, most of which was offset by increased shipments from other districts.

Stove coal leads the demand and dealers accept orders for this size when accompanied by permission to ship egg and nut also. Steam sizes are in moderate demand. The Lake movement is holding remarkably well; it was 103,240 net tons in the week ended Oct. 12 as compared with the preceding week's tonnage of 70,400.


Coal Age Index 90, Week of October 17, 1921 This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.
400
350
300
250
200
150
100
50
1920
1921
1921
Jan.
Apr.
July
Oct.
Dec.

COKE

Production of behive coke increased but 2,000 tons to 80,000 tons in the week ended Oct. 8. The possibility of lower freights has been an influence to postpone the relighting of blast furnaces and the Connellsville region has not made further headway in regaining production.

Foreign Market And Export News

Coal Paragraphs From Foreign Lands

GERMANY—Ruhr production during the week ended Oct. 1 was 1,778,000 metric tons, according to a cable to *Coal Age*, or an increase of 20,000 tons over the preceding week.

Prices of coal on the Upper Silesian market have been raised as follows: all coarser sorts by 42.80 marks; smalls by 31.40 marks; Ratterklein by 24.50 marks and washed dust by 3 marks per ton. The price for ordinary dust remains unchanged.

Provisional figures of the Ruhr production in August show 8,130,000 tons, as compared with 7,780,000 tons in July. Apparently the average daily output increased from 299,300 tons in the latter month to 301,300 tons in August.

ITALY — Cardiff steam firsts are quoted at 43s. 6d. on the Genoa market, according to a cable to *Coal Age*. American coal is not quoted.

INDIA — Stocks in the hands of dealers are considerable. Bengal coal is 35 rupees per ton. Welsh is quoted at 45s. and African at 55s. c.i.f. Bombay. The market is dull. The import of foreign fuels into India has precipitated a slump in the price of the Bengal coal. To remedy the situation they suggest that the existing embargo on the export of Indian coal to foreign ports should be withdrawn.

SOUTH AFRICA—A crisis has arisen regarding exporting of coal from South Africa because of the delivery of Welsh coal at East African, Indian and South American ports at prices which render competition impossible owing to the South African railway rates. Only Transvaal collieries are at present returning reasonable dividends, and today the majority of the operations are in much the same position as the low grade mines.

The Railways Board announces reductions in the rates for bunker coal, effective Jan. 1, 1922, of 4s. 6d. per net ton to Durban and Lourenco Marques and 5s. 6d. for Cape ports. On Oct. 1 a reduction was also made of 1s 3d. to Lourenco Marques and Union ports for export cargo coal and coal used in bunkering of ships carrying full cargoes of export coal.

SPAIN—The Tariff Commission has held a sitting for the discussion of the proposed duties on mineral combustibles and has decided to re-estblish the former duty of 3.75 pesetas on coal. The present prices for Austrian coal are: Screened, 100 pesetas; large, 95, and small, 75@80. The freight from Gijon to Barcelona is still round about 17 pesetas per ton.

Spanish coal owners are still uneasy owing to competition on the part of Great Britain, especially in view of the fact that the Spanish industries are giving fewer orders than usual. The great problem is the increased cost of production, due to the smaller output of the individual miner; in the Asturias the output per miner has increased somewhat lately, but not enough to make up for the rise in wages.

INDO-CHINA — Annual production in Indo-China averages about 650,000 tons, of which some 350,000 tons are exported. The greater portion of this output is furnished by mines of Hongay, in Tongking, in close proximity to the port of Haiphong. This coal finds a market even in Japan. In a recent article in the Saigon press the writer affirmed that Indo-China coal would in time completely oust English coal from Far Eastern markets and would successfully compete with that produced in China and Japan.

Commerce Reports, No. 6, Oct. 10, 1921, contains an article on the market for coal in Finland and statistics of Czechoslovakian and German production.

French Railway Orders Cheap Coal in England

British Protection Declines Nearly 160,000 Tons and Export Business Is Below Expectations—September Dumpings at Hampton Roads Lowest Since December, 1919

Quotations on the Marseilles market, according to a cable to *Coal Age*, are: Best Welsh, 52s., American, $14.

The output of coal in France, including the Sarre region, during August was 3,385,523 metric tons. Mine stocks of coal, including the Sarre, at the end of that month amounted to 1,775,000 tons.

The French Midi Ry. has ordered 60,000 tons of admiralty steam (second) from British producers, delivery over twelve months, commencing Nov. 1, on a price basis of 25s. The French navy has purchased a like amount of admiralty large to be delivered by Dec. 31, 1921, at 120 fr. c.i.f. Toulon or 90 fr. c.i.f. Brest. Home coals have not improved their position.

Another purchase has been made by the French Midi Ry. of 100,000 tons of Durham unscreened at 18s.@19s. f.o.b. shipping point. Delivery will be made over 1922.

British Export Trade Unsatisfactory

Production in the United Kingdom during the week ended Oct. 1 was 4,114,000 gross tons, ac compared with 4,273,900 in the week preceding, according to a cable to *Coal Age*.

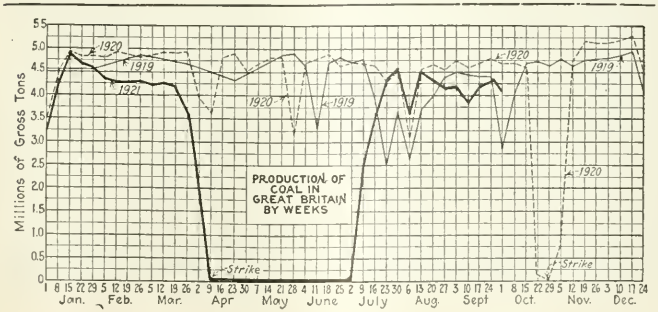
Cardiff exporters have fixed a rate to Buenos Aires of 20s. 5d. and to Rosario of 21s., being an increase of 6s. per ton. Homeward freights from the Plate have fallen so heavily—the present basis of between 22s. 6d. and 25s. per ton is just half that ruling three months ago for immediate shipment—that owners are disinclined to dispatch vessels to South America without greater inducement than has been offered lately.

The export trade is not proceeding as satisfactorily as was anticipated. Foreign markets feel the adverse exchange and the Eastern demand, which has been a recent feature, is now less active. Some Russian business is being done but shippers are cautious in taking orders because of the extremely poor port facilities.

In August 3,103,207 tons of coal were exported, as compared with 1,847,403 tons in August, 1920. The total export for the eight months amounted to 9,944,975 tons, as against 18,375,932 tons in the corresponding period of last year. The average value per ton of the coal exported in August was 36s. 6.4d. The *Colliery Guardian* publishes the following comparative statement of exports for the month and calendar year to date, 1913 and 1921:

Exported to	All Coal — Quantity (Tons) — August 1913	August 1921
Russia	769,794	50,281
Sweden	329,475	160,085
Norway	154,887	103,312
Denmark	248,746	287,110
Germany	798,177	124,524
Netherlands	168,862	248,646
Belgium	148,132	45,964
France	946,378	715,021
Portugal	74,225	80,778
Azores and Madeira	17,699	.....
Spain	180,505	116,992
Canary Islands	79,342	18,427
Italy	665,618	380,241
Austria-Hungary	54,286	.....
Greece	36,080	18,524
Algeria	116,754	53,223
French West Africa	10,136	3,714
Portuguese West Africa	13,390	14,248
Chile	21,039	186
Brazil	111,504	70,520
Uruguay	72,006	20,947
Argentine Republic	290,741	111,134
Channel Islands	16,004	13,797
Gibraltar	29,161	49,610
Malta	39,292	65,659
Egypt	196,796	114,825
Anglo-Egyptian Sudan	.....	.....
Aden and Dependencies	17,684	12,455
British India	10,057	53,439
Ceylon	7,037	100
Other countries	131,355	194,241
Total	5,819,152	3,103,207
Total: Anthracite	231,590	190,623
Total: Steam	4,197,809	2,181,765
Total: Gas	962,574	559,936
Total: Household	137,375	19,401
Total: Other sorts	289,814	111,582
Coke—Gas	113,423	20,636
Coke—Other sorts	.....	18,635
Manufactured fuel	140,278	153,176

	First Eight Months of 1913	1921
Total: Anthracite	1,934,680	570,451
Total: Steam	35,288,362	7,220,711
Total: Gas	7,587,554	1,725,508
Total: Household	1,160,811	57,586
Total: Other sorts	2,349,201	370,719
Total	48,320,608	9,944,975
Coke—Gas	712,698	239,913
Coke—Other sorts	.....	84,977
Manufactured fuel	1,363,324	394,819



Pier and Bunker Prices, Gross Tons

(Foreign Bunker Quotations by Cable to Coal Age)

	Oct. 8	Oct. 15†
PIERS		
Pool 9, New York	$5.75@$5.85	**$5 75@$6 00**
Pool 10, New York	5.45@ 5.60	**5 50@ 5 65**
Pool 9, Philadelphia	5.80@ 6.00	5.80@ 6.00
Pool 10, Philadelphia	5.40@ 5.70	**5 50@ 5.70**
Pool 71, Philadelphia	6.00@ 6.25	6.00@ 6.25
Pool 1, Hamp. Rds.	4.85@ 5.00	**4.90@ 5 00**
Pools 5-6-7 Hamp. Rds.	4.25@ 4.50	4.25@ 4.50
BUNKERS		
Pool 9, New York	6.10@ 6.20	6.10@ 6.20
Pool 10, New York	5.85@ 5.95	5.80@ 5.90
Pool 9, Philadelphia	5.80@ 5.90	5.80@ 5.90
Pool 10, Philadelphia	5.75@ 6.00	5.75@ 6.00
Pool 71, Baltimore	6.10@ 6.25	6.10@ 6.25
Pool 1, Hamp Rds.	4.95@ 5.10	**5 00@ 5 15**
Pool 2, Hamp. Rds.	4.65@ 4.85	**4 75@ 4 90**
Welsh, Gibraltar	47s. 6d. f.o.b.	47s. 6d. f.o.b.
Welsh Rio de Janeiro	65s. f.o.b.	65s. f.o.b.
Welsh, Lisbon	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, La Plata	60s. f.o.b.	60s. f.o.b.
Welsh, Madeira	52s. 6d. f.a.s.	52s. 6d. f.a.s.
Welsh, Teneriffe	52s. 6d. f.a.s.	52s. 6d. f.a.s.
Welsh, Genoa	55s. t.i.b.	55s. t.i.b.
Durham, Newcastle	35s.@ 37s.	35s.@ 37s.
Belgian, Antwerp	110 fr.	110 fr.

C.I.F. Prices, American Coal

(In Gross Tons)

	Oct. 8 Low Vol.	Oct. 8 High Vol.	Oct. 15† Low Vol.	Oct. 15† High Vol.
French Atlantic	$8 80	$8.40	$8.80	$8.25
United Kingdom	9 00	8.70	8.95	**8 75**
West Italy	9 00	8.70	8.85	8.60
Scandinavia	9 80	9.70	9 80	9.40
West Indies	....	6 80	6 80	6.30

These quotations are purely nominal and as far as can be learned, no business is being done in these markets.

Current Quotations British Coals f.o.b. Port, Gross Tons

Cardiff	Oct. 8	Oct. 15†
Admiralty Large	31s. 3d.	30s.@31s.
Steam, Smalls	19s. 6d.	19s.@ 20s.
Newcastle:		
Best Steams	27s. 6d.	27s.@27s. 6d
Best Gas	27s. 6d.	27s.@27s.6d.
Best Bunkers	27s.	26s.@27s.

†Advance over previous week shown in heavy type, declines in italics.

New York's August Exports Drop

There were 13,769 tons of anthracite shipped to Canada through the Port of New York in August, 1921, as compared with 14,259 tons in the preceding month. In August, 1920, Canada was shipped 6,003 tons and in July, 9,716 tons. Altogether there were 15,430 tons of anthracite shipped to foreign countries in August; 1,021 tons of bituminous and 98 tons of coke.

Hampton Roads Accumulation Reduced; Export Market Inactive

Very little change in the market is apparent, with export business reduced to a minimum and every effort being made to increase the coastwise trade. Movement to New England is steady and shows a slight increase, while the bunker business is not as brisk as in previous months.

Accumulation has been somewhat reduced, relieving coal from demurrage, but no appreciable change has been made in prices on this account. Freight rates for export show little change, although rates to New England are slightly increased.

September registered the lowest dumpings since December, 1919, with barely 900,000 tons sent over the piers. Dumpings of high-volatile coal is at a minimum, vessels preferring low-volatiles for bunkers in view of the slight difference in price. The piers are

maintaining a fairly regular dumping schedule, however, and a number of vessels are reported bound for this port for bunkers within the next week. The bunker busines is expected to do much during the winter to sustain the market, a slight increase in general shipping through the port being noted.

PIER SITUATION

	Week Ended	
N. & W. Piers, Lamberts Point:	Oct. 6	Oct. 13
Cars on hand	1,316	1,655
Tons on hand	76,803	87,751
Tons dumped for week	53,653	99,569
Tonnage waiting	7,000	12,500
Virginian Ry. Piers, Sewalls Point		
Cars on hand	1,675	1,336
Tons on hand	83,750	66,800
Tons dumped for week	32,659	74,856
Tonnage waiting	6,700	14,000
C. & O. Piers, Newport News:		
Cars on hand	1,432	782
Tons on hand	67,000	39,000
Tons dumped for week	60,038	35,273
Tonnage waiting	2,255	4,715

Belgian Production Is Declining

In a review of the foreign coal markets, the *Guaranty Trust Co of New York* states that Belgium's coal exports were inflated as a result of the British strike and averaged four and one-half times greater this year than during the corresponding period of 1920 and about 25 per cent greater than in 1913. Imports of coal also have increased considerably over 1920, but are still less by about 60 per cent than those of 1913.

The situation in the Belgian mines has recently become less favorable, due principally to the resumption of work in the British pits and the industrial depression in Belgium, which is still serious. Nevertheless, France and Switzerland continue to send in large orders. The prices charged are on an average about 20 fr. more than those for domestic consumption. The quality of industrial coal is still inferior. The mines are not always able to dispose of the stocks of industrial coal and, in the middle of August, it was estimated that the stocks of this category amounted to about 70,000 tons. The application of the 8-hr. law on Oct. 1 is expected to reduce somewhat the present production.

The coke market is slack and more ovens are closing every week. More than 50 per cent of the furnaces in the country are closed at present.

Poland's Coal Output Is Now Almost at Pre-War Level

Coal production in Poland is now approximating the pre-war rate of output. A summary of economic conditions in Poland was made available at the Department of Commerce, Washington, Sept. 12. An extract from the statement is as follows:

"The present Polish territories before the war produced about one-half of the coal which they consumed. Considerable injury was done to the mines during the war and their production fell to about 70 per cent of the pre-war average. The Polish Government has done much to stimulate production and during the months of April and June, 1921, the output became approximately 90 per cent of the monthly average of 1913 and exceeded that of years preceding 1913 (the output for May was somewhat lower on account of a strike."

Sequel of Flooded Pits in Scotland

The result of allowing the pits to flood during the mine dispute is shown by the appeal to the Scottish Board of Health on behalf of the Fife Mine-workers' Union regarding the destitution existing among Fifeshire miners. The situation is very serious and dangerous. The Miners' Association has exhausted its financial resources and has incurred considerable debt. Unfortunately, owing to flooding and collapse of large portions of the workings, many miners have been unable to find employment.

Reports From the Coal Fields

New England

BOSTON

Light Current Demand—Large Buyers Mark Time—All-Rail Coals Continue Dull—Anthracite Demand Less Brisk.

Bituminous—Even at minimum prices on Pocahontas and New River the market drags along without any sign of improvement. The agencies are continuing their forcing methods and consumers are being supplied right up to the limit of storage. The few who were awaiting Oct. 1 before laying in a prudent reserve are now furnishing what buying power there is. The whole territory is being scoured for business, and the response is much less than some of the shippers anticipated.

Of the present volume of steam coal going forward the lion's share is from the West Virginia smokeless districts, via Hampton Roads. Not only is more than half the tonnage being supplied from that source but it is clear that if freight differentials continue to work against all-rail routes the proportion of southern coals will continue to increase to the two-thirds that prevailed before 1914.

There is small inducement today for purchases beyond 60 to 90 days consumption. Industries show practically no increase in fuel consumption, and instead of looking forward to better business during the winter there seems a tendency to curtail expenses and postpone extensions. In several commodities besides coal there is observed a somewhat more slack demand, although there are opinions that these dull spots are only temporary.

The reduction in bituminous rates in railway-owned barges from Philadelphia has not proved sufficient to increase the volume dumped at that port. The difficulty is more deeply seated than can be reached by a mere 50c. reduction in an extremely high rate, as compared with privately-owned transportation.

What amounts to a minimum movement of Pennsylvania steam grades is passing the Hudson River transfer points this season. From the districts around Pittsburgh there is reported a slight curve upward in production, but possibly here and there this is due to local conditions that oblige the operators to provide a certain amount of work. Certain it is that the proportion of all-rail bituminous used this year in New England has dropped off most seriously.

Anthracite — Undeniably, there has been a slightly receding demand for domestic sizes. Pressure brought to bear upon retailers to take sizes other than stove and chestnut has somewhat relaxed, although a week of really cool weather will reverse the situation with very little ceremony.

To those ports where navigation may be expected to close around Dec. 1, there is a fair volume of coal moving, although if it cannot soon be made to move faster there will be a certain amount of apprehension, especially on the Penobscot.

Tidewater—East

NEW YORK

R.R. Controversy Delays Stocking Purchases of Anthracite — Bituminous Market More Active — Competition Keen—Roads Warn of Car Shortage

Anthracite—The recent cool days have not served to spur the slow moving sizes to any great extent. The only result at wholesale has been to cause a further tightening of the sizes least in need of acceleration.

Stove has been in good demand right along and chestnut has had call from around Sept. 1. As a result of the early buying of egg, the first cold snaps have passed almost unnoticed so far as that size is concerned and the same can be said of pea. The smaller classes of domestic consumers are buying more than those located in the better residential districts. The public still has that feeling that freight rates will be reduced and that prices will be lower, therefore they are delaying a little longer.

Late buyers are taking tonnage in even smaller lots than usual. This is interpreted both as an indication of lack of ready money and the hope of lower prices.

RETAIL PRICES FOR OCTOBER

	Manhattan	Brooklyn
Broken	$13 05	$13 00
Egg	13 05	13 00
Stove	13 30	13 25
Chestnut	13 30	13 25
Pea	11 05	11 00
Buckwheat	7 90	7 90
Rice	6 90	6 90
Barley	5 90	5 90
Bituminous	8 50	8 50

Bituminous—While the market is far from being active it is by no means as dull as it was during the summer and inquiries are now more numerous. Consumers have held off until necessity compels them to buy.

In spite of the increase in volume of sales the market will not be in a healthy state until it is possible to get a better profit on tonnage that is being sold. Operators located in the union fields are at such a disadvantage in competitive markets that many of them have virtually given up trying to do business except in territory from which non-union coal is excluded. Even in those sections, coal of good quality is offering so cheap that no one will buy the low grades.

Perhaps the best indication that tonnage movement is gaining faster than many realize is found in the recent notice sent to shippers by a Pennsylvania R.R. official, beginning, "We are now confronted with a shortage of coal cars," and going on to say that there is a possibility of placing the distribution on a percentage basis in the near future. Operators along the Baltimore & Ohio have also been told by officials that surplus cars on that system have dwindled until at present there is practically no serviceable equipment that is not in use.

Tonnage handled over the local piers is restricted by the fact that consumers in southern and eastern New England are turning to smokeless coal because of the low prices at which it is offered. Southern coal was quoted here at $6.40 alongside.

PHILADELPHIA

Irregular Shipments Hurt Retail Demand in Suburbs — Moderate Steam Market—Slight Bituminous Improvement—Prices Strengthen.

Anthracite — Seasonable weather has helped the retail trade. Retailers are all doing a fair amount of business and getting a good percentage of cash, as much of the ordering is now for ton lots, for which cash is demanded.

Conditions outside the city are not so good, particularly where the retail men are in competition with teamsters making track deliveries. In some cases retailers are beginning to fight back by meeting the prices of the newcomers, but in the main this has done nothing more than further demoralize the situation. There is still a feeling among consumers that prices must come down and they point to these cuts as evidence.

Relative demand for the sizes continues unchanged, but there are some signs that dealers are getting a better proportion of stove. If anything, nut has improved its position. Retail prices show some signs of getting stronger, as each week there is an increasing number of dealers who are quoting $14.50 per gross ton for stove and nut, although it is believed the majority are yet 25c. lower than that.

Steam coals are not moving very freely, although there is a slightly better demand for buckwheat. Rice continues the heavy size and the companies are still dumping in their storage bins. Barley is in moderate demand.

Bituminous—The weather has probably had some effect on sales, as one more frequently hears of slightly improved shipments. Freight rates continue to be much of a factor in the consumer buying, as the belief grows stronger that something will happen to reduce rates by the first of the year. Buyers exercise the utmost conservatism as to stocks.

The only exception, and that to a moderate degree, is the railroads, as they are still adding to their reserves. The one drawback in dealing with the railroads is the somewhat long wait for money. Although there is still some talk of a railroad strike, it fails to move the buyer.

Spot prices, which have been holding firm for more than a month, show a tendency to move slightly forward, at least on the best coals. There is, of course, plenty of low grade coal to be had almost at the buyer's own price.

BUFFALO

Bituminous Market Unchanged — Reports of Good Business in Sight—Anthracite Moving Fairly Well.

Bituminous—Only a few shippers report any increase of tonnage and it is quite likely that any spurts may be temporary. Still the tone of the market is good, in view of the slow sales. Belief is general that the demand will increase slowly during the winter, so that by spring the volume will be decidedly greater than it is now.

The fall has been warm, so that the demand for office-building fuel is just now coming in. If the winter is cold the demand will soon show from that. Shippers send their men out more or less, but it is mainly to keep them in touch with the consumers as far as possible.

Mining districts that used to be out of this market on account of high freight rates, are trying to get in, and if their coal were not so different from that now in use here it would sell readily on account of lower prices.

Quotations continue somewhat unsteady at $3 for Youghiogheny gas lump, $2.75 for Pittsburgh and No. 8 steam lump, $2.50 for Allegheny Valley and all mine run, $1.60@$2 for slack, adding $2.36 to Allegheny Valley and $2.51 to other coals for freight.

Anthracite—Some jobbers handling independent coal report that they are doing quite a good trade. All prices are now much the same, though the independents always try to get a little more than schedule.

It is probable that more hard coal has been distributed in Buffalo than formerly, as the old retailers generally claim to have done their usual business and there are new ones that are quite active. A few of the smaller retailers are cutting prices.

Lake — Shipments are somewhat larger than they were, but are not quite equal to midsummer. For the week ended Oct. 12 the loadings were 103,240 net tons, of which 48,100 cleared for Duluth and Superior, 24,600 for Chicago, 20,900 for Milwaukee, 7,600 for Green Bay, 1,700 for Cheboygan, Mich., and 340 for Pelee Island, in Lake Erie. Freight rates continue easy at 65c.@70c. to Chicago, 60c. to Milwaukee, 55c. to Green Bay and 50c. to Duluth, the other cargoes being at consignee's rate.

Coke—The small amount of iron ore brought in during the season shows that the furnaces do not intend to stock up coke for the winter. Most of them have byproduct plants and when business is steady enough to warrant operation they will use them. Prices rule as formerly.

BALTIMORE

Demand Improves Slowly—R R. Strike Threat a New Factor—Prices Soft—Hard Coal Men Have Difficult Demand.

Bituminous—In former years when a railroad strike threatened, business men immediately ordered coal for reserve. With such a complication now impending it is expected that requests for October deliveries will be greatly increased. The general business here shows a better tone that is not reflected as yet in coal prices, which continue abnormally low. Some of the dealers report that demand has increased slightly but all admit that the supply at sharp competition prices is more abundant than is the call.

Exports remain unsatisfactory. For the first half of October, as was the case in September, only three vessels cleared with export coal cargoes. Bunker trading is very depressed, and price offerings at times have been below even the ridiculously low figures in line trading.

Anthracite—Dealers are facing quite a few complications, among other things that of being forced to pay cash for their supply and getting a constantly increasing flood of requests for credit from customers who in former years were in the habit of paying cash. The dealer also has been forced to take a ton of either pea or nut from some of his mine connections before he can get delivery of a ton of stove coal, and for about two weeks past has had egg added to the list. This has caused a great deal of the sizes which the public will not take to pile up in railroad yards, arousing a protest that such an accumulation was resulting in serious railroad congestion.

In the meantime the public is demanding the stove coal but is with-

holding on purchasing practically all other kinds. The slow purchasing here by the general public, the ordering even in the face of winter being on the one and two-ton basis, has left the city about 120,000 tons short of normal reserve in cellars and yards for this season.

Northwest

MILWAUKEE

Frosty Weather Arouses Market — Small-Lot Retail Distribution — Sharp Competition in Screenings.

Frosty nights and raw days have served as a stimulant to the coal market and deliveries are more satisfactory than they have been at any time during the summer and autumn. Dealers are actively soliciting business, but competition is confined to the element of quality, and prices are not affected.

There was never so much storage coke as at present, but there is no indication that there will be a price reduction. Deliveries of both coal and coke are in smaller quantities than has been customary in the past.

The steam coal market is somewhat better. Fires on soft coal docks are forcing the removal of stocks and screenings are being thrown on the market as low as $3.50@$3.75. This operates to the disadvantage of Western screenings, and makes them almost unsalable, until the forced condition changes.

Receipts during October up to the present writing aggregate 37,920 tons of anthracite, and 90,632 tons of soft coal, making the total receipts for the season to date 785,642 tons of the former, and 2,130,704 tons of the latter, against 631,533 tons of anthracite, and 1,702,205 tons of bituminous during the same period last year, a gain of 582,608 tons.

MINNEAPOLIS

All Buying Confined to Small Lots— Buyers Criticize Hard Coal Prices— Cold Weather Needed to Boost Movement.

From attacks on the coal trade by people in general, it would seem that the public thought the coal business was in the fix of the awkward soldier whose fond parent discerned the entire company "out of step but Jim." The attacks are somewhat keener on the anthracite business because prices have shown no reduction from a year ago. The loose talk of profiteering without much to base it upon has practically put every dealer in any ware under suspicion. While the reconstruction period is on, this sort of thing is possible to be expected, but it is hard to endure.

Killing frosts have struck, some snow has fallen, and yet people are holding back from buying coal as though there were ample time. They are following the system of not stocking beyond a limited period. One and two-ton orders predominate where in former years it was two to five or more.

The same rule applies to steam buyers. One cause is the high cost which makes it desirable to buy less and distribute the amount to be paid over a wider period. Another and strong factor is the continued hope that there will somehow develop a reduction in price. On steam coal, all the probabilities point the other way. But the buyers remember hopefully the situation of a year ago, when after a scarcity through the summer and fall, the beginning of winter saw a slump in quotations. If hope deferred maketh the heart sick, the steam buyers are generally possessed of very strong hearts, for despite the disappointments to date, they are still firm in their expectation of reduced costs.

Contract prices seem to have confined the market for the present to a close range to the cost laid down. Many in the trade are looking for a reaction after the weather prompts a little more buying pressure, but there will be a weight on the market from all appearances, due to the buyers' strike, which seems to hold tight to limited action at all times. Should there be much severe weather early in the winter it would doubtless serve to force the buying of a sufficient tonnage to brace the market.

DULUTH

Seasonal Demand Growing — Prices Hardening—Screenings in Short Supply.

Flurries of snow on two days have given impetus to shipments, and dealers report that customers are hastening to put a winter's supply of anthracite in bins. More coal by far moved from docks this week than any week since the opening of navigation.

Prices are hardening all along the line, with bituminous firm at $7 for Youghiogheny and Hocking, $10 for Pocahontas lump and egg and $7 for mine run. Screenings are steady in the main, but some damaged lots are being released at $3. A peculiar situation has arisen in the screenings market. A shortage is threatened and it is said that one dock is 15,000 tons oversold and is in the market to cover its sales at any price.

Incoming shipments picked up, with twenty-eight cargoes received, of which eight were hard coal. The number of cargoes arriving is considered good for this time of the year, and the docks are working to provide space for the incoming coal. It is estimated that 5,600,000 tons of coal are on the docks now. Dispatch in unloading boats is extremely good.

Shipments from Duluth - Superior docks showed a falling off during September, the total being 18,739 cars as compared to 20,009 cars during August, and 21,126 cars during September last year. From Duluth docks, 6,391 cars were loaded and from Superior 12,344 cars.

Inland West

COLUMBUS

Increased Domestic Demand—Steam Sizes Are Slow—Lake Trade Active— Better Industrial Outlook.

With lower temperatures prevailing there is a stronger domestic demand. Retailers in the cities are the best customers, although some orders from rural dealers are being booked. There is still a decided preference being shown for the fancy grades such as smokeless and West Virginia splints. Retail prices are steady at former levels.

Steam business is still quiet, with the exception of public utilities demand. Distress screenings can be purchased at a low figure. Iron and steel mills are buying more actively, however, and this appears to be an outlet for the resultant sizes.

The Lake trade is still rather active. The H. V. docks at Toledo during the week ended Oct. 8 loaded 140,638 tons as compared with 150,847 tons the previous week, making a total of 3,656,962 tons for the season. The T. & O. C. docks loaded 42,752 tons during the same week, making a total of 948,196 tons for the season.

DETROIT

Slight Buying Improvement Noted— Retail Stocks Moving—Prices Firm— Distress Tonnage Reduced.

Bituminous — Increasing market interest is reflected in a heavier volume of buying. However, less business is being transacted than there should be at this season.

Retailers, although not overcrowded with business, are being kept fairly busy with the distribution of stock that should have been in consumers' bins several months ago. The present movement has not yet worked the retailers' stocks down to a point where they find it necessary to make further additions to their supply.

Consumers of steam coal are making purchases irregularly and in small quantities. Notwithstanding the small-lot buying, a number of the large users are reported to have some accumulation of reserve. With factories now showing curtailed production and reduced consumption of fuel, some buyers have been able to satisfy their requirements by picking up bargain offerings.

Smokeless lump and egg is quoted $4.75, mine run $2.65, nut and slack $1.60. Ohio domestic lump is $3.15@$3.25, egg $2.40, mine run $2, nut and slack $1.15. West Virginia 4-in. lump is $3.25, 2-in. lump $3, egg $2.50, mine run $1.90, nut and slack $1.25. Pittsburgh No. 8 steam lump is $2.40, mine run $2.15, nut and slack $1.65.

Anthracite — Retail yards are still well supplied. Despite slow demand, some independents are reported getting premiums, sometimes as high as $1 a ton.

CINCINNATI

Prepared Coals in Good Demand—Market Steadies Although Slack Is Weaker —Retail Prices Firm.

An increase of orders for prepared coal has played havoc with the market on steam sizes and screenings. There is a shortage of cars for the movement to the southeast. River business has picked up a little, even in the face of the huge storage piles between Huntington and Louisville.

Smokeless prices have recovered a little from their unsteadiness. Spot lump and egg, in distress can still be bought around $4, with $4.50 as top for company sales. Nut is $3@$3.50 with some concessions on the low for quick sales. Mine run is quoted $2.25@$2.75 and slack is down to $1.10@$1.50.

Bituminous slack was hardest hit of all, some southeastern Kentucky offerings going as low as 75c.@85c. West Virginia sales range 95c.@$1.50. Sales of mine run are made from both states at $1.65@$1.85. Kentucky lump recovered a little from its slump, with $3@$3.50 as the range. West Virginia lump and block is $2.75@$3.25.

There has been no change in retail quotations, although one company is offering slack as low as $4, as against $5@$5.25 by the other concerns.

ST. LOUIS

Domestic Business Picking Up—Prices Advancing — Public Buying Cheaper Coal—Steam Situation Unimproved.

Chilly weather has improved the domestic situation. Dealers find most of the demand is for Standard and Mt. Olive coals. Movement of Carterville is just fair. On Oct. 12 prices advanced 25c. on all sizes, making Carterville $7.75, Mt. Olive $6.75, and Standard $5.75. A further increase can be expected at almost any time if mine prices advance.

Domestic business promises to be good, but buying is mostly in small quantities. Steam is slow. A little storage coal is moving in, but nothing in any volume. Country business is good on domestic but slow on steam.

There is a good movement of coal to Western and Northwestern points through this gateway. Favorable deliveries are reported on coke, both gas and byproduct.

CLEVELAND

Domestic and Industrial Demand Slightly Better — Lake Movement Speeding up—Small-Lot Buying Still Continues.

Cooler weather and sustained improvement in the industrial situation have combined to give a better tone to the domestic and industrial coal markets. Demand for domestic fuel is brisker than for steam coal, but even householders are showing an unusual reluctance to laying in their entire winter's supply at this time. The feeling prevails that since there is no apparent danger of a shortage it might not be disadvantageous to await freight rate developments.

It is estimated that 68 per cent of the unemployment in Cleveland has been caused by slackened operations in some phase of iron and steel manufacture. A survey just made of the iron and steel and machine shops of this city discloses a distinct improvement in many of them, though all are still running far below normal. These heavier operations are being reflected in more coal requirements, but hand-to-mouth buying still prevails.

The better demand and the stimulation of the Lake movement has resulted in a heavier output from mines in Ohio. The coal movement is speeding up largely because of the fact that the rail rate reduction of Lake coal from mines to lower docks expires on Oct. 31, and most operators are striving to complete their shipments before that time. It is understood that the Wheeling & Lake Erie and the Bessemer & Lake Erie will not advance their rates after Nov. 1, but other roads are expected to do so, unless there is some change in plans in the meantime.

Bituminous receipts at Cleveland for the week ended Oct. 8 were 994 cars, divided: Industrial 699, retail 295. This is an increase in volume consigned to retailers of some 43 cars over the preceding week.

CHICAGO

Steam Market Quiet While Domestic Picks up—Eastern Coals in Good Call —Strike Threat May Move Screenings.

As is true throughout the whole Northwest, the domestic market has picked up very considerably in Chicago. Smokeless, which was offered at a bargain a few days ago, has been snapped up and now the price of mine run is holding firm at $2.50@$2.75. Smokeless coal has proved to be a great surprise to Illinois and Indiana operators. During the war but little of this was allowed to come into Chicago on account of the zoning system. During that time the better grades of Illinois and Indiana had an opportunity to become very well established. It was thought that the demand for Eastern coals would never again reach the point attained in prewar days. However, more Eastern coal has been handled in Chicago this year than perhaps ever before. The reason for this popularity is not entirely on account of quality. Eastern coal has been coming into the Chicago market at prices very nearly equal to those quoted by our own operators with local mines.

The steam market remains quiet. Every now and then some large manufacturing concern comes in and buys fifty or a hundred cars, but at a rock bottom price. Operators with storage piles of screenings are beginning to worry as to how they will ever be able to dispose of this surplus. So long as industrial conditions remain as unsatisfactory as they have been, any betterment in the steam market is considered a very remote possibility. The strike threat of the railroad men will, of course, provide an increased demand.

Domestic coals are moving in a satisfactory way. This is true both of coals from mines in Indiana and Illinois as well as those in the East. The cooler weather has resulted in a little flurry on Pocahontas as well as anthracite, but it is believed that this is entirely a weather proposition

Southwest

KANSAS CITY

Labor Situation Clears — Men Returning—Seasonal Domestic Demand.

The situation, which has been considered very critical since the walkout of the men, improved considerably on Oct. 17, when 1,500 miners returned to work in District 14. They had been idle since the jailing of Howat and Dorchy as a protest against this action. The operators feel that with the existing dissatisfaction between the miners and their chiefs little trouble will be experienced in maintaining operations in the immediate future.

The cool weather has stiffened the demand and already jobbers are limiting shipments so as to take care of the trade to best advantage. Slack is still very slow but the use of modified lump and mine run by industrials has enabled operators to keep fairly well cleared of screenings.

Arkansas semi-anthracite is holding steady, with lump selling $7.50@$8 and screenings $2. Lexington Missouri lump has increased and is quoted $4.75 @$5. Oklahoma lump is $7.25, nut $5.75, mine run $4.50 and screenings $1.75@$2.

South

BIRMINGHAM

Commercial Market Sluggish—Domestic Improved by Cooler Weather—Better Furnace Operations.

Inquiry here generally indicates a very unsatisfactory condition in the steam market, while the demand for domestic is little better. The retail trade has reaped some benefit from the more seasonable weather conditions, but the movement of domestic coal from the mines is still slow and difficulty is experienced in disposing of the tonnage available.

While industrial conditions generally seem to be greatly improved and it would seem that the demand would naturally be heavier, such is not the case and the market is extremely dull and listless.

Several of the railroads have slightly increased the tonnage which they have been taking on contracts. There has also been a temporary betterment in demand for bunker coal at the ports of Pensacola and New Orleans.

Production has been considerably increased by the improvement in furnace

operations, there being a 100 per cent increase in the number of stacks now operating as compared with Aug. 1. A good tonnage of coal is being consumed in coke ovens which have recently resumed production.

LOUISVILLE

Demand Better and Prices Firmer—Southern Market Improves — Retail Trade Confined to Small Lots.

Colder weather has resulted in a better demand in the South and consumers are beginning to stock a little fuel. The cottonseed and cotton ginning lines are taking some coal, and the textile plants are busier. Woodworking industries and the automobile trades are looking up a little, while the implement and wagon makers are taking the road with reduced prices, anticipating ability to start producing on a larger scale. In Louisville there is fair demand from the clay working and cement mills and other scattered industries, there being no especially large call from any one source.

Retailers report that with people out of work or employed only part time there is quite a volume of small order business which is not especially profitable. Collections are a little slow.

West

DENVER

Constitutionality of Industrial Act Upheld—Operating Conditions Improve.

An important ruling by the state Supreme Court, regarding the constitutionality of the Colorado industrial act, holds that the law is constitutional and that coal mining is impressed with the public interest.

The decision comes at a time when the miners' officials have gone on record as challenging the powers of the commission in connection with an investigation arising out of an attempt on the part of the Colorado Fuel and Iron Co. to reduce wages. This will come to a test when the commission announces its findings in the southern Colorado investigation.

Conditions generally are improving. For the week ended Sept. 24, Colorado's production was 215,000 tons of a possible full-time output of 292,429 tons, within 25,000 tons of the tonnage of the corresponding week in 1920. Lack of orders was equal to a lost production of 22 per cent.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Production Down to About 30 Per Cent—Costs too High—Some Shading in Panhandle.

With the almost complete cessation of Lake shipments the district is deprived of a large part of what little business it had. Production is down to about 30 per cent. Some coal is going to the railroads and there are some shipments of steam on contract. A large part of what production there is involves gas coal, which has little competition from adjoining fields.

The Connellsville region is getting not a little business that would ordinarily go to the Pittsburgh district, but the Connellsville region itself is having a hard time selling coal. The miners show no disposition to consider wage matters execept in connection with the new scale, and such discussion is now set for next February.

Conditions in the steel industry have not been improving particularly in the past week or two and in some quarters mill operations are expected to taper off in the next two or three months.

In the past week or two some of the Panhandle operators have been naming lower prices than formerly. Asking prices in general are unchanged, except that gas slack is off 15c.@25c. Steam slack is $1.65; mine run, $2.20@$2.25; ¾-in., $2.75; 1¼-in. domestic, $3.25. Gas slack is $1.85@$2; mine run, $2.25@$2.35; ¾-in., $2.55@$2.75.

ANTHRACITE

Steady Production—Rail Strike to Increase Demand—Second Mining Still Delayed.

Mines are working steadily with a few exceptions, resulting not from lack of market but from reasons more or less individual to the plant. The Glen Alden Coal Co. still has mines idle by reason of the Kohler Law. Though that legislation has been declared unconstitutional, the company will hardly venture to start second mining until the constitutionality of the act has been decided by higher authority than has as yet passed on it.

Strikes are less frequent this year, but the Kohler Law makes up for labor unrest as a preventive of production. The output for the week ended Oct. 8 was 1,793,000 net tons as compared with 1,832,000 in the preceding week.

EASTERN OHIO

Situation Improved—Steel and Tube Industry in Market—Lake Movement Speeds up—Domestic More Active.

Reports indicate a slight improvement in the general business situation, and the steel industry continues to show increased activity. Production for the week ended Oct. 8 rose to higher levels, not touched since the early part of August. Output amounted to 393,000 tons or approximately 63 per cent of the rated capacity. This represents an increase of some 30,000 tons over the preceding week. Against the potential capacity of 25,000,000 tons, this field has produced for the calendar year to Oct. 8, 13,545,000 tons or slightly better than 54 per cent of capacity.

Lake shippers are speeding up before the close of the season. Several shippers are planning to send a considerable part of their output to Upper Lake ports; thus they will have advantage of the 28 per cent refund which expires Nov. 1. As yet stock on the lower docks is running around 10,000 cars, and receipts 2,000 cars.

The larger steel and tube plants are said to have depleted their stock and are in the market for large quantities of coal. In fact, more buying of steam coal the last few days has brought additional cheer to the coal trade.

Railroad fuel requirements, if anything, are increasing, and are taking 35 to 40 per cent of the output. Resumed operation on the part of certain mines which cater to domestic trade has been brought about by the arrival of cold weather and the improved retail situation.

Figures given out by the operators' association indicate that their mines worked 52 per cent of possible worktime during the week, and produced a little better than 60 per cent of capacity. Time lost account "no market" is around 45 per cent.

CONNELLSVILLE

Demand Less Than Expected—Ovens Blown in too Freely—Furnace Coke Easier, Foundry Stiffer.

Recent stiffening in Connellsville coke has entirely played out. A week or two ago it was expected that a little buying would eliminate the lower priced furnace offerings, leaving the market at a definite advance. There has been some buying, but not as much as expected. Prices done were a shade lower than was counted on, fourth-quarter contracts being made at $3.40@$3.50, and there is coke still offered at these figures without finding takers. Several furnaces that were expected to go in very shortly have deferred action, either because they find prospects unsatisfactory for selling pig iron or because they wish to wait for freight rates to be reduced.

While the increase in coke consumption, by idle furnaces blowing in, is less than was expected, the increase in production is, if anything, more than is necessary, and there is surplus coke hanging over the market.

A sale of a dozen carloads of spot furnace at $3.35 represents substantially the top of the market for round lots, while odd carloads for outside consumption bring up to $3.50 when the buyer is at all particular. Foundry coke is stronger, it being harder than formerly to pick up any at $4.25, while

favorite brands bring $4.75 with less difficulty than formerly.

The *Courier* reports production in the week ended Oct. 8 at 14,300 tons by the furnace ovens, and 38,900 tons by the merchant ovens, making a total of 53,200 tons, an increase of 900 tons.

UPPER POTOMAC

Market Sluggish—Operations Curtailed —Prices at Minimum.

Conditions were unchanged during the week ended Oct. 8. Demand was so poor and prices so low that most companies remained in idleness. In the Georges Creek region about all that was produced was Big Vein coal. Prices were still at a minimum, owing to the lack of demand.

CENTRAL PENNSYLVANIA

Increased Production Absorbed by Non-Union Mines—Operators Prepare Data for Senate Committee.

An upward trend in production is noticeable from the fact that during the week ending Oct. 9 there were loaded 14,008 cars, an increase of 762 over the week previous. The daily average was 2,213 as compared with 1,835 cars during the month of September.

This increase has been largely absorbed by the non-union mines. In September, the union mines loaded 54 per cent of the amount which they loaded in December, 1920, whereas the non-union mines in September loaded 91 per cent.

Operators are now preparing data to present to the committee of the United States Senate which will have in charge the bills introduced by Senator Kenyon, of Iowa, regulating the coal industry.

UNIONTOWN

Possibility of Lower Freights Halts Coke Market—Prices Are Firm—Coal Production Increases.

There is reflected a halt this week in what promised to be a steady upward trend toward normal conditions in the coke region. There are several factors to be considered and the conclusion has been reached by some operators that the situation is far from discouraging.

The opening of the month saw a number of inquiries out for contract coke and while some were placed, resulting in resumption at several operations, quite a few of the inquiries developed into the "bubble" variety. The possibility of lower freight rates has at least influenced blast furnace interests in postponing relighting.

That disposition being reflected in the demand for coke, the region has not made any headway in regaining normal production. Prices remain firm for the reason that no surplus stocks are being created and plants are not resuming operations until orders for tonnage are placed.

Production in coal is making rapid gains but the increase is coming principally from the smaller mines. It is also noted that operators are mining very little coal for spot sales. Quotations remain the same.

FAIRMONT AND PANHANDLE

Domestic Improves at Expense of Steam Sizes — Steel Mills Increase Requirements—Spot Market Still Lags.

Fairmont

Price shading featured conditions during the week ended Oct. 8. There was little spot business in hand, however, and the poor slack demand offset a better domestic call. Toward the end of the week slack stiffened somewhat, bringing the price up to about $1.50. Lake and Tidewater shipments were almost negligible.

Northern Panhandle

About all that kept production going was the large volume mined for railroads. The output ranged around 60,000 tons. Steel mills were mining a little more coal from their own operations but there was no spot demand except for prepared sizes.

Middle Appalachian

LOW-VOLATILE FIELDS

Domestic Prices Being Cut — Western Markets Becoming Sluggish — More Steam Tonnage in Distress.

New River and the Gulf

New River coal was sold with difficulty during the first week of October, even prepared sizes being off in price, $4@$5. Tidewater shipments were small, of course, and the bulk of production went to Western markets, which were becoming overburdened.

Some Gulf operations were forced to curtail their output to the very minimum and production did not reach 40 per cent of capacity. Prepared coal ranged $4@$5 and was sold with increasing difficulty.

Pocahontas and Tug River

A better Western absorption of prepared sizes enabled Pocahontas producers to keep well above the 300,000-ton mark. This was accompanied by price shading down to $4 a ton. Mine run and slack remained on their former low levels. Lack of equipment figured to some extent in the production loss.

Contract shipments and movement to associated companies kept up Tug River production. There was little or no industrial demand, as a result of which mine run and slack were extremely soft.

HIGH-VOLATILE FIELDS

Seasonal Domestic Production Hampered by Steam Sizes — Output Still Low—Cars Not So Plentiful.

Kanawha

A fairly good domestic call developed during the week ended Oct. 8, yet there was little change in mining conditions because of the almost insignificant demand for industrial coal. Mine run averaged $1.75 and slack was in such poor demand that prices were not higher than $1.00@$1.25.

Logan and Thacker

There was also a slightly increased domestic demand in the Logan field but slack was still decidedly draggy. Mine run also came in for much dullness in view of the general industrial depression.

Thacker conditions were practically unchanged, aside from an increased call for prepared sizes. Production remained at about 40 per cent of normal with railroad shipments constituting the bulk of the output. Some difficulty was experienced in securing cars readily.

Northeastern Kentucky

Production was speeded up somewhat because of the seasonal domestic call. The output reached about 40 per cent of capacity, larger than at any time in recent months. There was little demand for steam coal and slack was almost impossible to move.

Virginia

Because of their contract orders only the larger mines found it possible to operate. Fully 80 per cent of the mines were still out of commission, although there was a slight increase in domestic demand, with higher prices, which were offset by the poor market for steam sizes.

Middle West

MIDWEST REVIEW

Domestic Market Advances—Steam Demand Improves as Rail Strike Looms—Discussion in Miners' Union.

The improvement during the last week in the coal market has been very marked. Prices have strengthened materially, in some cases advancing as much as 25c.@50c. The improvement, however, has all been on domestic sizes.

With the colder weather sales agents immediately felt the change in the whole situation. Although the weather has become a little warmer, the demand has increased rather than decreased, and at this writing, is still going strong. Some companies producing the better grades are sold up for the time being on their lump and egg. Depressing stories, however, still continue to come in from the Northwest as we hear of whole communities deciding to burn up their corn for fuel rather than purchase coal. In one instance it was found that coal costs about $11.50 per ton at the station whereas corn could be bought at $5.40, and the farmers claim that corn is a good fuel.

Steam coal has improved to some slight extent. A little flurry has been caused by the announcement of the railroad strike. This has tended to help out the price on screenings anywhere from 10c.@15c., but outside of this betterment, the market remains dull and uneventful as there is no industrial revival in sight in the immediate future.

The frame of mind of the United Mine Workers is causing some thought. There has been a tendency during the past few week to dispute President Lewis' authority. Howat, out in a Kansas jail, has openly defied the central authorities of the United Mine Workers, and, what is more significant, is receiving the backing of his men. In Illinois, Farrington, local head of the mine workers, has issued a statement to the press backing up Howat and reviling Lewis. It would not surprise a number of old timers if a very serious split occurred in the ranks of the United Mine Workers this spring.

SOUTHERN ILLINOIS

Domestic Situation Getting out of Hand —Steam Still Heavy — Car Shortage Looms — R. R. Tonnage More Satisfactory.

Carterville lump and egg advanced last week to $4.30 with nearly every operator. Nut went up from $3 and under to about $3.25@$3.50. Screenings are still heavy at 85c.@$1, and several mines are piling up this size. Most mines are considerably oversold on lump and some on egg. Domestic business has taken a sudden spurt with the recent cool wave.

Several mines have been affected by an insufficient supply of cars. Railroad tonnage is fairly good. Working time averages three to four days on account of inability to move steam sizes. In Duquoin and Jackson County somewhat similar conditions exist and practically the same prices prevail.

Mt. Olive shows better tonnage. Good movement is reported to Kansas City and Omaha, as well as to Chicago and the North. Screenings sell at 85c. @$1. Railroad tonnage is good. The St. Louis domestic price has advanced to $3.50; country figures are still $3.75.

The Standard field shows some improvement in screenings. Railroad tonnage is better. The bulk of movement is on 2-in. lump to St. Louis, while the country is drawing remarkably well west of the river. Car shortage is showing up at some mines.

WESTERN KENTUCKY

Demand Somewhat Better — Prices Firmer—R.R. Repairs Idle Cars.

Industrials are unable to take the large amount of screenings, as prepared coal is in demand as a result of cold weather and is moving much better. Prices are somewhat stiffer all along the line.

Car supply is good and, according to railroad officials, it will take a considerable increase in tonnage to cause any material shortage, in spite of the argument of some operators that a 15 per cent increase in shipments would result in a shortage.

The Louisville & Nashville has put back to work all car repair men, and is running the shops full, although the machinists are not all back.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Domestic Market Active — Slack Touches Lower Level.

A good deal more activity is apparent in the domestic market due to the cold snap and block is moving readily. Slack is the lowest for the year, sales being reported at Harlan at 90c.

Prices for Straight Creek block are $3.75@$4; Harlan $3.50@$3.75; Harlan or Straight Creek mine run, $2@$2.25; Harlan slack $1@$1.30, and Straight Creek $1.30@$1.50.

West

UTAH

Production Increase Seen—Prices Firm —Coalmen Attacked.

Production continues around 65 per cent of capacity but is xpected to increase as the weathr gts colder as there has not been much storage coal purchased so far. Prices remain firm.

The Citizen, a wekly magazine published in Salt Lake City, has made a bitter attack on "Utah's Coal Barons." The paper declared the coal operators have "laid seige to all the great coal deposits of the state" and are clinging to the old wartime maxim of "all the traffic will bear" with a view to summer.

WASHINGTON

Non-Union Labor Satisfactory — Production Increases—Healthy Demand.

The first full month of operaton with non-union labor in the commercial coal mines witnessed the production of 15,071 tons in September.

Men are daily being sent to the mines, while additional operations are preparing to reopen. Producers have practically complted the contsruction of new bunk houses and hotels at several of the mines, a necessary item in view of the fact that many of the houses in the camps ar still occupied by strikers.

News Items From Field and Trade

COLORADO

Operators in this district are pleased with the appointment of **Harry F. Nash**, vice president of the Oakdale Coal Co., as a member of the Colorado state transportation committee, by Governor Shoup. He succeeds **T. S. Nance.**

The Yankee Fuel Co.'s coal mining property near Trinidad, which was ordered sold recently by Judge Lewis of the Denver Federal District Court, to satisfy approximately $2,000,000 worth of bonds, was disposed of for $150,000 according to a preliminary report of DeStell De Lappe, special master. No information was given as to the identity of the purchasers of the property.

ILLINOIS

The Harco Mine at Harrisburg, in which eleven miners lost their lives Aug. 13, due to an explosion, has resumed operations after being idle on account of a strike. Wm. Larson, superintendent of the mine, resigned his position over the trouble.

B. W. Kilculen well known in northern Illinois and Chicago, has joined the forces of Lorin W. Jones. He was formerly with the Rutledge & Taylor Coal Co., Chicago.

On account of the depressed market, especially on screenings and the smaller sizes, the **Sangamon County Mining Co.**, of Springfield, is making preparations to store a large quantity of screenings. A large pond located near the mine east of Springfield has been drained and the coal will be dumped into the basin. Other mines are following this example of storing coal, as the **Majestic Coal & Coke Co.**, operating at Clinton, is also making ready for the storing of a large amount of coal.

The Kuhn Colliery Co., of Du Bois recently resumed operation after being idle since last April. The mine being the only one in the town, many of the miners were threatening to leave unless work was resumed.

The Binkley Coal Co., 11 South La Salle St., has been organized under the state laws with capital of $100,000, to operate coal properties in Illinois. The company is headed by L. C. Binkley, W. H. Leland and Hubert E. Howard.

Among the mines in the southern part of the state which have been shut down during the past two months and are now reopening are: **Valier Coal Co.**, mine at Valier, having reinforced the roof of their main entry; No. 11 mine of the **O'Gara Coal Co.**, located at Eldorado; the mine of the **Franklin County Mining Co.** at Benton, having been idle during which time many needed repairs were made.

The large, new colliery in Saline County has finally been put into operation by the **Big Creek Coal Co.** A miner's train is operated daily to the mine by the Chicago, Burlington & Quincy.

What is considered the world's record for hoisting coal in one months' time was made in August by Mine No. 1 of the **Bell & Zoller Coal Co., at Zeigler.** During the month the mine worked 27 days and hoisted 133,666 tons and averaged 4,950 tons daily. The record before that was 132,000 tons and was held by the **Chicago, Wilmington and Franklin Coal Co.**, at Orient.

INDIANA

Deeds to more than 1,700 acres of coal near Somerville, were filed in Gibson County recently. Clement J. Richards, of Terre Haute, is the grantor and the **General Fuel Corporation** the grantee. It is understood that bonds for more than $500,000 will be issued by the corporation. Mr. Richards was instrumental in acquiring the deeds and also leases, of which a large number have been recorded. A small lake is being built at Somerville to provide water for the proposed mine.

A suit on account against the **Retlaw Mines Co.** asking for judgment in the sum of $112,885.19 was filed in the Superior Court at Terre Haute recently, by Walter S. Bogle. The judgment is asked in payment for various sums of money loaned to the defendant by Mr. Bogle since Feb. 27, 1911.

The Mutual Ice & Coal Co, recently organized with a capital of $160,000, has purchased the plants of the Sanitary Ice Co. and the Citizens' Ice & Coal Co., of Columbus.

Four hundred miners are idle as result of the burning recently of the tipple at **Bogie Mine No. 1,** at Blanford. It will be several weeks before the structure can be replaced and the mine started again. Plans are being made by the owners for the erection of a modern steel tipple to replace the burned equipment.

KENTUCKY

The Hance Coal Co., Pineville, capital $200,000, has been chartered by T. J. Asher, G. M. Asher and Robert Asher.

Charles W. Connor, one of the prominent mining men of the northeast Kentucky field, and a director in the Northeast Kentucky Coal Association, was in Elkhorn City and other points on Big Sandy recently working up sentiment for a miners hospital in that section.

John F. Buckingham of Ashland, president of the Chamber of Commerce of that city and extensively interested in coal properties on Beaver Creek was at Paintsville, Pikesville and other points on Big Sandy recently.

The Banner Fork Coal Co., of Kentenia, is considering the construction of a new electric power plant at its properties, with a number of extensions and improvements in existing mining plants. A housing development to provide for about 100 miners will be constructed. The work is estimated to cost in excess of $150,000.

C. N. Morrison, of Huntington, W. Va., who recently organized the Huntington Coal Mining Co., has secured about 1,000 acres of coal land near Prestonburg, and expects to begin development work in the near future.

The Roberts and Schaefer Co. has been given the contract of the **St. Bernard Mining Co.** of Earlington, for the construction of a new steel tipple.

MARYLAND

John C. Brydon of Somerset, Pa., and Baltimore, Thomas B. Davis and Joseph E. Davis ,nephews of the late Henry G. Davis, have organized the **Maryland Big Vein Coal Co.** They have bought and leased all the property of the **Potomac Coal Co.** at Barton, about 1,000 acres in all.

NEW YORK

Abel Mishler is now connected with Willard, Sutherland & Co., Inc., New York City, in the capacity of manager of the domestic department.

M. R. Gano, of Gano, Moore Co., sailed on the Aquitania recently for Europe.

W. P. Schaff, who for some time has been attached to the Johnstown, Pa., office of W. A. Marshall & Co., has been transferred to the New York office at 25 Beaver St.

OHIO

John Steinkorb, manager of sales of the Reliance Coal Co. of Cincinnati has been away on an Eastern trip. He visited the Buffalo and New York markets.

En route to Western cities, **J. B. Clifton,** of Beckley W. Va., head of the Raleigh Smokeless Fuel Co., spent a few days in the Cincinnati market recently.

George H. Cushing, of the American Wholesale Coal Association was the guest of honor at a luncheon in Cincinnati recently, given jointly by the Cincinnati Coal Exchange and the Cincinnati Coal Wholesalers' Association. R. A. Colter presided and Fred Legg, director of the wholesalers' association, presented Mr. Cushing. He said that purchasing agents had found the spot market on coal more attractive than the contract market, had felt that there was a good chance of freight reductions and saw the possibility of still lower selling rates through labor reductions. Most of the corportations represented were disposed to prefer non-union mines in buying and more than 75 per cent of them gave orders to non-union companies not only because of lower prices, but because they favored the open shop. The wisdom of carrying large reserves and of getting them early was unquestionable. Mr. Cushing told of the fight against unfriendly legislation at Washington and declared the emergency presented by the treat of the new Kenyon bill a very serious one which must have the closest attention.

The mine of the **Ohio Consolidated Coal Co.,** which was placed in the hands of H. M. Palmer and Roy Brenholtz as receivers, located on the C. & M. V. division of the Pennsylvania. is being operated by the receivers. No steps have yet been taken to lift the receivership which was brought about because of lack of capital.

The Elk Coal Co., of Columbus, has established branches for sales purposes at Lima, in charge of L. S. Stansberry; Marion, in charge of A. J. Sautter, and at Bucyrus, in charge of G. A. Bull.

PENNSYLVANIA

The Payne Coal Co., Inc., of Wilkes-Barre, has been organized to mine, buy, sell and deal in coal. Capital, $50,000; treasurer, C. Ernest Banker, Wilkes-Barre, Incorporators: Bruce Payne, Edgar M. Houpt and Gilbert S. McClintock, Wilkes-Barre.

F. A. Wyant, has resigned as engineer in charge of construction at the new Warwick mine of the Diamond Coal & Coke Co., of Pittsburgh, at Warwick, Green County, on the Monongahela River near the West Virginia line.

President A. C. Dinkey of the Mldvale Steel and Ordnance Co., of which the Cambria Steel Co. is a subsidiary, recently inspected the Cambria operation and reviewed the progress of the work on the coke ovens and byproduct plant. The work has kept thousands of men employed, during an almost general shutdown.

A state charter has recently been issued to **the Hite Coal and Clay Co.,** Lilly, capital $50,000; Martha Hite, Lilly, treasurer; A. P. Hite, Lilly; Thomas Kemp, Dover, Ohio and C. R. Kipitsky, Cleveland, incorporators.

The Lecoe & Shiffer Coal Co., of Luzerne County, has filed notice of a capital decrease from $40,000 to $20,000.

The Iron Trade Products Co., offices at Pittsburgh, New York and Philadelphia, has been appointed exclusive sales agent for the production of the **Snyder Mine** at Markleton, Somerset County, on the Western Maryland.

The Hillman Coal & Coke Co. has fired 100 ovens at the Isabella plant at Hillcoke, Fayette County, about ten miles up the Monongahela River from Brownsville.

The Lilley Coal Co., a large union operation, located on the Pennsylvania and on the Monongahela River, just below West Brownsville, has resumed operation after being idle since July.

C. H. Diffenderfer, president of the Blair-Parke Coal Co. has returned to his headquarters at Philadelphia after a recent visit to the Fairmont region.

At the annual meeting of the stockholders of the **Altoona Coal and Coke Co.** held in Altoona, the following officers were chosen for the year: Directors, Thomas Newhall, J. M. Skyles, John Lloyd, W. D. Canan, Thomas K. Maher, Julian P. Huff and Walter Maguire. Thomas K. Maher of Cleveland was elected president, John Lloyd, treasurer and Miss Anna Frank, secretary

WASHINGTON, D. C.

The United States Civil Service Commission will hold an examination for the position of **Associate Electrical Engineer.** Applications on Form 2118 which can be secured from the commission, must reach the Civil Service Commission, Washington, D. C., by Nov. 15, 1921.

Arguments have been heard in the Supreme Court in the case of the **Western Fuel Co.,** which seeks to set aside a verdict of California courts of $9,560 in favor of the heirs of Manuel Garcia who was killed in unloading coal from a vessel in 1916. The coal company puts up the statute of limitations and also invokes admiralty questions.

The Supreme Court has granted a motion to review judgment of Virginia courts in favor of the **Quemahoning Coal Co.,** in a libel case for recovery of value of coal furnished a vessel on order of the charter party.

WEST VIRGINIA

The Canyon Coal & Coke Co., operating in the West Virginia fields, has filed notice of increase in capital from $500,000 to $750,000.

The Jeffrey Manufacturing Co., has established a service station in the Fairmont Hotel, Fairmont.

Clay City reports that a new railroad is to be built from Argyle to Pilot Knob, the plan having the backing of Ashland and Huntington, West Virginia, interests.

Organization of the **Brooke County Coal and Coke Co.** with a capital stock of $430,000, presages the development of coal lands in Brooke County. Wellsburg is to be the headquarters of the Company in which R. L. Ramsey, J. R. Elson, W. S. Wilkins, S. S. Hodges, all of Wellsburg, are interested, together with C. M. Warden of Beech Bottom.

W. D. Boone, of Lookout, well-known in smokeless circles spent a few days in Charleston recently.

In the suit of the state ex rel, **A. L. Black Coal Co.** against the United States Fidelity and Guarantee Co., the Supreme Court of Appeals of West Virginia has handed down a mandate reversing the decision of the circuit court of Mercer and County and remanding the case for retrial in the lower court. This case grew out of an injunction suit brought by George W. Warren of Boston against the Black company, a corporation in which Morgantown men were interested, the suit growing out of an injunction bond of $500. The action was really for the purpose of having the bond dismissed, inasmuch as the injunction had been dissolved. The case was dismissed in the lower court on a demurrer filed by the defendant to the declaration and amended declaration. The case was then appealed to the higher court.

With the completion of work on the Aracoma Mine of the **Lake & Export Coal Corporation** in the Logan field, it has been possible to put that tipple in commission. Plans have been matured for extensive repairs and improvements at the Sunbeam Mine of the corporation and it is understood work will be started on such improvements in the near future.

Huntington is to be the headquarters of the **Block Coal Sales Co.** in which H. D. Hatfield and associates are interested, this company having been formed for the purpose of handling the output of some of the mines in the Logan region. The new company is capitalized at $50,000. Closely identified with the company are H. C. Duncan, Jr., Homer H. Holt, W. K. Cowden, all of Huntington, and Walter Prockter, of Yamacraw, Ky.

A contract has been awarded by the **West Bethlehem Coal Co.** for the erection not only of a tipple but also a power house, as well as for sixty miners dwellings at Corunna, near Oakland on the Western Maryland Ry.

BRITISH COLUMBIA

The property of the Pacific Coast Coal Co. Ltd., consisting of the Morden Mine and considerable undeveloped coal areas on Vancouver Island, would have been put up at tax sale by the Provincial Government on Oct. 12, if the ordinary procedure had been followed But, had this been done, the claims of coal miners for back wages aggregating $71,326.71, might have been adversely affected. The tax sale, therefore, has been postponed to Dec. 1. Meanwhile it is likely, should there be no settlement in the interim, that an order of the court will be asked for authorizing the sale for the satisfaction of the wages in arrears.

The Aveling Coal Co., Telkwa, is making preparations to take advantage of the growing demand for coal in northern British Columbia. The probelm has been that of transportation. This has been tackled seriously during the past summer and, with the construction of a bridge, now underway, in which the provincial government is lending financial assistance, it is likely that local coal will be available to the people of northern cities and settlements.

ONTARIO

Coal as a strike benefit is something new in Toronto. Hundreds of striking compositors in the printing trades in that city have recently been presented with a ton of coal each from a special strike fund provided by the International Typographical Union.

Affairs of the **Blue Diamond Coal Co.** were gone into rather fully at the recent annual meeting of the owners in Toronto The financial statement indicated that earnings were now showing up well and in addition to the market in Western Canada there is a promising field for business in supplying bunker coal to ships at the port of Vancouver, while the West Indies also afford a profitable outlet.

F. A. Fish, of the Fish Coal Co., Toronto, and his sales manager, **W. A. Walkover,** have returned to Toronto after a visit of inspection to a number of the Pittsburgh coal properties.

Business visitors and callers on the coal trade in Toronto recently were **C. E. Graves,** of E. L. Hedstrom & Co., Buffalo, and **J. C. Good,** of the National Coal Co., Cleveland.

Traffic News

The Southern Freight Rate Committee has before them the following proposed changes in rates, rules and regulations affecting coal

Submittal No. 3304. Initiated by Shippers —coal from mines on N.C. & St.L. Ry. to Tallahassee, Fla. Present and proposed rates are: From Bon Air group, present 472, proposed 419; from Tracy City group, present 465, proposed 413; from Whitwell group, present 459, proposed 407, from Whiteside group, present 453; proposed 400, per net ton. Proposed rate from Bon Air group is the same as the rate at present applicable from Coal Creek, Tenn., while the proposed rates from Tracy City, Whitwell and Whiteside groups are based 5, 10 and 15c respectively less than the rates from Coal Creek, Tenn., as of Aug. 25, 1920, the totals so arrived at increased 25 per cent in accordance with Ex Parte 74.

Submittal No. 3414. Initiated by Shippers —coal from N.C.&St.L. Ry. mines, viz. Bon Air group, Tracy City group, Whitwell group and Whiteside group, to stations on the Northwestern RR. of South Carolina. At the present time, there are no through rates in effect, lowest combination of rates being applicable. It is proposed to establish rates same as at present in effect from L.&N. east Tennessee group, 1 mines as per L.&N. Tariff I.C.C. A-14167.

Submittal No. 3502. Initiated by Carrier —coal from mines on the L.&N. and its short line connections in southeastern Kentucky and eastern Tennessee to Pensacola, Fla., Mobile, Ala., New Orleans, La., and Port Chalmette, La., for export, bunkerage purposes and coastwise movement. Present rates are published in L.&N. Tariff I.C.C. No. A-14167. Proposed rates are 25c less than the present rates, but do not include wharfage and handling charges at the ports. The purpose of this revision is to seperate the terminal charges from the transportation rates.

Submittal No. 3530—Initiated by Shippers —coal from mines on the Central of Ga. Ry. in Alabama to Ragland, Ala. No through rates at present in effect, lowest combination of rates being applicable. It is proposed to establish rates of 150c. per net ton same as the rate at present applicable from Frisco Ry. group 1 Alabama mines to Ragland, Ala.

Submittal No. 3583—Initiated by Shippers —coal from Southern Ry. mines to Brunswick, Ga., for transshipment beyond by water. The present rates to Brunswick for transshipment beyond by water are limited to those having destination beyond Brunswick via the Atlantic Ocean. It is proposed to change the present application in Southern Ry. I.C.C. A-8898 so that the rates now applying to Brunswick for export will apply also on shipments moving beyond Brunswick by the inside route to points between Brunswick and Savannah and points between Brunswick and Fernandina, including Savannah and Fernandina.

Submittal No. 3644—Initiated by Shippers —coal from L.&N. southeastern Kentucky, eastern Tennessee and Virginia mines to Birmingham, Ala., SAL. Ry. and Sou. Ry. intermediate points. Present rates, various. It is proposed to establish rate of 275c. per net ton to Birmingham, Ala., SAL Ry., stations between Wellington, Ala., and Birmingham, Ala., Southern Ry. stations between Chattanooga, Tenn., and Birmingham Attalla, Alabama City, and Avondale, Ala.—Southern Ry. stations.

Railroads serving the Boulder lignite fields refuse to recognize an order of the Colorado utilities commission, reducing freight rates on coal hauled from the mines, a few miles away, into Boulder. The railroads challenge the right of the state commission to interfere with freight rates.

The I. C. C. has vacated its investigation concerning the lawfulness of the rates, charges, regulations and practices of the **Central Railroad of New Jersey** in the matter of bunker coal charges at Port Liberty coal piers, Jersey City, N. J., the carriers having canceled the schedules effective Sept. 29. The commission had previously suspended the schedules until Jan. 7.

In the complaint of **W. L. Carney** an I. C. C. examiner recommends that the rate on bituminous coal from points in Indiana and Illinois to Chicago during Federal control were not unreasonable

In the complaint of the **National Supply Co.** an examiner recommends that rates on lump coal from West Clinton, Ind., to Ottumwa, Ia., reconsigned to destinations in Iowa and Nebraska, were not unreasonable

The I. C. C. has denied application of the Pennsylvania R. R. for re-argument of the decision of the **Pittsburgh Terminal Railroad & Coal Co.**, in which the commission had found that rates on bituminous coal from points in Pennsylvania on the West Side Belt R.R. to interstate destinations east of Harrisburg were not unreasonable, but that the refusal of the Pennsylvania to maintain joint rates on the Westmoreland group basis from and to the named points, while maintaining this basis from points on the Peters Creek and Ellsworth branches of the Monongahela division on the Pennsylvania and on the Monongahela Ry. was prejudicial.

In order to better shipping facilities, producers in the New River field have asked the management of the Chesapeake & Ohio to move the western end of the Eastern Division of the road from Hinton to Thurmond.

The Terre Haute Paper Co., of Indiana, has complained to the I. C. C. against unreasonable charges on coal from Wabash and Speedwell mines to Terre Haute during Federal control. It also alleges unreasonable rates on coal from mines on the P. C. C. and St. L. in Indiana, and from mines on the Chicago, Terre Haute and Southeastern.

In a complaint to the commission the **Greene Cananea Copper Co.**, of New York, alleges unreasonable rates on coke from Gardiner, and Koehler, N. M., and Segundo, Col., to Cananea, Mexico.

The Pennsylvania Power and Light Co., of Stoughton, Wis., alleges that charges for transportation of anthracite coal from producing points to Haute, Pa., were illegally assessed.

Unreasonable charges on smithing coal from Douglas, W. Va., to Benton, Ill., reconsigned to Tulia, Tex., and thence to Clifton, Ariz., because of demurrage accrued through failure of reconsignment, are alleged in a complaint by the **Romann and Bush Pig Iron and Coke Co.**, of St. Louis.

The Nelton Fuel Co., and others of Leslie, W. Va., allege unreasonable rates on coal from points on the Greenbrier and Eastern to various interstate destinations in the United States and to points in Canada, and requests joint through rates on the New River District basis

The Central New Jersey Coal Exchange, Inc., has withdrawn its complaint from the I. C. C., which related to rates on anthracite coal from Pennsylvania to New Jersey points.

The complaint of the **Northern West Virginia Coal Operators' Association** will be argued before the commission at Washington on Nov. 21.

The Coal & Coke Committee, trunk line territory, held a public hearing in New York City, Oct. 20, on the proposed revision by the D. L. & W. Ry. of **switching charges on coal and coke in the Buffalo district.**

Association Activities

West Virginia District Coal Associations

There was a large attendance of secretaries representing the various West Virginia district coal associations at a recent meeting held in Washington. This conference was called by E. J. McVann, chief counsel for the West Virginia operators, in the Ohio rate case, Mr. McVann having called the secretaries together for the purpose of stressing the importance of being prepared to go ahead with the case, hearings on which were held in Ohio a few weeks ago. Members of the executive committee of the West Virginia Coal Association were also present.

The meeting was held not only for the purpose of impressing secretaries with the importance of the matter but also to prepare for further hearings and in order to make certain that data in support of the opposition of the West Virginia operators to the application of the southern Ohio operators for an increase in the freight differential would be prepared promptly and accurately. It is claimed by West Virginia operators that any increase or widening in the differential would be ruinous to West Virginia operators so far as Western markets are concerned.

Illinois Coal Operators' Association

The association held its twenty-sixth annual meeting in Chicago recently. Rice Miller of Hillsboro, Ill., was elected president; L. J. Smith of Chicago, vice president, F. C. Honnold of Chicago, secretary-treasurer; and C. E. McLaughlin of Springfield, secretary of the commission and recording secretary. The meeting was attended by approximately one hundred operators.

One very significant fact came out in the annual report read at the meeting. During the last twelve months there were recorded the largest number of mine disputes of any annual period. This restlessness on the part of the miners was considered extremely significant.

During the meeting there was no discussion relative to the new wage scale. This matter will not be taken up until after the first of the year as the present agreement with the United Mine Workers does not expire until March 31, 1922.

Kentucky Retail Coal Dealers' Association

The semi-annual meeting of the dealers was held at Lexington recently.

There were three sessions, presided over by president R. A. Watson. The first session was given over to reports from the secretary, who told of correspondence that had been had with members touching the subject of indiscriminate sales by operators and wholesalers direct to groups of consumers. Also of having made some efforts to develop district meetings in the western part of the state. The second session was given over to reports from county chairmen and a discussion of them. These indicated that competition from group buying has demoralized prices and reduced retail margins to the point where profits are small. The one comforting thing about this is that it will help discourage group buying.

Recent Patents

Jig. Guy H. Elmore, Swarthmore, Pa., 1,387,370. Aug. 9, 1921. Filed Dec. 23, 1919; serial No. 346 812.

Rock Drill. Allen Alford, Waco, Texas, 1,387,447. Aug. 16, 1921. Filed July 28, 1920; serial No. 399 483.

Side-Dump Car. A. M. Gow, Duluth, Minn., 1,387,485. Aug. 16, 1921. Filed April 6, 1921; serial No. 458,929.

Obituary

George Dees, for many years connected with the Peabody Coal Co., and of late years located at Taylorsville, Ill., died recently of heart failure.

The death occurred in Atlantic City recently of **W. Hamilton Smith**, of Washington, D. C., who was nationally known in the coal trade. He was second vice president of the J. Maury Dove Coal Co., of the District of Columbia, which company he had served 45 years. He was also president of the Washington Coal Merchants' Board of Trade, vice president of the Standard Coal Co., and one of the organizers and vice presidents of the National Retail Coal Merchants' Association. He was born in New London, Conn., in 1862 and had lived in Washington since 1874.

Coming Meetings

The National Industrial Traffic League will hold its annual meeting Nov. 9 and 10 at the Sherman Hotel, Chicago, Ill. Executive secretary, J. H. Beek, Conway Building, Chicago, Ill.

The Coal Mining Institute of America will hold its annual meeting at Pittsburgh, Pa., Dec. 7, 8 and 9. Secretary H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

An Industrial Relations Conference for all industries in the State of Pennsylvania has been arranged for October 24 to 27 at Harrisburg, Pa., by the Commissioner of Labor and Industry, C. D. Connelly.

American Gas Association. Annual convention Nov. 7 to 12 at Congress and Auditorium Hotels, Chicago, Ill. Secretary, O. H. Fogg, 130 E. 15th St., New York City.

The Illinois Mining Institute will hold its fall meeting in the City Hall, Springfield, Ill., Saturday, Nov. 19. Secretary, Martin Bolt, Springfield, Ill.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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Make Collective Bargaining Fair to Both Sides

NO subject elicited more comment from speakers at the American Mining Congress, meeting at Chicago last week, than that of the check-off, by which the United Mine Workers force membership in their union wherever they have agreements with the operators in the bituminous coal mines, and by which they retain their strength both in membership and in funds. The check-off is the particular subject of attack in the famous proceedings before Judge Anderson, both the indictment of more than 200 operators and miners last year and the Borderland Coal Co. application for an injunction, now pending.

The check-off is legal or is not legal. It is presumed that Judge Anderson soon will settle that, at least as far as his jurisdiction goes. That it is economically unsound is the opinion of those who spoke on the subject of coal-mine labor. H. N. Taylor, whose experience with the United Mine Workers dates from the first joint meeting in the early nineties, holds that the check-off is responsible for the growth of radicalism in the miners' organizations. In the early days of the contracts between the operators and miners in the Central Competitive Field the collection of dues by forceful extraction from pay envelopes was, he says, a comparatively harmless thing, used only for collection of nominal dues and sick benefits. The practice has grown to such an extent that now "vast sums" are collected in this manner "for purposes far remote" from that intended in the original contracts.

T. H. Watkins blames the coal operators for having allowed the practice to grow to its present magnitude. He points out that "for twenty-five years the operator's policy seems to have been one of following the path of least resistance," and with competition so great that wages were forced to low levels in years gone by the miners' organization was encouraged in its program of bringing into the fold the remaining non-union fields. Some idea of the revenue this system produces, with which the miners' union can finance strikes and assist in the unionization of other fields, is disclosed in the figures he cites. From each miner in central Pennsylvania last year the national union received more than $36, and as there are more than 500,000 members paying tribute to the national treasury, the annual budget is well over ten millions of dollars.

Not a voice was raised in opposition to collective bargaining. It is abuse of power on the part of the leaders of the unions and therefore by the unions themselves that is being condemned. The check-off is under attack because of its unfairness to the man who does not want to belong to the union but must under its rules and because of the abuses that have grown out of the practice. The check-off is the most precious "right" that coal-mine labor cherishes today, for the reasons that make it objectionable to the operators. It means power.

Philip Penna, of Indiana, a veteran of many labor controversies, roundly scored the United Mine Workers for their light-handed treatment of their contracts. There can be no solution of the labor problem in the coal industry, he thinks, that does not contemplate the incorporation of the labor union, making it as responsible before the law of the land as the producer. Collective bargaining, with a union if need be, but with a union that can be held responsible for the performance of its obligations, he upholds. In this we agree with him. Collective bargaining between managers and workers on questions of wages and working conditions is here to stay. The problem is to make it a definitely workable plan, equally fair to both.

Open shop councils are proving as efficacious as unions. Charles M. Schwab, in his talk before the annual dinner of the American Mining Congress last week said that never had he employed union labor in a closed shop. He has shop councils—the congress he calls it—in which labor and management are equally represented. His success with labor is so well known as to require no further indorsement of his plan.

Where unions have entered the coal industry, however, they are largely in to stay. Where they have but knocked at the door they are not likely to enter save by violence. Nor would we have them cast out of their old-established fields. The standardization of wage and working conditions they have introduced has helped stabilize the coal industry. When they are made responsible under the law for the fulfillment of their contracts, as are the operators, and when they have banished from their ranks the radicals who seek not fair wages and decent living and working conditions but the entire product of their labor, leaving nothing as a wage to capital, and when they abandon all efforts to set limits on individual effort again will there be a semblance of peace in the coal industry.

Reason as a Laboratory Tool

FOUR of the national societies met at the Engineering Societies Building to discuss the fitness of engineers as business men, and after two bankers had made some wise—and some unwise—remarks on the subject, an engineer arose and gave it as his opinion that the professional did not regard reason, as he should, as a laboratory tool to be discarded in his public relations.

Reason out your conclusions as carefully as you will but stage them so that they will have the right effect on the emotions of the public, for the people do not reason; they react to impressions. In fact, detailed thought is not popular, and the engineer would do well to remember this fact. Let him have his sheaf of plans, his inventories, his figures, his details, but if they are

to be presented let them be separate and even under another cover. His argument must deal in broad statements which the volume of simple, orderly details, kept duly and discreetly in the background, by their elaboration rather than by their force must drive home.

It appears only too true that the engineer has faith that an argument that has given him delight will prove as pleasing to another who has no time to give to it, and to whom it comes not as a personal discovery but as the work of another man's brain. The man who understands human nature will hide away the unessentials, the further places of decimals, the unit dollars in the total expenditure, the ten-thousandths in the tonnage cost and will deal broadly and interestingly with his subject, playing it up lightly and clearly.

But, most unfortunately, too many engineers would have every detail read, and they cover their conclusions with overwhelming findings of fact, of which the reader wearies. Be human and be brief are two good pieces of advice to the engineer. Let him make it a point to ascertain the character of the man he is addressing; let him visualize the man he is dealing with; let him know his audience and write his report or deliver his message accordingly.

How Not to Estimate

RECENTLY the city of Wilkes-Barre asked for bids for the purchase or lease of the coal under the "River Common." The resulting bids were a great disappointment to the city officials and to the public, who had been fed up with wildly extravagant estimates of the value of this coal published in the local papers.

The "estimates" apparently were made on the total area of thirty-three acres, with a yield of 1,200 tons per foot acre, and the values calculated by applying to this yield the present average royalty rates for *prepared* coal.

An analysis of the results of such methods of calculation is interesting and instructive. The thirty-three acres must be reduced by the barrier pillar required by law. Allowing 50 ft. for this, the area is reduced by six acres or to 82 per cent of the total. The yield of 1,200 tons per foot acre would be equivalent to about 83 per cent removal, which is high for thin beds that are close to the surface and have to be mined with due consideration to the necessity of furnishing surface support. The coal in question lies along the edge of the Susquehanna River, under water-bearing wash and quicksands; the beds range up to 20 ft. in thickness and the deepest is about 1,000 ft. below the surface, which by the terms of the contract must be absolutely supported.

Under these conditions the total ultimate removal figured by the engineers for the County of Luzerne in assessing the coal values would vary from 45 per cent in the Baltimore bed to 62 per cent in the Abbott and Five-Foot beds, with a weighted average of 53.7 per cent. Allowing only 18 per cent for fuel and loss in mining and preparation the yield would be 44 per cent of 1,820 tons, or 800 tons per foot acre, 66⅔ per cent of that estimated. On the present rates of royalty the average for coal of all sizes is about 80 per cent of that placed on prepared coal.

The coal under the property can be expected to last at least seventy-five years, and its present value in place is not the royalty rate but the present value of that rate as an annuity discounted to the present time. Considering the present money market an 8 per cent discount rate can properly be used. At this rate an annuity of $1 per year for seventy-five years would have a present value of $12.46 and each dollar to be ultimately paid a present value of 16.6c.

For this reason the estimates made as above should be reduced to the product of the above percentages, namely: Area, 82 per cent; removal, 66⅔ per cent; royalty rate, 80 per cent; present value, 16.6 per cent. Hence the corrected figures would be reduced to 7¼ per cent of those given. This shows how easily a non-technical editor may be misled. In this instance the honest opinion of the editor is actually about fourteen times the proper and reasonable value.

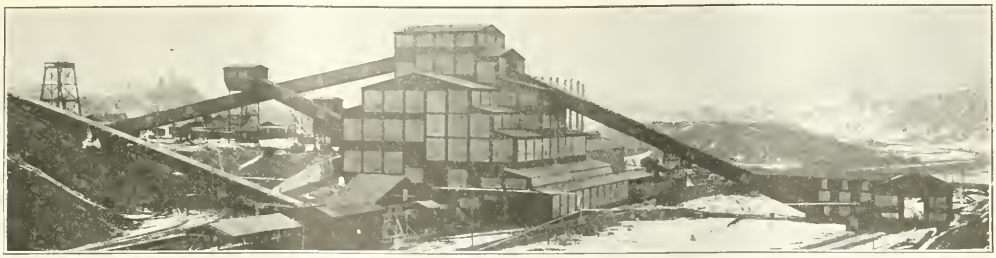
Decay of Mine Timber

SEVERAL causes conspire to make the preservation of timber more important now than in the past. In early days mines soon suspended operation because of the inadequacy of their haulage equipment and the ease with which a new mine could be started. When the transportation problem became difficult by reason of distance or the mine dipped unpropitiously and made much water it was abandoned. Today these difficulties are met without much effort, and mining goes on. Consequently mines are having longer and longer lives, especially where shafts are used instead of drifts. The shaft being the more expensive form of opening it is not as soon abandoned and the workings adjacent and tributary to it remain longer in use than in the past and, moreover, the air circuits are longer, as the air has to be returned to the shaft, where with drift mines there were many opportunities to reach the surface.

Furthermore when workings are extensive the air is apt to be excessively spore-laden, with unfortunate results to timber, which, because the mines are larger, is present in greater quantity than in smaller workings. However, some quite small mines have been noted with heavy fungus growth and rapid timber deterioration. More important, however, as a consideration in favor of timber treatment is the fact that our posts and caps have to be moved longer and longer distances with freight rates much higher than at any time in past history, and the cost of cutting, peeling and transporting to the railroad is heavier than in past years.

Time was when farmers could be induced to cut and haul props during the winter for a remarkably low figure. They would cut the smaller timber on their own wood lots and practically donate it to the coal company if thereby they might get wages for themselves and families and feed for their horses during the winter months. Or they would take the timber off the company's own land, charging rates which would afford them wages so low, if competently reckoned, as would make the farmers themselves wonder how they could live on so little.

Those days are past. The lumber and posts come more and more from distant states and are cut and hauled by companies that must pay the full wage scale and who, keeping careful accounts, see that the price is high enough to cover all costs. The business of lumbering is on a different basis, and in consequence it will soon be necessary for operators of the United States to be as careful in preserving timber as are those of France and Belgium.



LOREE BREAKER OF HUDSON COAL CO. DEISTER-OVERSTROM CONCENTRATOR HOUSE IS IN SMALL BUILDING AT BASE OF CONVEYOR LINE IN LEFT FOREGROUND

Three Methods of Separating Coal from Slate and Bone Now Being Used in Preparation of Anthracite*

Chance Uses Sand Floated by Agitation as High Specific-Gravity Fluid—Coal Floats and Impurities Sink—Conklin Adopts Impalpable Magnetite Dust in Similar Manner—Concentrating Tables Used for Fine Sizes

By Dever C. Ashmead†

ANY two lump substances of different specific gravities may be effectively separated by introduction into a liquid the specific gravity of which lies between their specific gravities. All the particles heavier than the liquid will sink while those lighter will float. T. M. Chance procures any desired specific gravity of the separating liquid by the addition of fine sand to water; this sand is kept in suspension by agitation. For the separation of coal from slate and bone, ocean-beach sand has been used in sizes ranging from 20- to 30-mesh down to 100- to 200-mesh and even finer. Specific gravities of from 1.20 to 1.75 may be maintained for any period.

Sand Agitated in Cone Washer with Stirrer

The inverted-cone type of washer has been used in the most recent of these experiments, the washed coal and refuse both being removed from the apparatus without the use of complex devices or conveyors. A slow-moving rotary stirrer within the cone will keep the sand agitated and prevent its forming into banks on the walls. This fine granular material virtually forms a stratum of quicksand in the lower half of the cone, which the stirrer maintains at a uniform density. As the flow of water is reduced to a minimum, a high fluid density is maintained. The cleaned coal usually is discharged through an overflow weir along with the water, but in some cases it is removed with a conveyor or a raking wheel. The coal is discharged onto a stationary screen, where the sand particles that adhere are rinsed off and the coal is recovered. In treating the finer sizes, a shaker screen probably will be more efficient.

In washing anthracite it has been found possible to produce washed coal carrying no free slate and only such a proportion of bone coal as is desirable in the finished product, also to produce refuse with no free coal of the average ash content of the washed coal. Occasionally pieces of what appear to be pure coal are found in the refuse, but these are invariably found to be exceedingly heavy.

If the average specific gravity of the coal to be washed is 1.5 and the average density of the ash is such as to produce an increase in density of 0.01 per cent for each per cent of ash content, a specific gravity of the fluid of 1.6 will produce washed coal no piece of which can contain more than 10 per cent of ash. The coal that floats is a high-grade product. The material that sinks can be passed to a second washer, in which the fluid mass is maintained at a specific gravity slightly higher than the first and graded into middlings and tailings. The middlings will contain most of the bone, which can be crushed so as to separate the coal and the rock; it then can be returned to the first washer for cleaning. Pyrite can be separated from the tailings by a third washer and sold as a byproduct.

Re-treatment of the tailings from the first washer will be of greater economic value in the case of an efficient cleaning process than with the usual processes. One fact that militates against the production of high-grade washed coal by ordinary methods is the presence of laminated slate and boney coal. In the center of the jig such material will often have a falling velocity practically equal to that of the large pieces of clean coal and will, therefore, be discharged with the washed product. With the Chance process no difficulty has been found in maintaining such a fluid density that no individual piece of coal is discharged that contains more than 3 per cent of pyritic sulphur.

Coal Will Be Washed Almost Without Sizing

The first commercial installation has been located in the Pennsylvania anthracite district. It will be used for the cleaning of practically unsized coal. It has been found entirely possible to concentrate anthracite averaging 20-mesh, and experimental work has been done on coal of smaller dimensions. It is possible to treat an unsized product carrying a large percentage of fine coal, because the fines are discharged with the super-

*From article, entitled "Advances in the Preparation of Anthracite," presented at the September meeting of the American Institute of Mining and Metallurgical Engineers in Wilkes-Barre.

†Anthracite Editor, *Coal Age*.

natant wash water at the top of the fluid mass. When extremely small sizes of coal are treated it is not practicable to screen out all of the fine sand that is removed from the apparatus with the washed coal, consequently hydraulic classification will be used for separating the very fine coal from the sand that is withdrawn with it.

Highly satisfactory results have been obtained in treating No. 1 buckwheat, rice and barley coals. It has been possible to reduce the impurity so that practically only the inherent ash remains. As a commercial proposition, however, this would result in too great a rejection of boney coal and hence in too low a recovery. As a result, the percentages in Table 1 have usually been found to represent the best practice.

TABLE 1. PREFERRED PRACTICE WITH CHANCE SEPARATOR

	Feed, Per Cent	Washed Coal, Per Cent	Reject, Per Cent
Ash	38 00	11.22	83 58
Total weight	100 00	63 00	37 00

Little sand is lost in the operation. When rice coal has traveled less than 1 ft. over a ¼-in. mesh screen, the washed coal contains less than 0.6 per cent of residual sand. A further travel of 1 ft., with the addition of fresh water, reduces this final sand content to approximately 0.1 per cent, or 2 lb. per ton of coal. The sand is washed from the coal by the agitation water after it is discharged over the weir at the top of the cone. It is possible to use this water several times by employing a screen built in a number of steps, the sand washed out in one portion being given an opportunity to settle before the water is used in the next.

Conklin Will Use Pulp of Magnetite Dust

The Hudson Coal Co. has recently developed an experimental plant for testing the operation of the Conklin method of separating coal from its heavier impurities. This method, or process, is based on the principle of introducing a mixture of coal with its impurities into a fluid medium possessing a specific gravity somewhat greater than that of the coal and somewhat less than that of the heavier impurities. The medium used is a pulp composed of magnetite dust passing a 200-mesh screen diluted in the proportion of approximately 44 to 1, and having a specific gravity of about 1.9. This fluid quality is sufficiently permanent to make the pulp a working medium that does not require agitation in order to preserve its property of high density. In fact, agitation of any kind is distinctly harmful to its operation and is as far as possible eliminated from the process. At this density it is quite fluid and retains this quality to a large extent after eighteen to twenty-four hours of settlement.

The experimental installation consists of several elements, the first of which is the separator tank, filled with the pulp, into which the stream of impure coal is introduced. The actual separation takes place in this tank, the coal passing off on the surface of the pulp and the slate and other impurities sinking to the bottom and being removed by a screw conveyor and elevator. The removal of the coal is assisted also by a flight conveyor, which elevates it slightly above the overflow point of the tank. At the coal and slate discharge a small shaking screen, having a very fine mesh, and a water spray are installed to remove any pulp that adheres to the coal and slate. Fig. 1 shows a side elevation of the apparatus.

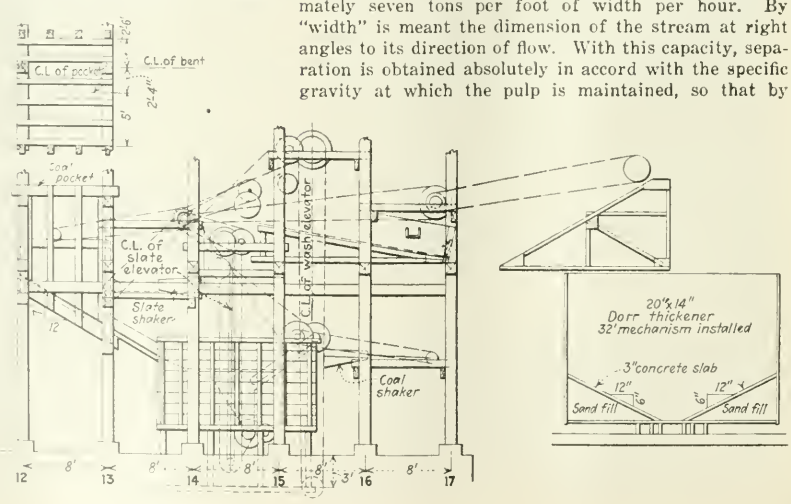
Dorr Thickener to Re-Condition Pulp

The second element of the plant is a thickener tank, pump and Dorr classifier, the function of which is the production of the pulp. The pulp washed off from the coal and slate as these materials emerge from the separator tank is lifted by means of a bucket elevator to a Dorr classifier, which removes the impurities and allows the diluted pulp to flow to a Dorr thickener. In this tank the pulp is restored to its proper degree of dilution and is removed from the tank by a diaphragm pump which discharges it into the top of the slate elevator, thus completing the circuit.

The apparatus described has not as yet been placed in actual operation, but similar equipment, smaller in size, built by Mr. Conklin at Joplin, Mo., indicates that results may be expected approximately as follows: The machine will handle run-of-mine coal with the fines removed approximately as well as it will handle graded and sized material. By fines is here meant buckwheat and smaller, which at present it is not thought that the machine will be particularly proficient in handling. The capacity of the separator is expected to be approximately seven tons per foot of width per hour. By "width" is meant the dimension of the stream at right angles to its direction of flow. With this capacity, separation is obtained absolutely in accord with the specific gravity at which the pulp is maintained, so that by

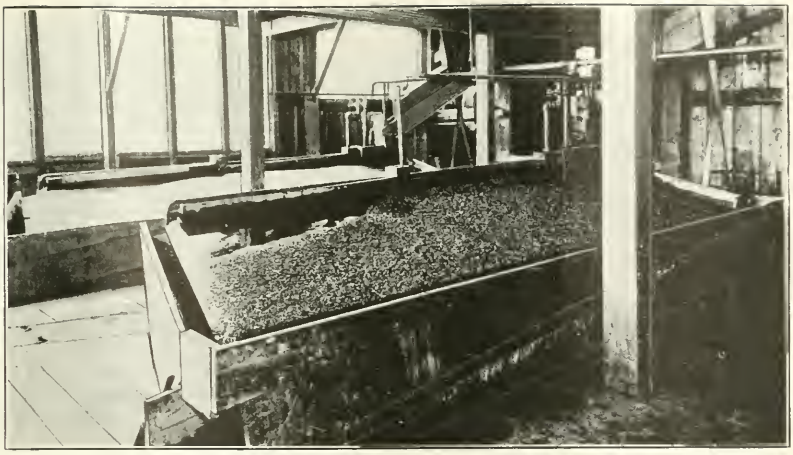
Conklin Separator

Planned to operate without any agitation except that of elevators. To this end extremely fine magnetite dust is used. Pulp is to be recovered in the plant on the right, the fineness which keeps it suspended in the washer making it slow to settle in the thickener. The washer is to handle run-of-mine coal after buckwheat and smaller have been removed. Washing before screening saves breakage, for, to satisfy the market, screenings need not be made into so many sizes as is necessary for good jig washing. Lack of agitation prevents the breakage of coal that is usual when it is jigged.



Coal-Washing Table

The table was found capable of cleaning three to four tons of slush per hour and as much as ten to twelve tons of buckwheat. It uses about twice as much water as coal. By use of this table the Hudson Coal Co. has been able to reduce the ash content of slush from 28 per cent to 13 per cent and at a sacrifice of capacity could bring the ash to 7 or 8 per cent.



slight variations in the pulp density the quality of the coal and slate can be controlled with a fine degree of nicety. By the use of magnetite-ore dust it is expected that such specific gravities of the pulp can be obtained that everything except the heaviest pure slate and rock can be supported on its surface.

After investigating five methods of cleaning anthracite slush, either on a commercial scale or in the laboratory, the Hudson Coal Co. has obtained the best results with the Deister-Overstrom diagonal-deck No. 7 coal-washing table. The concentrating table has found quite wide application for years in the metal-mining industry and later for washing bituminous coal. It has only recently invaded the anthracite field, but about 150 of these tables are already in operation or are being constructed for use in cleaning various sizes of anthracite from No. 1 buckwheat down to slush.

The Hudson Coal Co. has made a long series of experiments on anthracite slush at the Loree breaker (illustrated in the frontispiece above the title of this article) in conjunction with the Dorr slush-recovery plant. The results were highly satisfactory as to ash-and-sulphur reduction by the washing process, but a table will effectively clean only three to four tons of slush per hour; though of the larger sizes, up to No. 1 buckwheat, as much as ten to twelve tons per hour can be handled. With slush, the fineness of the particles precludes the treatment of more than four tons; this means that a comparatively large installation (eight tables) is required to treat the slush from the company's largest collieries.

Coal Goes Over Riffles; Slate Sidesteps

The various operations are as follows: Raw coal, mixed with about twice its weight of water, is delivered to the table through the feed box at the upper corner at the head motion of the deck. Water-distributing boards placed along the same side of the deck as the feed box allow a nice adjustment in the distribution of water over the deck surface. The table is placed in a horizontal position and is practically level longitudinally, or along the line of its reciprocation. A slight side inclination at right angles to this line, adjustable to meet changing conditions, permits the clean coal to be washed over the long edge of the table into a trough or launder. Simultaneously the action of the head motion in reciprocating the deck approximately 275 times per minute with a length of stroke of about $\frac{3}{4}$ in. drives the pyrite and refuse, which stratifies next to the surface of the table deck, over the short edge, or refuse end, of the table, where it is caught in launders and conveyed to the refuse heap. The wooden riffles on the surface of the table deck aid in collecting and guiding the refuse to its proper point of discharge and also prevent the finer particles of waste matter from washing over with the clean coal.

Using this table on anthracite slush, the Hudson Coal Co. has obtained an average ash content of 13 per cent in the washed product when the crude coal averaged 28 per cent ash. This ash content in the washed coal can be reduced still further, to from 7 to 8 per cent if required, by extreme care in tabling and at a considerable sacrifice of capacity. Typical average results obtained in the operation of this table are as in Table II.

Labor and Power Cost Four Cents a Ton

The material treated on table was anthracite slush (through $\frac{3}{4}$-in. round opening) recovered from breaker slush by Dorr hydroseparator and classifiers, with the following average size as determined by test: On 60-mesh, 88 per cent; on 100-mesh, 8 per cent; on 200-mesh, 3 per cent; through 200-mesh, 1 per cent.

TABLE II. AVERAGE RESULTS WITH DEISTER-OVERSTROM TABLE

	Short Tons per Hour	Ash, Per Cent	Sulphur, Per Cent	Distribution and Yields — Total Solids, Per Cent	Combustible, Per Cent	Ash, Per Cent	Sulphur, Per Cent
Feed	3.41	28.0	1.71	100.0	100.0	100.0	100.0
Washed coal	2.43	13.0	0.79	71.3	86.1	33.2	32.8
Slate, etc.	0.93	65.0	1.91	27.2	13.2	63.2	33.2
Pyrites	0.05	70.0	42.00	1.5	0.7	3.6	36.8

Reduction of ash, 53.51 per cent.; reduction of sulphur, 53.8 per cent.

The best data at hand indicate that 4c. per ton will cover labor and power expense of tabling and that probably the total cost per ton, including fixed charges, depreciation, repairs, etc., will not exceed 10c. per ton in a fair-sized installation, which is one of about eight tables. In this data, power is charged at 1.5c. per kw.-hr. and labor at 50c. per hour.

At one of the breakers belonging to the Madeira-Hill & Co. interests a mixture of rice and barley was washed

on Deister-Overstrom concentrating tables for ten days, the float-and-sink being used to determine the slate in the washed coal. Three thousand, six hundred tons of rice passed over the concentrators, samples being taken every 20 min., with results as in Table III.

TABLE III. QUANTITATIVE RESULTS OF DEISTER-OVERSTROM TABLES AT MADEIRA-HILL & CO. PLANT

Coal discharged from concentrator:	Coal, Per Cent	Slate, Per Cent
Rice over $\frac{1}{4}$-in. mesh	87 5	12 5
Barley over $\frac{1}{8}$-in. mesh	87 0	13 0
Barley over $\frac{1}{16}$-in. mesh	87 5	12 5

Slate discharged from concentrator	Per Cent
Proportion of slate	90.75
Proportion of coal	9 25

The material fed to the concentrator contained 30 to 35 per cent ash. Table IV gives an analysis of the product from the concentrator.

TABLE IV. ANALYSIS OF PRODUCT FROM DEISTER-OVERSTROM TABLES AT MADEIRA-HILL & CO. PLANT

	Rice Over $\frac{1}{4}$-In.	Barley Over $\frac{1}{8}$-In.	Barley Over $\frac{1}{16}$-In.
Coal discharged from concentrator:			
Fixed carbon, per cent	75 93	79.85	80 11
Ash, per cent	19.48	15.20	14 62
Heat value (dry basis), B.t.u.	12,172	12,573	12,663
Slate discharged from concentrator:			
Fixed carbon, per cent			22 69
Ash, per cent			70.20
Heat value (dry basis), B.t.u.			3,636

Lightning in Unwired Cochran Mine Sets Fire to Gas

Three Explosions in Idle Mine, One Due to a Short Circuit and the Other Two to Lightning or Current Induced by It in Mine Track

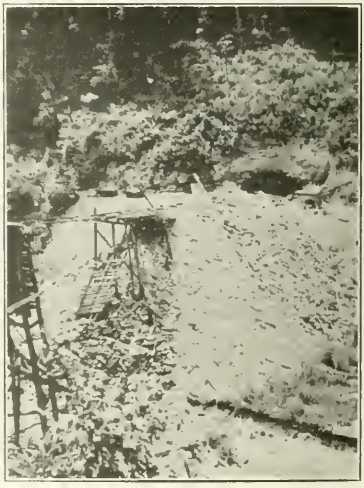
By A. F. Brosky*

FOR a number of years the No. 1 Mine of the Cochran Coal Co. has been operated in the Upper Freeport bed at Salina, Pa. Mining and development work have pushed the advance headings a distance of approximately two miles from the mouths of the drift, and in order to increase the mine output and lessen the haulage distance the company contemplates the sinking of a hoisting shaft at the eastern boundary of the present property holdings. Four years ago an 18-deg. slope 360 ft. in length was driven as a manway for the shaft whenever it would be sunk, and incidentally, to aid in the development work and in the sinking of the shaft. Work then was discontinued for a period of three years. Last summer, however, the company decided to resume development.

The dimensions of the slope are 6½ x 16 ft. in the clear, the excavation being supported by 12-in. square timbers. The alluvium at the slope mouth was held up by fourteen double sets of timbers, each composed of posts, caps and mud sills. Temporary ventilation was obtained by bratticing down the center of the slope and installing an electrically-driven force or blowing fan at the bottom. The brattice was constructed of a double thickness of 1-in. boarding. Tracks were laid and development prosecuted until the face of the heading was 1,500 ft. from the slope mouth. Only eight men were employed. In consequence the work did not come under the jurisdiction of the state mine inspector.

A timber trestle was built from the slope mouth, extending out over a gully. This was provided with a track and was used for dumping. This slope with its existing and contemplated development is known as the No. 2 Mine. Eventually it will connect with No. 1. During the present year it was idle from April until July, after which a series of three explosions occurred.

The first explosion took place on July 11. Although only traces of gas had ever been noticed in No. 2 Mine and open lamps were used in No. 1, the company during the suspension operated the fan for short periods several times each week. On this particular day, in accordance with his schedule, the mine foreman started for the slope bottom carrying a safety lamp. He encountered gas, and returned to the surface to procure a flashlight. He then proceeded to the bottom, where he found gas in quantity. After making a thorough inspection of the entries, assuring himself that the doors were in their proper position and pulling the switches at all pumps, he returned to the fan at the slope bottom and, fearing to admit electrical current to a gassy mine, slipped the belt from the motor shaft, and spun the fan by hand for a period of one hour.



DAMAGE FROM THIRD EXPLOSION

Lightning apparently struck the rails on the timber trestle and entered the mine or, without actually striking, induced a current therein. Whatever happened the gas was ignited and an explosion occurred, dislodging, as may be seen, all the timbers and heaping rock on the surface.

By this means he hoped to set up enough of a ventilating current to clear the limited workings of most of the gas. The switch conveying current to the motor which drove the fan was open. The foreman then left the mine. About an hour later he closed the switch at the surface, and an explosion followed.

After closing the surface switch the foreman intended to go to the bottom and make a test for gas. Had he found none he contemplated replacing the belt on the motor and fan, then starting the fan by closing the switch at the underground station. In case he found a showing of gas he meant to clear the place by more hand spinning of the fan. However, he had

*Bituminous Editor, *Coal Age*.

FAN HOUSE AFTER THE EXPLOSION

In two hours the fan house then under erection would have been completed. The lightning struck near the mine and an explosion occurred, wrecking it and demolishing other construction work. Is it possible that there was enough gas on the surface around the mine that it was fired by the lightning flash?

no opportunity to go through with the program he had in mind, because of the unexpected explosion which took place upon closure of the surface switch. It is thought that the explosive gas in this case was ignited by an arc resulting from a short-circuit somewhere between the two switches. In driving one of the entries a "split fault" had been encountered. It is thought that a gas pocket lay above or below this parting and somewhere ahead of the face, and that the advance along this entry had weakened the walls enclosing this pocket. Stresses were set up in the rock and coal, because of the gas pressure, with eventual disruption of the weak wall, allowing the gas to escape.

The force of the explosion tore out the electric wiring completely. It shot the 6-ft. Sirocco fan up the slope, out of the mine, and into the gully. A remarkable coincidence is that not a single timber was dislodged. Several mine cars were thrown up the slope, yet the explosion caused no caves or falls of rock.

Lightning May Have Induced Current in Rail

Immediately after this explosion, work was started on the installation of a surface fan. On July 26 an electrical storm arose, and the men who were engaged in erecting the fan sought shelter in the slope mouth. They were suddenly startled by a pop and a blowing-off noise, whereupon they went "helter skelter" for the hills. This second explosion, if such it might be called, apparently was caused by a bolt of lightning or an induced current therefrom that travelled down the well-bonded track. This is regarded as the probable cause, as the explosion and a lightning flash occurred simultaneously. All electric wiring had been cleared out of the mine by the first explosion, and it is the general opinion that the second could not have occurred in any other way than that suggested.

By July 28 the fan had been almost completed, lacking only the double boarding and hinging of one door. A short test run had been made and the fan was pronounced ready for service upon the completion of the door. About 8:30 that evening another electrical storm arose. An explosion similar to the first but more violent than either of the two so far experienced took place. The evidence again pointed to lightning as the agency that ignited the accumulated gas charge, with the bonded track again the conducting medium.

The third explosion dislodged all mine timbers and brattice work. A 5-ft. bed of fireclay, part of the surface soil capping a stratum of sandstone, caved, obstructing the slope near its mouth. About twenty carloads of rock fell at a point 70 ft. due west of the slope bottom. This was the total extent of the damage done underground. The fan installation on the surface, however, was completely shattered, and the timber trestle was damaged to some extent.

In order to prevent a recurrence of explosions resulting from lightning the company intends to insert a length of wooden rail in the track. These rails, one on each side, probably will be staggered in order to obtain greater track rigidity and allow quick replacement should anything happen that would cause them to be disturbed.

Gunite and Creosote Extend Life of Timber

D. HARRINGTON, of the U. S. Bureau of Mines, writing about the decay of timber in a certain return airway in the North Butte Mining Co.'s mines in the *Engineering and Mining Journal*, says that where timbers lasted only eight months when untreated, sound timbers with a gunite treatment a half inch thick or over had not become affected after two and a half years. In the same airway, timber treated by creosote or not treated at all but covered with fungus to a considerable extent as the result of two or three months' exposure, would, if it were still solid at the time of the application of gunite, last more than a year and in some instances more than two and a half years if the guniting was efficiently performed.

Timber treated with creosote by the pressure process or sprayed with creosote after being placed in the tunnel, though apparently attacked by fungus, seemed to resist complete decay for more than two years even when not gunited and appeared to be almost as good as new after two and a half years' standing when it was gunited, provided the guniting was properly performed and that undue weight did not destroy the work of the gun.

In guniting timber it is necessary to cover it first with some kind of metal lath or chicken wire. The mixture of one part cement and two and a half to four or five parts fine sand should cover the timber to a thickness of at least one-half inch and should be so "shot" as to exclude air wholly from the timber. Spots where the coating of the gunite is thin almost invariably show fungus growth even when the timber beneath has been creosoted.

In guniting, three men operating a cement gun would gunite about 30 lineal feet of airway in each shift. In replacing timber creosoted wood is being used, as it is not convenient to gunite unless considerably more than one set can be covered at the same operation. From a fire-prevention point of view the use of guniting is much safer than creosoting; moreover it has not the objectionable odor of creosote, nor does it cause the unsightly stains on skin and clothing when water drops from it.

The fungus growth against which protection is sought usually is almost snow white and resembles cotton. It is generally from ½ in. to 1 or 2 in. thick and covers much of the surface of the timber attacked. In places it forms a species of inverted cone and hangs down 12 to 18 in. It may be found at the top or foot of a post, on a cap or on a piece of timber lying on the floor. It grows as frequently where the current is 400 to 800 ft. per minute and strikes the timber directly as in a sheltered place where the air has no velocity.

Bathhouse, Hospital and Heating Arrangements Provided For Employees of Lynch Mine in Kentucky*

Three Men Out of Four Expected to Use Washhouse—One Seat for Each 8⅓ Men Employed, a Shower for 28.2 Men, a Lavatory for 31¼ Men—Hospital Has Wards with One Bed for Every 36 Employees and Additional Private Rooms

By Howard N. Eavenson†
Pittsburgh, Pa.

THE one objection to washhouses around many of the drift mines in the bituminous regions has been that usually there are several openings, so that it is rather difficult to concentrate the travel to any one point where a washhouse would be convenient to all. Though there are several openings into each of the mines of the United States Coal & Coke Co., at Lynch, Harlan County, Ky., the main travel is through the main pit mouth in each mine; this will be the case more and more as the mines are developed. The two pit mouths are only about 400 ft. apart, so a location midway between them is an ideal spot for the main office and the washhouse with its accompanying first-aid rooms.

Office and Bath House Placed Together

The ground floor (Figs. 1 and 2) of the office building is used by the superintendent, chief clerk, payroll clerks, etc., and the second floor has an office for the division engineer, a drafting room, rooms for the telephone exchange and blueprinting, a lecture room in which instruction in first aid is given, and a smoke room, which can be filled with smoke or gas in which the men are required to work with their rescue equipment in place.

It was estimated, from the experience at the Benham mine, that probably 75 per cent of the men could be expected to use the washroom; accordingly facilities for 1,500 men were provided. Experience having shown the superiority of the overhead suspension of clothes to lockers, 1,500 clothes hooks were provided, each of which is separated from its neighbors by galvanized hoods, so that there can be no contact between the clothes hanging on adjacent hooks.

The hangers are of the usual galvanized-iron type and are hung on galvanized-steel sash cord instead of the usual chain. The hooks can be locked in place by inserting a padlock through a loop on the cord. The number of clothes hooks determined the size of the building; the seating capacity is about 240 men.

As the ordinary man will not consume more than fifteen to twenty minutes in taking his bath and changing his clothes, the entire number probably can pass through the building in about two hours; and as a man can leave for home as soon as he cleans up his place, this arrangement has worked out satisfactorily. The building contains seventy-one showers and sixty-four lavatories. Three fans, each having a capacity of 7,500 cu.ft. of air per minute, installed on the main roof, have furnished satisfactory ventilation.

The walls of the building are masonry and the floors of concrete; these are arranged so that all the water will drain to one point, therefore the building can be flushed out by a hose and kept thoroughly clean. A room is provided in which the work clothes can be washed and repaired. The building has proved satis-

*Fourth and last instalment of article entitled "Lynch Plant of the United States Coal & Coke Co.," presented at the September meeting of the American Institute of Mining and Metallurgical Engineers. Other instalments appeared in the issues of Sept. 22 and 29 and Oct. 6.

†Consulting engineer.

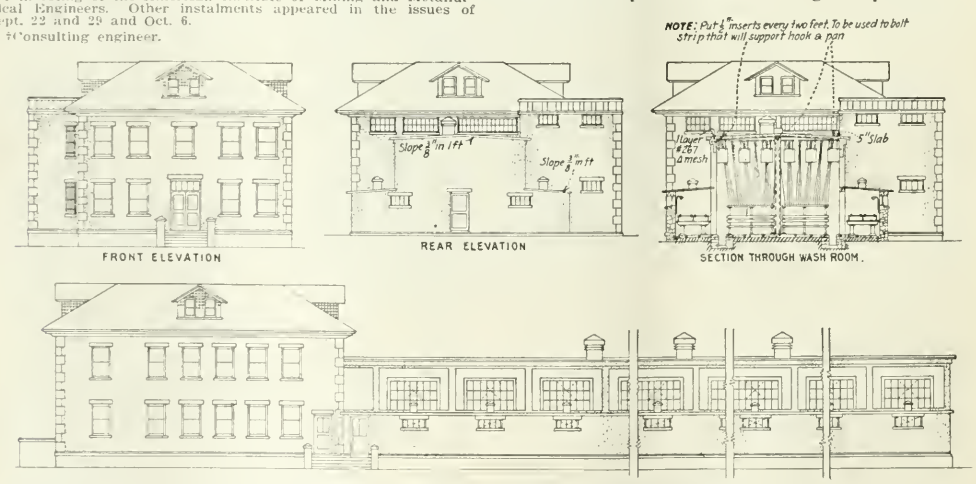

NOTE: Put ½" inserts every two feet. To be used to bolt strip that will support hook & pan
Slope ⅜" in 1 ft
Slope ⅜" in ft
5" Slab
FRONT ELEVATION
REAR ELEVATION
SECTION THROUGH WASH ROOM.

FIG. 1. GENERAL OFFICES AND WASHHOUSE FOR THE ACCOMMODATION OF 1,500 MEN
Clothes of men are suspended from ceiling but are kept apart by galvanized hoods so that clothes are not in contact. The building will seat 240 men at one time, or about 12 per cent of the number of employed and 16 per cent of the men expected to make use of the building.

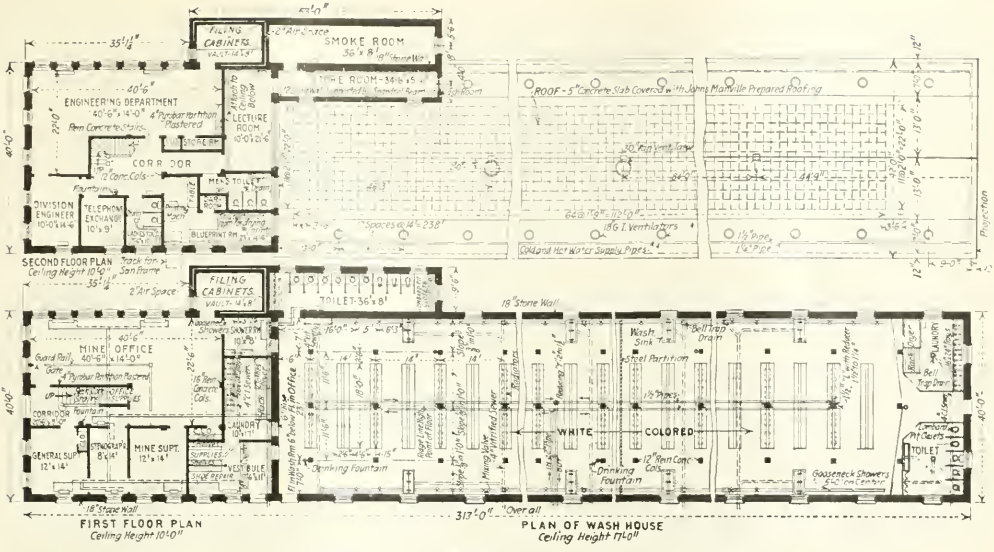


FIG. 2. PLAN OF BUILDING SHOWN IN ELEVATION IN FIG. 1

Both floors are shown, the lower floor having the executive offices and the upper those of the engineering department, a lecture room, smoke room and storeroom. Note the laundry at the end of the washhouse, where clothes can be washed and repaired.

factory and apparently is thoroughly appreciated by all who use it.

The hospital is a stone building with reinforced-concrete columns and floors and a wooden roof. It is equipped with the usual operating room and a powerful x-ray apparatus, sterilizing apparatus of all kinds, offices and a drug room for the doctors, public wards for both white and colored patients, with a capacity of fifty-four beds, and a number of private rooms. The kitchen is intended only for the preparation of food for the patients, as the nurses and doctors can be well cared for in the neighboring hotel. The third floor is fitted up with bedrooms for the servants.

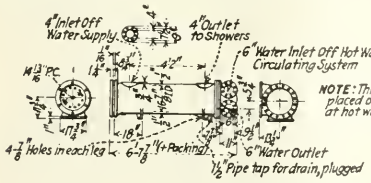

4" Inlet Off Water Supply
4" Outlet to Showers
6" Water Inlet Off Hot Water Circulating System
NOTE: This heater can be placed on wall brackets at hot water inlet to building
4-7/8" Holes in each Flg.
6-7/8" Packing
6" Water Outlet
1/2" Pipe tap for drain, plugged

FIG. 3. DETAIL OF HOT-WATER HEATER FOR WASHHOUSE

Seventy-one showers and sixty-four lavatories are provided and they are in use a large part of the afternoon, each being used on an average by twenty persons.

On account of their proximity to the power plant, the main buildings and many of the better-grade houses are heated by a central hot-water heating plant. Though the first cost of the central plant is about 15 per cent more than that of the separate plants, the operating expense is much less, and it was decided to install a hot-water system.

The highest building to be heated is about 164 ft. above the power plant; so, to avoid pumping all of the water against this head, the system was made an entirely closed one. The cool water returning, balances the outgoing hot water and the head against the pumps is only that due to the friction loss in the pipes. The water is heated in a closed heater by exhaust steam; the usual temperature is 160 deg. but it can be heated to 205 deg. in periods of extremely cold weather. The make-up water is taken from the condenser circulation and is passed through a deactivator, to remove its oxygen content. This machine consists of a tank filled with loose thin steel sheets, upon which the oxygen acts, and a sand filter to remove any foreign material from the water. The deactivating plant was designed by F. N. Speller, and experience with similar plants in the hot-water heating systems of large apartment houses has shown that the corrosion in the pipes has been largely eliminated.

All the pipe lines are of steel, flange joints being used at frequent intervals, and expansion joints at all branches and elsewhere when necessary. Both main and return lines are laid in the same trench and insulated by surrounding them with asbestos felt, which is held in place by vitrified sewer pipes, the sizes of these depending on the sizes of the water lines (Fig. 4). The sewer pipes were placed in trenches filled with crushed stone to about the middle of the pipe. In the bottom of the

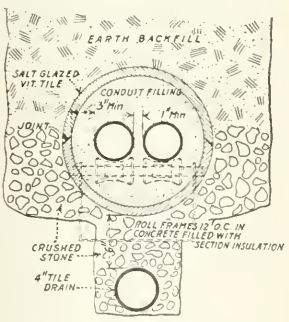


FIG. 4. CONDUIT FOR CENTRAL STATION HOT-WATER HEATING SYSTEM

Main and return lines are laid together in vitrified sewer pipe as a conduit with asbestos felt as a filling. The ditch in which the sewer pipe lies is filled with broken rock up to the mid-diameter of the pipe. A drain tile collects all the ground water and does it satisfactorily now that it has been tapped at several points along the line

FIG. 4. CONDUIT LAYOUT FOR CENTRAL STATION HOT-WATER HEATING SYSTEM
All the important buildings and many dwellings are heated by hot water. The drawing shows the number of square feet of radiating surface to be heated and the size of the pipes used for that purpose.

large trench is a small trench in which a 4-in. sewer pipe is placed for drainage. The expansion joints, bends, etc., are placed on small concrete pedestals.

Each building is provided with valves on each line, so that the velocity of the water can be regulated; provision also is made for taking the supply of hot water from the main, so that a constant supply of hot water is available at all times. In the summer time this is provided without operating the pump by connecting the main to the tank, which furnishes the necessary pressure.

When the lines were first laid, much trouble was caused by the ground water, the 4-in. pipe being too small to pass all the water encountered. Arrangements were made for additional taps from this line at various points, which relieved the trouble. A larger line would be better in ground of this character.

While this plant was under construction, labor conditions probably were worse than they had ever been before in this country, and to make matters worse in this immediate locality, the large plants at Muscle Shoals, Ala.; Nashville, Tenn., and the camps at Louisville, Ky., all within a few hundred miles of Lynch, were under construction. It was impossible to make contracts at any fixed prices, and as there was absolutely nothing at the site and everything had to be brought in, it was decided to do all work by company forces, except a portion of the early railroad grading, the installation of the asbestos roofing on the permanent buildings and the placing of the insulation on the heating system piping, which were done by contract.

In addition to a large number of shanties required, a number of large mess rooms were built, which were all operated by the company, and to the excellence of the meals served in these rooms is largely due the success achieved in obtaining the amount of labor required. The entire construction camp was carefully policed, the water supply was carefully watched and the health of the camp was excellent, not a single case of typhoid fever developing until the construction period was over.

As only about a half mile of track had to be built to enable shipments to begin, the first coal was shipped in sixty-three days after work was started, on Nov. 2, 1917. Since then the output has been as follows: 1917, 12,400 tons; 1918, 541,000 tons; 1919, 1,243,000 tons; 1920, 1,338,000 tons.

Is Castor Oil a Good Dressing for Belts?*

By W. F. Schaphorst

A PROMINENT writer recently wrote in a well-known paper: "The belt should be run about half speed and, to limber it up, an occasional application of castor oil should be made to its face."

While it is true that castor oil is better than nothing at all, I am unable to understand why it is so frequently recommended for application to belts when it has been proven time and again to be harmful to the belt's fibers. What is more, it does not prevent slip as well as a treatment made especially for belts.

I have in mind a 12-in. belt which connected a 4-ft. driving pulley running at 213 r.p.m. to a 14-in. driven pulley. This belt drove a 682-light dynamo and even when treated with castor oil had to be run very tight with a man constantly at hand to prevent it from slipping off the pulleys. When a belt slips, the lights of course are bound to flicker. Later on, a belt treatment made especially for belts was applied and the drive was so improved that an 850-light dynamo was substituted for the 682-light. In spite of the increase of 25 per cent in the load the same belt now runs quite slack, does not slip and requires no attention whatsoever.

Castor oil is gummy. The gum in solution is carried in and among the belt fibers as far as the oil penetrates. The liquid parts of these oils slowly dry out and leave the gummy elements, which continue to stiffen and sooner or later become hard enough to crack. When these elements do crack, the belt fibers crack with them. This explains the fine transverse cracks, particularly across the back of belts, which have had initial or subsequent treatment with castor or linseed oil. It is these same gummy elements that make a belt so treated look slick and smooth, and, in a measure, lessen its tendency to slip. Both of these oils also decompose into harmful fatty acids. Proof of the decomposition of castor oil is obtainable by placing some in an uncorked bottle, setting this in strong sunlight or in a warm place and in time observing the changed appearance.

Cases are on record also where castor oil has caused leather belts to rot. By saturating a piece of leather belt with castor oil and placing near a radiator or other warm place, it will be found that the castor oil will decompose and will then attack the leather, causing it to become so weak that it can be easily torn with the hand.

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Mechanical and Engineering Considerations Determining The Selection of an Electric Locomotive

Locomotive Must Be Dimensioned to Accord with Rail, Gage, Curves, Switches and Heading—Weight Determined by Service to Be Performed—Five to Ten Lbs. Per Ton Tractive Effort Needed for Acceleration of Trip

By H. H. Johnston*
East Pittsburgh, Pa.

MANY considerations should enter into the selection of mine-haulage equipment if it is to fulfill satisfactorily the conditions imposed at any particular operation. The information that a certain number of tons of coal is to be hauled out of a mine or to the shaft daily in cars having a certain weight loaded or empty is not in itself sufficient to determine the proper equipment. Neither will the addition of information concerning the maximum grade permit a proper application to be made. Obtaining the proper service data is one, and by no means the least, of the problems encountered in making a judicious selection of the equipment which is to perform the work in prospect.

Locomotives for well-developed mines can no doubt be selected with greater accuracy so far as present and future service is concerned than can those intended for undeveloped or new operations. Development of a mine continually brings to light new problems incident to that particular operation. In a general way, however, many of these difficulties may be foreseen in the original layout or projection. Many of the possible conditions visible in the original plan, but not generally mentioned when outlining the haulage problem, would be of great value in working out these transportation problems. When all the available information is not supplied, the equipment installed is likely to be too small for the service rather than too large.

Factors Needed for Making Specification

Service conditions of which the manufacturer's engineers should be cognizant, if they are to make a study of haulage and proper application of locomotives, usually will be about as tabulated below:

1. What is the maximum permissible width of the locomotive?
2. What is its maximum permissible height?
3. What is the weight of the rail (in pounds per yard), the gage of track on straight haul, the sharpest curve measured to center of track, the length of this curve, and the clearance between the outside rail and the rib on curves?
4. Is trolley wire on the right- or left-hand side of track when entering the mine?
5. Will the locomotive operate continuously with the trolley wire on one side?
6. What is the horizontal distance from the center of the track to the trolley wire?
7. What is the maximum height of the trolley wire above the rail?
8. What is the minimum height of the trolley wire above the rail?
9. What is the weight of a coal car when empty?
10. What is the weight of a coal car when loaded?
11. What is the maximum number of cars to be handled per day?
12. How many cars are to be handled per trip (average and maximum)?
13. What is the maximum grade against the load and the length of that grade?
14. What is the maximum grade in favor of load and the length of that grade?
15. What is average grade and is it in favor of or against the load?
16. If curves occur on the grade, what are their radii and inclinations?
17. What is average length of haul, one way?
18. Will the locomotive have to be dismantled to take it down the mine shaft or to move it to its point of service? State conditions, giving allowable dimensions.
19. What are the mine-car dimensions: Maximum height of car from top of rail? Length? Type of bumper and drawbar height?

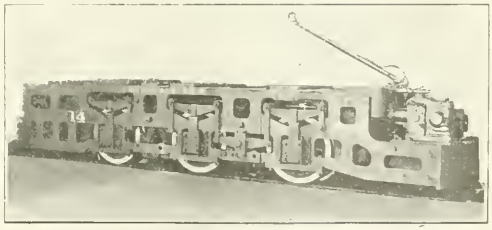


FIG. 1. LOCOMOTIVE WITH OUTSIDE FRAME

With outside frames a somewhat wider clearance is necessary, which if not provided may be the cause of accident. The advantage, of course, is in greater accessibility and more available space between the frames, making a more powerful locomotive feasible.

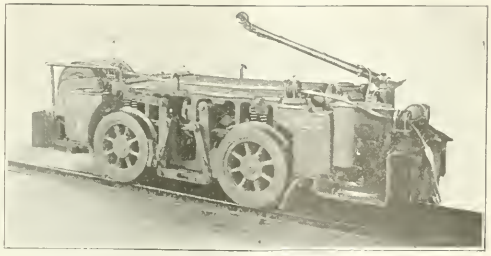


FIG. 2. LOCOMOTIVE WITH INSIDE FRAME

The wheels are on the outside of the frame and hence the bearings are not so readily accessible, and the motors, which must necessarily lie within the frame, are restricted by reason of the space occupied by the bearings.

*General Engineering Department, Westinghouse Electric & Manufacturing Co.

Maps should also be furnished showing the general layout of the haulage system with location of partings, the distance between partings, the number of cars hauled between partings per hour, the distance between partings and rooms, the profile of the track showing maximum, minimum and average grades.

With reference to the above conditions and information, the maximum height and width permissible are direct functions of the dimensions of the haulageways. The gage of track largely determines the over-all width of a locomotive and decides the question whether it can be fitted with inside or outside frames. With outside frames the locomotive weight rests on the journals, as indicated in Fig. 1, whereas with the inside frames it acts as shown in Fig. 2. For a given locomotive the gage of the track and the size and type of driving motors, a greater clearance will be obtained between the motors and wheels when the latter are within the frames, whereas for the same gage this clearance is diminished by the width of the side frames if the journals come between the wheels and the motors.

Larger Locomotives Involve Heavier Rail

The weight of rail employed has an important bearing upon the selection of the locomotive, and conversely a given weight of locomotive will determine the size of rail that should be used. The weight of the locomotive alone will not determine this, for it will depend upon how this weight is distributed and the number of the drivers as well as upon the condition of the roadbed. The following will illustrate this point regarding rail size. A mine may be using, say, a 50-lb. rail in its main haulageway, where 15-ton locomotives are in operation. If a 30- or 35-ton locomotive is to be installed a change in the rail size would be recommended, which might be as much as 90 lb. per yard for poor road beds and 80 lb. for exceptionally good roadbeds. This change is based on the assumption that the locomotive has six drive wheels. A tandem locomotive made up of two 15-ton units instead of a single three-axle 30-ton machine would require no changes in the rail from the original 50-lb. size used with the single 15-ton units.

Consideration must be given as to whether the haulageway is straight or curved. The radius and length of the curves and their location in the haulageways relative to the hauls made may or may not require additional weight in the locomotive to counterbalance the resistance which such curves offer. Curves also have to be considered in fixing the wheelbase as well as the front and rear overhangs, this last being checked for clearance in rounding the curves. The construction of the roadbed, the speed of locomotive with its trip and various other conditions of service make it impossible to give any exact rule for computing the resistance offered by a curve of a given radius.

It is customary to express curvature in degrees, a one-degree curve being taken arbitrarily as one in which a 100-ft. chord will subtend a central angle of one degree. Curves, however, may be given either in degrees or feet of radius. The radius of a curve in feet is equal to 5,730 divided by the number of degrees of curvature.

Train resistance varies, depending largely on the kind of bearings used on the cars, whether these be of the sleeve or roller type. Where cars of both types are in use, the worst possible condition, namely, a trip made up entirely of the sleeve-bearing type of cars, should be considered in calculating the proper size of the locomotive. The train resistance here spoken of is that to be overcome in hauling the trip over straight, level track. To it must be added grade and curve resistance. The grade resistance may be positive or negative, depending upon whether the trip is being hauled up or down hill. In some cases the maximum-grade resistance need not be figured for the entire maximum trip, such instances being where the haulageway is rolling or where the momentum gained by the train previous to reaching the grade assists in getting it over the top. It is not a good plan, however, to disregard the fact that through failure of power or from some other cause it may be necessary at some time to start the maximum load on the grade in question.

Weight Required When Increasing Speed

Starting or accelerating rates interpose forces in addition to those required for overcoming train, grade and curve resistances. The force necessary to accelerate a given body is proportional to the product of its weight and the rate of acceleration. This considers translation only, and a certain amount of additional force (amounting to from 5 to 15 per cent) is necessary to bring the rotating parts up to speed. For an accelerating rate of one mile per hour per second 100 lb. per ton of tractive effort is often used. Acceleration rates employed in main haulage usually lower this figure to between 5 and 10 lb. per ton.

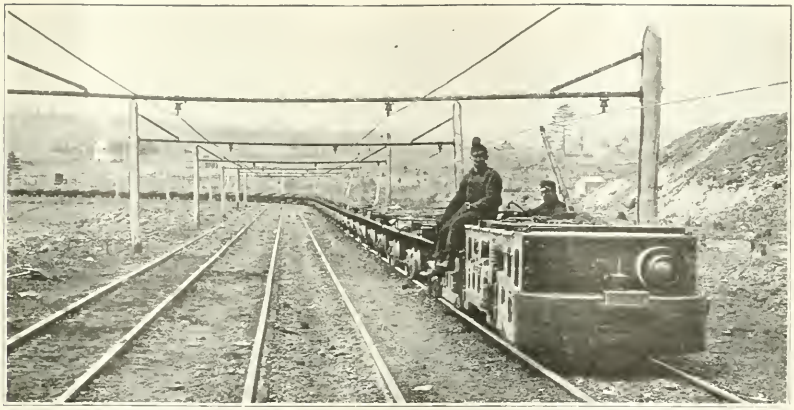
Having considered the necessary forces to be overcome in accelerating and operating under various conditions of track, grades, curves, etc., the necessary

Outside-Frame Locomotive

With these locomotives side thrust can be taken up at the journals by wearing plates attached to the journal-box covers. These plates are readily accessible for inspection, lubrication or renewal.

Pulling Long Line of Mine Cars

A peculiarly favorable condition for haulage. With grade adverse and with a long trip to start a heavy load is imposed on the locomotive, making additional weight necessary. An acceleration rate of one mile per hour per second will take up 100 lb. per ton of tractive effort, though such rapidity of acceleration is unusual in mining work.



weight of the locomotives can be determined. One detail not yet mentioned is that of adhesion between the locomotive driving wheels and the rails. This factor is quite variable and is a function of such things as the size of rail, condition of rails (whether clean and dry or wet), condition and dimensions of treads and material composing the locomotive driving wheels, the rates of acceleration, height of drawbar or couplings, locomotive wheelbase and condition of track and roadbed in general.

The proper weight of the locomotive having been determined, the electrical equipment, particularly the driving motors, that will enable the locomotive to perform the haulage or gathering schedule must be selected. At this point must be considered mainly the schedule of operations, including the coal to be hauled, the trips necessary, the number of cars (empty and loaded), all per day, the number of loads up or down grade, cars empty and loaded per trip and any other factors that may mean a greater load on the motors such as the number of stops or slow downs for cross-overs and switches during the haul, which will be followed by acceleration periods adding to the load on the motors.

Mention has been made of outside and inside frames. Outside frames are considered preferable by most operators, chiefly because they permit a locomotive design affording more ready access to the various parts for lubrication and inspection, whether locomotive pits are provided or not. With outside-frame locomotives the wheels are only partly exposed, if at all, and as a result are not such a source of danger as they once were.

Side thrust must be taken up at the journals. With the outside-frame locomotives wearing plates may be incorporated in the journal-box covers, thus rendering these plates easy of access for inspection, lubrication or renewal.

Drivers may be of cast iron, cast or rolled steel, or cast centers, steel tired. Steel-tired wheels are the type generally accepted. They give greater satisfaction in service and permit of practically renewing the wheel through the renewal of the steel tires. As compared with cast-iron wheels the steel-tired and the rolled-steel wheels afford better adhesion between wheels and rails, thereby enabling a locomotive of a given weight to pull heavier loads without the use of sand. Main-haulage locomotives as well as other trolley types have their drivers pressed onto forged steel axles.

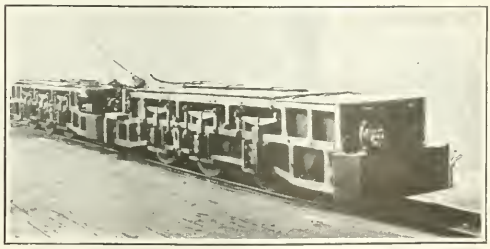
Sand boxes having ample capacity and means of control are not to be overlooked, particularly on main-haulage locomotives, where wet rails require the frequent application of sand. A new locomotive under some service conditions will require the frequent use of sand until the driving wheels have been so worn at the tread as to give a fair contact area on the rail.

The gears generally found most satisfactory are of the solid rather than of the split type. Solid gears are pressed onto their axles. Experience has shown the advantage of this construction as compared with split gears.

Lubrication of axle and motor bearings was at first obtained by the use of grease. Satisfactory results were obtained, however, when waste and oil lubrication was tried. This practice has been followed also in mine-locomotive motors with good results.

Motor frames were originally split through the axle bearings. This design was later changed to separate split axle caps. The motor frames also were split, of course, but not through the axle bearings. It thus became possible either to remove the axle caps or raise the upper half of the motor frame without disturbing both. Experience has shown that where high speeds are not prevalent, ball bearings are dependable and require less maintenance and attention to lubrication than do the older sleeve type of armature bearings.

Single-reduction gearing between each two or three motors employed on a trolley type of mine locomotive and the axles they drive has outlasted other types of mechanical transmission, doing away with side rods and chains formerly used for this purpose.



TANDEM LOCOMOTIVES FOR LIGHT RAIL

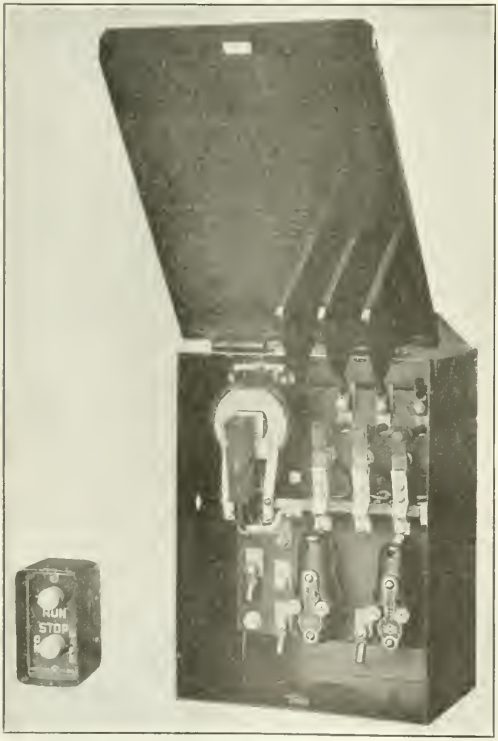
A 30-ton locomotive needs 90-lb. rail if the track is in bad condition. With two 15-ton locomotives coupled in tandem 50-lb. rail is heavy enough. It is assumed that the heavy locomotive has six drive wheels.

Starter That Guards Squirrel-Cage Motor Against Destructive Continuous Overload

A NEW automatic starter has been developed, intended for use in connection with squirrel-cage induction motors of small capacity—7½ hp. and less. This device allows a large starting input to the machine yet affords positive protection against burnouts.

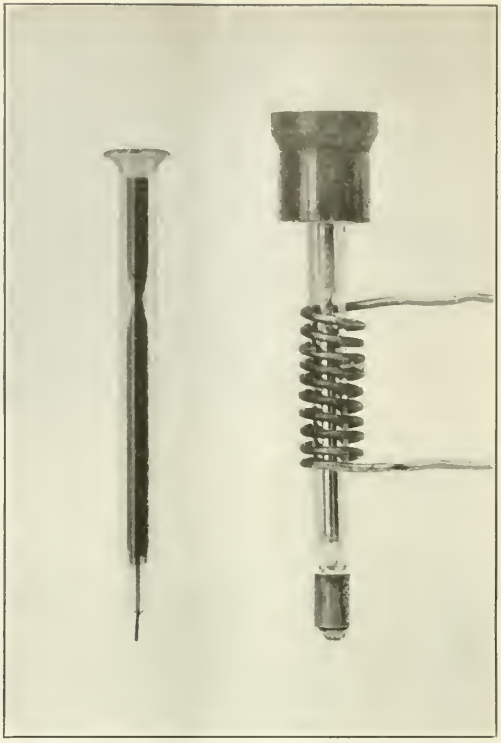
To accomplish this result two mercury overload relays are mounted below the contact fingers of the control, as shown in the accompanying illustration. These eliminate all fuse troubles and attendant expense and yet allow heavy momentary overloads or sustained loads 25 per cent above normal for a limited period. They thus prevent harmful overloading of the motor.

The new relay consists of a glass tube within which is a mercury column forming a part of the pilot circuit of the magnetic switch coil. A portion of this column is surrounded by a heating coil or thermal element which is in series with the motor circuit and is heated to the same degree as the motor windings. Excessive current flowing through this coil heats it and excessive or even moderate but sufficiently sustained heat causes the mercury to vaporize and pass upward into a chamber at the top of the tube. This breaks the liquid column and opens the circuit to the magnet coil. De-energizing this coil allows the contact fingers to separate, disconnecting the motor from the line.



STARTER WHICH PROTECTS MOTOR FROM AN OVERLOAD TOO LARGE OR TOO LONG SUSTAINED

When the temperature of the place is low, as on a cold day or in the mine, the starter allows a much more generous or much longer overload. The degree of temperature that the overload causes the control to reach is the determining factor.



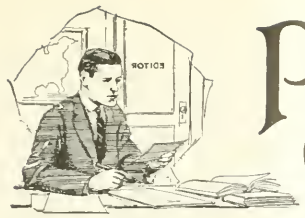
OVERLOAD RELAY FOR AUTOMATIC STARTER

A mercury column is surrounded by a heating coil in series with the motor current. If the current used by the motor becomes high enough to vaporize the mercury, it boils and passes into a chamber at the top of the tube, breaking the continuity of the mercury column and opening the circuit.

After such an interruption the mercury cools, that portion of it that was vaporized condenses and flows back into the tube, so that the pilot circuit to the magnet coil may be again completed when the control button is depressed. In other words, these relays quickly reset themselves. The motor will not start, however, until the control button has been pushed.

As the functioning of this relay depends upon the vaporization of mercury, it is evident that the current necessary to operate it will fluctuate or vary with the temperature of the surrounding air. Thus, if the weather is cold or the motor and starter are installed in a cool place, the relay will permit a greater starting current or a higher overload than if the surrounding air is warm. Similarly if the motor and starter are installed in a locality unduly warm these relays will act in place of a thermo-couple.

The push button supplied with these starters can be installed in any position most convenient for the operator. The time saved by utilizing an automatic starter in place of one manually-operated depends much upon the frequency with which the machine driven must be started and stopped. Even with comparatively few interruptions, however, the aggregate time saved is surprising. These new starters, built by the Cutler-Hammer Manufacturing Co., are now being used on all kinds of machinery driven by squirrel-cage motors not exceeding 7½ hp. in nominal rating.



Problems of Operating Men

Edited by James T. Beard

Human Differentials in the Mining Industry

Meaning of Differential Applying the Term in Coal Mining—Superintendent and Mine Foreman as Differentials—Result, a Successful Organization

RECENTLY, a correspondent writing in *Coal Age* suggested that the inter-relationship of a mine foreman to his superintendent largely affected the production of coal in the mine. The statement struck a responsive chord in the minds of many readers and an interesting discussion followed regarding the relation of these two officials to each other and to the operation of the mine.

Some time ago I remember reading an excellent article entitled "The Human Differential in Mining Operations" (Vol. 10, p. 528). One statement that strongly attracted my attention read as follows: "The mechanical differential is always found in service at the point of contact. Just so, with the human differential. Managers, superintendents and foremen of all classes are differential timber."

The writer of the article explained the meaning of the term "differential," in a mechanical sense, as "the obtaining of a certain movement by the difference in two motions in the same direction, as a gear operating between one of 15 and one of 16 teeth."

Speaking humanly, the mine foreman is such a differential, acting between the superintendent and the men in charge. Again, the superintendent is a similar differential, standing as he does between the mine foreman and the management. All are or should be moving in one direction. But, the human differential when properly functioning is the means of softening the differences that so frequently arise in the operation of the mine and harmonizing all efforts to one great end.

The Mine Foreman As a Human Differential

Truly, the mine foreman is the man "at the point of contact" and, as such, is a human differential. He is the man in close touch with the workers. The extent to which he gains the confidence of his men is the real key to a harmonious organization, without which the best equipment will not insure successful operation.

In the discussion, some correspondents have taken the view that certification is necessary for all mine superintendents. May I ask, Why not say *qualification*, instead of certification, is the one essential? We all know that "certification" spells nothing, in the present order of things. The *qualified* man never has any trouble in gaining a certificate, but a *certified* man is not always qualified.

In my opinion, a mine superintendent should have at least five years' actual experience in underground work. He must have learned the game by practice and have a full knowledge of the difficulties the foreman meets in the daily operation of a mine.

Old- and New-Type Supers

The old type of mine superintendent who was, as I may say, short on theory but long on practical experience and who ruled his men by force and profanity, is well nigh obsolete. The new type of superintendent is a man of reason, strong personality and possessing tact, which accomplishes results not dreamed of by men of the old type.

Today, the mine superintendent realizes that his foremen are in actual charge of operations underground. If he is wise he holds them responsible for the production of the coal and leaves all matters of discipline to them, never interfering with the authority of a foreman in his dealing with the men. By taking this course, the superintendent is another human differential and a successful organization is assured.

JOHN W. JONES.

Altoona, Ala.

Making of Competent Mine Officials

Value of study in mining—Its effect—Examining boards grant certificates, but cannot make qualified men—Practical knowledge renders its possessor a more valued worker.

AFTER reading the article of W. A. G., *Coal Age*, Aug. 4, p. 181, I feel constrained to say a few words in defense of certified officials in mining. In common with many others I have followed with deep interest the many letters published in *Coal Age* relating to certification.

Being a certified foreman myself and a student of mining for many years, the reading of this letter ought to make me feel that all my previous efforts have been for naught—a tremendous waste of energy. The writer would have me think that I would be better off today had I not studied at all.

After, as he says, an experience of twenty years and coming in contact with all classes of mine officials, this writer concludes that the granting of certificates, in a large number of cases, does more harm than good. It is true that the study for a certificate does not make a man a walking encyclopaedia of mining; but our friend seems to go on the theory that "a little knowledge is a dangerous thing."

The truth of this old adage depends on the ability and common sense of the person gaining this limited knowledge. It must be admitted that, at times, a man will make the wrong application of such knowledge with poor results; but why condemn all because of the faults of a few. If the seeker for a certificate ceases to study when he has attained his object, the knowledge he has gained will do him little good.

Again, there is no doubt but that many men who have passed the examination and been granted a certificate do not deserve it, as they have a very smattering knowledge of the subject and are unable to apply successfully the principles they were taught. Such men, however, soon fall by the wayside; their incompetency quickly betrays them.

The First Certificate

When, in 1901, after trying three years in succession, my first certificate was handed to me, it made me feel that I knew considerable about mining. Looking back on the twenty years that have now passed, I realize that it was little I knew at that time.

That this is the common experience of most all students of mining cannot be denied. Nevertheless, we all know that the young man who has studied and passed his examination for fireboss is not fitted for that position, until he has been given a chance to perform the work in the mine. What is required before one can assume the responsibilities of firebossing is practice and experience.

Again, the successful applicant for a certificate to act as mine foreman is but partially equipped for the duties of that position. Indeed, it may take years of practice to make him competent to assume those duties and operate a mine successfully. In every position there is much knowledge to be gained through practice and experience.

Examining boards can only grant certificates according to the evidence produced by the applicant and the credentials furnished by his friends. An examining board can only judge indifferently in regard to an applicant's

executive ability, which must be proved by practice. An examining board can certify as to a man's theoretical knowledge, but this is only a step in determining his qualifications and fitness for the position he desires. However, my belief is that where the members of the board perform their work conscientiously, they are more capable of determining these qualities in an applicant than any single person.

The company by whom I am employed holds monthly meetings or institutes, for the purpose of interesting their young men in the study of mining. The policy of the company is to select all their mine officials from the ranks. While the law leaves them free to appoint an uncertified man to the position of fireboss or mine foreman, they would not think of taking a man who did not hold a first-grade certificate.

Speaking of superintendents, I agree with the suggestion that most of the men in this position are worthy and capable men, who could pass an examination, without great difficulty, if that was required. Why it is not made a requirement of the mining law is hard to say. Certainly the man holding the higher position should know more than the men working under him.

Regarding the change made in the Pennsylvania mining law, my opinion is that it was a backward step. I believe it has caused many young men to give up the study of mining. Let me say, in closing, that if our examinations are not a true test of the qualifications of candidates the matter should call for an investigation to ascertain the reason why and suggest a remedy.

Donora, Pa. G. C.

Certification in Tennessee

No need to certify the mine superintendent—Present practice harmful—Certificate no proof of competency—Life of certificate should be limited.

PERMIT me to offer a few thoughts suggested by reading the interesting letter of Oscar H. Jones, *Coal Age*, Aug. 4, p. 180, and the equally interesting leter signed W. A. G. on the following page. I am in hearty accord with the sentiments expressed by the latter, in almost every particular.

Incidentally, allow me to say that I can see no need of certifying the mine superintendent, as has been suggested by a number of writers on this subject. The work of a superintendent is very different from that of a mine foreman. While the superintendent looks after the constructive work of the entire operation, both outside and inside of the mine, the foreman has charge underground and the direct oversight of the miners in their working places.

If the superintendent is wise, his orders to a competent foreman are only given in a general way, instructing him in regard to the policies and plans as these are outlined by the company. It is understood that the miners receive their orders from the foreman and not the superintendent. The same is true in coal mining as in other industrial operations in our country. Every superintendent has supposedly qualified subordinates in charge of different branches of the work. In mining, the mine foreman is one of these qualified subordinates.

To illustrate, allow me to cite an instance, in the Mining Department of Tennessee, where the chief mine inspector has under him three district inspectors, each of whom are in charge of a separate division of the state; namely, the Eastern, Middle and Western divisions, respectively.

In Tennessee, the chief inspector is not required to hold a certificate of competency, while each of the district mine inspectors must hold a Class-A certificate. The chief inspector is charged with the supervision of the whole mining department and is responsible for the work performed by each of his subordinates. In turn, however, the chief inspector holds each district inspector responsible for the condition of the mines in his division, in respect to the safety and health of the employees and the fulfillment of the laws.

Orders From an Uncertified Superintendent

Now regarding an uncertified superintendent giving orders to a certified foreman that would endanger life or health if carried out in the mines, I see nothing to hinder the foreman from failing in such a case, to execute the orders given him.

Suppose, however, a certified superintendent gave the same orders, would a certified foreman execute them against his better judgment? My observation is that most mine superintendents are experienced men, having a fairly good education, and the holding of a certificate, which they could easily obtain if necessary, would not make them more competent.

In the letter to which I have referred previously, the writer asserts his conviction that "the granting of certificates to a large number of men . . . has the effect of doing more harm than good." My own observation in this respect leads to the same conclusion; but I wish to make my position clear in that regard.

Views of an Ex-Inspector

Studying the question in its relation to both the safety of life and the economic management of mines convinces me that the present system of granting certificates in this state is far from beneficial. I am speaking from the standpoint of an ex-mine inspector and believe that few will deny that a large number of miners who now hold certificates of competency to act as firebosses and mine foremen are unfitted for the work, while many miners who hold no certificates would prove safe and capable men in these positions.

The first examination for certificates of competency, in this state, was held November, 1901. About 150 men presented themselves for examination and, I believe, each applicant received some kind of a certificate. It being the first examination of the kind held in the state, the board was a little lenient. Had it not been so, there would have been a shortage of mine foremen in the state.

Twenty years have passed since this system was inaugurated and it is a fact that there are many certified mine foremen and firebosses, now in charge of the work in our mines, who have never looked inside of a mining textbook or read any kind of mining journal since receiving their certificate. Some of these men have not been connected with mining continuously and actually know less, regarding the principles of safety and health in the mines, than when granted their certificates.

One is compelled to admit, therefore, that the mere possession of a certificate does not prove that the holder is competent to take charge of a mine and operate the same safely and efficiently. The certificate only shows that the man has been before an examining board and answered certain questions to their satisfaction. Most of these questions he has been diligently studying for a short time before taking the examination.

A large class of men are ambitious to become foremen, believing the position is one easy to fill and that it gives them a standing in the community. Having a fairly good education, they brush up a little on mining questions and succeed in passing an examination before the board that, I regret to say, is seldom calculated to determine the practical fitness of the candidate.

Question an Examining Board Must Determine

In the granting of certificates of competency, the safeguarding of mines should form the first consideration. The board should ask themselves this one important question: Is this applicant's practical experience and ability in coal mining such that men's lives will be safe in a mine in his charge? Especially is this true in the granting of certificates of the first-class, which authorize the holder to take charge of a gassy mine.

It often happens that a foreman who holds a second-grade certificate is offered a position in a mine generating gas. He has never had a day's experience in gas and is wholly unfamiliar with a safety lamp, having never seen one in use. He at once studies up on mine gases and, a few days before the board is to meet, he arranges with the fireboss in a gassy mine to accompany him in his morning rounds.

With this slight experience and knowledge of testing for gas, the man then appears before an examining board and, after answering a few technical questions on gases, is given a passing mark and receives a first-class certificate, which enables him to take charge of the most dangerous and gassy mine in the state. How many of us, may I ask, would submit to having a sur-

geon of small experience perform a delicate operation on our bodies, knowing that his experience in the handling of instruments was like the experience of this fireboss with a safety lamp in a gassy mine.

My service as mine inspector convinces me that the larger number of coal operators, in this state, are interested in safeguarding the lives of their employees and protecting their property. It is my belief that few of these operators can be found willing to employ any but the best available mine foremen and, in the choice of these men, the certificate is not their only guide.

In conclusion, let me say that I am not opposed to the certification of mine officials; but I believe our law should be amended to restrict the life of a certificate to, say five or six years. Moreover, the examination for a first-class certificate should be made more rigid than is the present custom. The candidate should be required to show a longer and more practical experience before being certified as competent to serve in a gassy mine.

As has already been stated, the majority of certified men cease to study and acquire further knowledge, immediately after receiving their papers. This would not be the case if each man knew that he would have to take another examination a few years later. Therefore, as I view the present system, the practice of granting unlimited certificates is not beneficial but harmful. Practically, it is a license to drop all further study.

JOHN ROSE,
Former District Mine Inspector.
Dayton, Tenn.

Ventilation a Basic Condition

Good air essential to physical exertion—Temperature, humidity and velocity of air current at working face important factors in production of coal.

VISITING over a thousand places where coal is mined under varying conditions enables one to draw fairly just comparisons between the means employed by different operators, and their views in respect to the ventilation of their mines.

In far too many instances there is a notable disregard as to the importance of pure air in the mine workings. While many operators will make an extra effort to get a satisfactory measurement of the air, in the last breakthrough in a section, for the benefit of the inspector on his coming visit, a large number of mine officials regard this only as a matter of form, in compliance with the mining law.

On the other hand, officials in charge of the larger coal operations generally understand that good ventilation in mines is the foundation of economic production. They realize that a man's capacity for manual labor depends to a great extent on the temperature and humidity of the air in the mine.

Experience has shown that where the air current sweeps the working faces in a mine, at a moderate velocity, it has a marked effect in reducing the humidity and lowering the temperature of the atmosphere, thereby enabling the men to work with greater avidity than when they are compelled to breathe warm, moist air and the ventilation is sluggish.

The subject of mine ventilation is so old that it seems almost vain to comment on the importance of properly conducting the air current, by building substantial stoppings and air-tight doors, air bridges and brattices for that purpose in the mine.

It seems unnecessary to add, what every mine operator should know without further instruction, that the volume of air in circulation must be sufficient to dilute, render harmless and sweep away the smoke and noxious gases that accumulate in a mine, so that all working faces and traveling roads shall be healthful and safe. Nevertheless, there are many mining states whose laws do not include these requirements or, if they do, they are not enforced.

So great has been the improvement in mine management and equipment, in the last ten or twenty years, that the large majority of coal operators now realize that it pays to maintain good ventilation. In all up-to-date mines, much money is now spent in building substantial air-tight stoppings. These are constructed of concrete or brick laid in cement.

In other places, however, it is not uncommon to find operators spending time and money in an effort to repair old leaky stoppings that were never properly built, because of a false idea of economy, in the earlier development of the mine. The efficient ventilation of workings in which these conditions prevail will aways prove expensive. The sooner men realize this truth the quicker they will secure larger returns upon their investment.

Let me say, in closing, a mine foreman should be a perfect fiend on ventilation. Nothing he can do will so quickly increase his production as a well-ventilated working face. I know of mines having high-class haulage systems, but their failure to put ventilation first will aways be a handicap to economical production.

Pikeville, Ky. GEORGE EDWARDS.

Inquiries Of General Interest

Arranging a Practical Horsepower Hoist

Power Exerted by Horse Working a Gin, in Hoisting from Shaft — Arrangement for Reversing Direction of Hoist — Prevention of Overwinding — Other Details to Render Horse More Efficient

WILL *Coal Age* kindly suggest a plan or arrangement that will afford the greatest efficiency in hoisting coal from a shaft, by means of a whim or gin? Ours is a single-compartment shaft, 55 ft. deep. At present, we are hoisting a load varying from 3,000 to 3,500 lb. and making a single hoist in 5 min. The horse is attached to a cross-sweep 12 ft. long, which requires him to travel in a circle having a diameter of 24 ft.

We understand that by a certain arrangement of gears, or other means, it would be possible to gain speed and not increase the pull on the horse. Any information you can give us that will improve our present arrangement, will be greatly appreciated.

Clinton, Ind. BONDIS COAL CO.

In order to obtain the best possible results when hoisting coal with a whim, the horse should be made to travel in a circle having a diameter of 40 ft. Naturally, the power of a draft horse varies greatly according to his strength and the conditions under which he is working. While the theoretical horsepower, established by James Watt, is 33,000 ft.-lb. per min., the power exerted by an average horse, traveling at a speed of 2½ mi. per hr. (220 ft. per min.) can safely be taken as 22,000 ft.-lb. per min., for purposes of estimate.

Therefore, in making this estimation, we will assume that an average draft horse, weighing 1,000 lb. and walking at a speed of 2½ mi. per hr., on level ground, will be able to exert a continuous pull of $22{,}000 \div 220 = 100$ lb. This force will vary, however, inversely, both as the speed of travel and the length of time the horse must work. Thus, going at a speed of 4 mi. per hr., the estimated continuous pull is

$$4 : 2\tfrac{1}{2} :: 100 : x = 62\tfrac{1}{2}\ lb.$$

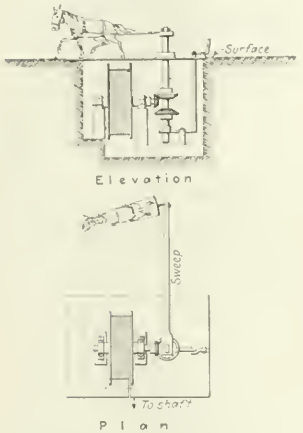
Again, if the continuous tractive effort of a horse, on level ground, working 10 hr. a day is 100 lb., when working 5 hr. a day the pull may be taken as 200 lb., for the same speed. It is clear, then, that a horse, working on a whim and resting at brief intervals between each hoist, may be assumed to exert a much greater tractive force, during the short period of a single hoist, than the estimated continuous pull, which may be increased several fold.

From the statement in this inquiry, the horse is exerting $(3{,}500 \times 55) \div 5 = 38{,}500$ ft.-lb. per min. Assuming a speed of 4 mi. per hr. and making some allowance for friction, it is probable the horse is exerting, in this case, a pull of from 150 to 200 lb.

In reference to gaining speed in hoisting with a whim, it is clear that no arrangement of gears can increase the speed of hoisting a given load without providing a corresponding increase of power.

The power of the draft horse being practically limited, any increase of speed in hoisting must be effected through speeding up the horse and making him travel faster. For a given power, the speed of hoisting must vary inversely as the gross load including friction. Briefly stated, the ratio of the load hoisted to the force exerted by the horse is equal to the ratio of the diameter of the path in which the horse travels, to the diameter of the winding drum, disregarding friction.

Regarding the most efficient arrangement of a whim hoist, we would suggest placing the winding drum below the surface of the ground, as shown in the accompanying figure. In this position



HOISTING COAL WITH A WHIM

of the drum, the hoisting rope will not interfere with the travel of the horse. Again, to avoid loss of time where the horse must turn and travel in a reverse direction, in hoisting and lowering the cage in the shaft, there should be provided two bevel gears on the whim shaft, arranged to engage alternately the bevel gear on the drum shaft.

When reversing the hoist the gears on the whim shaft must be raised or lowered on the shaft, by means of a lever. Not only will this arrangement permit the horse to travel in a continuous direction and avoid loss of time; but it has the advantage, also of avoiding the risk of overwinding should the horse fail to stop at the right moment when the cage has reached the surface or upper landing.

By means of the lever, the apparatus can be thrown out of gear at any desired moment. In this connection, it is important to observe that the winding drum must be provided with a strong brake capable of holding the load in the shaft when the gears are thrown out or changed.

Examination Questions Answered

Miscellaneous Questions

(Answered by Request)

QUESTION—(*a*) *Under what conditions should a gasoline motor or pump be used in a mine? (b) What are the dangers to be guarded against from using a gas engine in a mine?*

ANSWER—(a) The safest practice is to eliminate the use of a gasoline motor in any portion of a mine except on the main return haulage road. This applies to locomotives, pumps or fans operated by gas engines, which should never be permitted on an intake airway or in a closely ventilated place.

(b) The chief danger arising from the use of a gas engine in a mine is the poisonous character of the gases discharged by the engine, especially where the supply is not properly regulated. Another danger arises from the presence of the explosive oil in the confined workings of a mine.

QUESTION—*When 5 cu.ft. of air, at a temperature of 45 deg. is heated under constant pressure up to 177 deg., what is its new volume?*

ANSWER — For a constant pressure, the volume of air or gas varies directly as the absolute temperature. In other words, the volume ratio is equal to the absolute-temperature ratio of the air. Calling the required volume of air at the higher temperature x, we have

$$\frac{x}{5} = \frac{460 + 177}{460 + 45} = \frac{637}{505} = 1.2614$$

$$x = 5 \times 1.2614 = 6.307 \text{ cu.ft.}$$

QUESTION—*In a tract of land containing 4,000 acres, a 4-ft. seam of coal lies 350 ft below the surface and has a natural rise of 6 per cent. The seam is underlaid with 2 ft. of fireclay and 3 ft. of sandstone. Over the coal is 4 ft. of slate and above the slate is a sandy shale. The coal is known to give off gas in considerable quantity. How would you proceed to open and develop this property, in order to produce 2,000 tons in an 8-hr. day.*

ANSWER—Assuming this is bituminous coal and taking the average weight of the coal as 80 lb. per cu.ft., we estimate the coal as (43,560 × 80) ÷ 2.000 = 1,742 tons per ft.-acre. Again, assuming a 90 per cent extraction, this 4-ft. seam should yield 0.90 (4 × 1,742) = 6,272 tons per acre. The total weight of available coal in this tract is, then, 4,000 × 6,272 = 25,088,000 tons.

Now, assuming there are, say, 220 working days in a year, the desired output, per year, is 2,000 × 220 = 440,000 tons.

On this basis, a single opening, producing 2,000 tons of coal per day, would require 25,088,000 ÷ 440,000 = 57 years to exhaust the coal in this property. Two openings would work out the coal in half that time.

Again, assuming the property lies four-square, the tract measures 13,200 ft. (2½ mi.) on a side. This would give opportunity for two openings 1¼ mi. apart. The shafts should be sunk on the lower side of the property and the coal worked to the rise, by driving the main entries four abreast on the full pitch of the seam.

In the development of these mines, cross-entries should be driven, in pairs, to the right and left of the main headings. The direction of the cross-entries should be such as to require the same tractive effort to haul the loads out and to pull the empties back into the mine. All rooms must then be driven to the rise of the cross-entries. This arrangement will afford the greatest advantage in haulage and drainage.

Driving the main headings four abreast will provide separate return air-courses, one for each side of the mine. The air-courses being the two outer headings, the two center headings can be used as haulage roads for the empties and loads passing in and out of the mine. The 6 per cent grade will afford an excellent opportunity to install a good gravity-plane haulage on the main headings. Or, locomotive haulage can be used if desired. A 4-wheel, 10-ton locomotive is estimated to handle a loaded trip of 19 tons on this grade. Air bridges should be built at the mouth of each pair of cross-entries as quickly as they are warranted by the development. This will provide a separate air split for each pair of entries.

QUESTION—*An airway whose area is 36 sq.ft. passes 100,000 cu ft. of air per minute. Another airway having the same sectional area has a rubbing surface 1 6 times that of the first airway How much greater pressure will be required in the second airway to pass the same quantity of air as in the first?*

ANSWER—For the same quantity of air in circulation and the same sectional area, the pressure producing the circulation in two airways will vary as the rubbing surfaces. In this case, the rubbing surface of the second airway being 1.6 times that of the first, the pressure required to produce an equal quantity of air in each airway will be in the same ratio. Thus, if the pressure in the first airway is 5 lb. per sq.ft. that required in the second airway will be 5 × 1.6 = 8 lb. per sq.ft.

American Mining Congress Meets in Twenty-Fourth Annual Session at Chicago

Program Featured by Papers on Coal Problems by Leaders in the Industry—Mining Machinery and Equipment Interestingly Displayed—Standardization Conference Runs Parallel Program

By C. E. Lesher*

COAL was featured to a gratifying extent at the Twenty-fourth Annual Convention of the American Mining Congress at Chicago during the entire week of Oct. 17-22. On the programs of nearly every session were papers by men in the industry or by others on the subject of coal. At the Mining Exposition in the Coliseum were exhibits of every kind and make of equipment and machinery used in mining. Among the exhibitors, those supplying the coal industry were predominant with full-sized equipment from mine cars and locomotives, compressors, loaders, cutters and shaking screens to lubricating oil and commissary script. The exposition was the largest and the best attended of any held under the auspices of the Mining Congress in many years. So interesting were the exhibits, which included numerous displays from the mining states, Alaska and Mexico of local products and educational exhibits from such bureaus of the Federal Government as the Geological Survey and the Bureau of Mines, in addition to the machinery and equipment, that the program committee was hard put to it sometimes to gather the crowd to listen to papers and discuss the program. An Alaskan miner, attired in flannel shirt, corduroy trousers—or should one say pants?—and mountain boots sitting astride a tub of water panning gold, was more of an attraction for some than sitting through a program on taxation or standardization.

Programs Many and Diversified

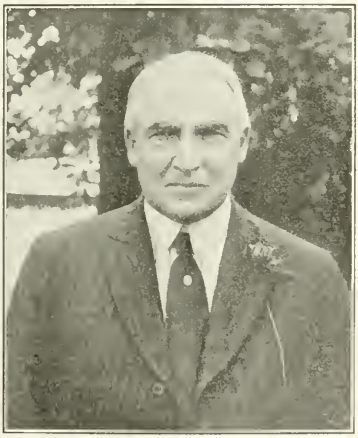
The Mining Congress and the Standardization Conference ran parallel programs. The Standardization Conference was divided between the coal and metal branches. The Mining Congress program provided for general sessions and at the same time meetings and conferences on taxation, education, oil shale, gold, underground loading and petroleum reserves. Although there were no less than 600 in attendance all or part of the week, the work of the congress was so diversified and so many programs were scheduled at the same hour that none of the meetings was able to attract large crowds. Exceptions should be noted of the smoker on Wednesday evening and the banquet on Friday night. Everyone turned out for these events, the one characterized by frivolity and the other by dignified good fellowship, but both were voted huge successes.

The congress was formally opened on Monday evening by Secretary Callbreath with the reading of a letter from President Harding, a reproduction of which appears on the next page. Tuesday morning W. J. Loring, president of the American Mining Congress, took the chair as permanent chairman and after a brief review of the work of the congress during the past year introduced F. S. Peabody as the principal speaker of the morning.

Mr. Peabody said that of the forty years he had been in the coal industry thirty-five had been spent in trying to keep out of the hands of the sheriff by selling coal for more than it cost and that for the past five years he had been trying to keep out of the hands of the Federal Trade Commission. This occasion was the first, he said, since he went to Washington in 1917 as chairman of the committee on coal production of the Council of National Defense that he had felt free to say what he thought of the happenings of those times and of the problems that have been interjected into the coal business since the beginning of the war. He reviewed his work in co-operation with the then Secretary of the Interior, Franklin K. Lane, and told of the patriotic response of the coal operators to the program of voluntary price restriction proposed by Secretary Lane. He criticised the obstructive tactics and policies of former Secretary of War Baker and also of Mr. Colver, former chairman of the Federal Trade Commission. On what they did to prevent the operation of the program laid down by the committee on coal production he blamed much of the coal shortage, the suffering, and the necessity for heatless days in the following winter—that of 1917-18.

The Calder, Frelinghuysen and Kenyon bills to regulate the coal industry were described as objectionable. With respect to the Kenyon bills, now before the Senate, he said:

"Prices are to be based on cost, but the bill does not define cost. It states that cost shall not include interest on bond indebtedness, unreasonable charges or salaries. I presume it means unreasonable salaries, but who is to say what is an unreasonable salary? I believe the directors of any mining company are in a much better position to decide on the salaries which they pay their officials than any official or commission to be appointed by the government.



PRESIDENT HARDING

In a letter to the Mining Congress Mr. Harding expressed the hope that suggestions would be made for improvement of conditions in the coal-mining industry.

"This bill fixes margins to be allowed on the sale of various tonnages. Mines producing in excess of 5,000 tons a month are permitted a margin of 35c. on the production up to 5,000 tons and 30c. per ton on the remainder. It provides for a margin of 25c. per ton on sales in excess of 60,000 tons per year. If we operate one month under this law, we are allowed 35c. on 5,000 tons and 30c. per ton on the remainder, but if we operate one year under this law we are allowed but 25c. per ton on the entire sale.

"I have not been able to figure from reading the bill just what it proposes to do with the difference of 5c. and 10c.

*Editor *Coal Age*.

per ton which the operator may legally keep in any month, but which he must not have in his possession at the end of the year. I am wondering if the man who wrote this bill has ever seen any actual figures on the cost of producing coal. I am operating fourteen mines in central Illinois, all within a radius of twenty-five miles, and I have seen, time and again, the costs in that group of mines vary as much as $1 per ton. I presume that under this bill I would be expected to confine the margin on the low-cost mines to the 25c. per ton permitted for mines of that size and to find someone who would be willing to pay $1 per ton more for the same grade of coal produced in the same district from some other mine.

"One of the most difficult features in conducting the coal business is to ascertain costs in advance. We in the mining industry know the important part that idle time, accidents, etc., play in our costs. It has been our custom for years to sell our coal around April 1, for delivery one year hence, at fixed prices, subject to change only in the event of change in the wage agreement with our employees, which agreements have heretofore been made for two years. As I read this bill, if I should make a contract on April 1, at a price 25c. per ton higher than the estimated cost, and then through additional investment, improvements in machinery, or increased efficiency could reduce that cost, I would be obliged to refund the difference to the buyer. The bill does not provide for the payment to me of prices based on increased cost. I am wondering how we would operate under this bill with market conditions such as we have had this year.

"Screenings, which represent approximately 40 per cent of our product, have fallen in price in the last six months from $2.75 to 75c. per ton. Needless to say the present-day market on that 40 per cent of our product represents a substantial loss. Working under this bill, what would be the incentive to reduce the cost of producing coal? What would be the incentive to invest a million dollars in a coal mine, such as has been done in hundreds of cases, to produce coal at low cost rather than have ten small mines costing $100,000 each, none of which separately or all of which combined could produce coal at relatively low cost?

"In this state we separate our coal into twelve different sizes. Some of those sizes naturally have greater heat value than others. Who will force the consumer to pay the same price for all of the sizes and who is to say which consumer shall take the sizes of least value? Are we to sell our twelve sizes at the same price, or are we to discard all of our cleaning and separating machinery and go back fifty years and ship only mine-run coal, which would necessitate 90 per cent of the large consumers of coal changing their entire power-plant?

"Under this bill high-grade gas or byproduct coal, if shipped from a mine with low production cost, would be sold for less money than coal fit only for rough steam purposes produced at a mine with high production cost. This bill makes no distinction between coal of high-grade preparation and that containing excessive impurities.

"Coal is a seasonal commodity. The demand for it is always light between April and September with a sharp increase in demand about Sept. 1 and continuing for the next six months. Under this bill the low-cost mines would sell their yearly output without much effort. The high-cost mines could not operate during the summer. Who is to pay the cost of keeping those high-cost mines in condition while not operating five months of the year? If this bill is enacted into law, I predict that in less than six months over half of the mines in this country will be closed and the Federal Trade Commission will determine that an emergency exists every winter."

THE WHITE HOUSE
WASHINGTON

September 30, 1921

Gentlemen:

I regret exceedingly that earlier engagements make it impossible for me to accept the invitation to attend your Annual Convention.

Realizing the unfortunate estate into which the mining industry has come, along with so many others, in the period of depression following the war, I regard as especially important the effort of your Congress to bring about an early improvement.

The present unfortunate situation being a world-wide one, resulting from world-wide causes, complete recovery must await improvement in world conditions; but there are indications that industry is on the up-grade and mining is sure to reflect the improvement which is marked in some other directions.

I cannot forbear to suggest that your Congress might perform a useful service in connection with the improvement of conditions in coal mining. A widely variable demand makes the problem of production difficult, especially when it involves an overload of the transportation system at a time when that system is least able to bear it.

With both labor and facilities lying idle for substantially half of each year, the costs of coal are bound to be unsatisfactory to the consumer. Is there no way of regulating the demand so as to distribute it more uniformly over the twelve months? Is it not possible to provide storage reservoirs which will enable the large consumers and large producers to accommodate their conditions to the need for a more constant rate of production?

I feel that these questions may, with particular propriety, be addressed to your organization. Adequate improvement can hardly be expected in the coal mining industry until the army of working men and the vast capital engaged in it find constant employment.

I would be glad indeed if your deliberations might produce some suggestions of practical value in dealing with this difficult problem.

Very sincerely,

Warren G. Harding

The American Mining Congress
Congress Hotel
Chicago, Illinois.

PRESIDENT HARDING'S LETTER TO THE CONGRESS

Anti-Trust Laws Have Little Effect on Coal

Mr. Peabody's remarks on the Sherman and Clayton laws caused as much comment as any other statements made during the convention. "These laws," he said, "forbid combinations in restraint of trade, meaning thereby that men in a similar line of industry cannot get together and agree upon prices, cannot get together and agree upon the quantity of their production. How does this affect our industry? I do not believe it affects it in the slightest. There are 7,000 coal operators scattered throughout the United States, from Virginia and Maryland to the State of Washington, mining coal under dissimilar conditions, not only as to the physical problems of mining but as to the quality and use of the coal produced—coal veins running from 24 in. to 50 ft. in thickness, and with ash running from 2 per cent up to 25 per cent.

"It seems incredible that a condition could exist whereby these men could even think of getting together on prices or production. But let us assume that it would be possible. What would be the result? During periods of great demand, prices would go up; not because of any combination but because the demand is greater than the supply. During periods of depression, prices would go down, because the demand was less than the supply.

"To prove this, let me call attention to the provisions in the Clayton bill exempting farmers' organizations from the penalties of the bill, exempting labor organizations from the penalties of the bill—especially providing that labor is not a commodity, therefore no combination can be formed in restraint of trade. What is the result? Notwithstanding the farmer is allowed to combine, is allowed to hold back shipments of corn, etc., is allowed to combine on the price at which he shall sell his beef, or his corn, or his vegetables, or his grapes, today corn is selling at 16c. a bushel in Nebraska. Public utilities, villages and farmers are burning corn instead of coal. Do you think for one minute that if they could have made a combination that would hold, we would not be paying $1 or $1.50 a bushel for that same corn? But no matter how hard they try to combine

they cannot get away from the inexorable law of supply and demand, and if there is more corn than can be used, the price must go down.

"Labor is the same. The unions are holding for $8, $9 and $10 a day for their men. With what result? Half of their men are out of work today. Everything from the beginning of the world has been based upon the inevitable laws of supply and demand; the human mind can devise no method by which these laws can be supplanted."

Edwin Ludlow, president of the American Institute of Mining and Metallurgical Engineers, who followed with a paper on "Coal and Labor," concluded that "the period of hard times that we have gone through has seemed long and we all look ahead for better conditions, but it would be a mistake if those conditions should improve too rapidly until the labor situation has been liquidated and its efficiency brought back.

"The most dangerous doctrine that we are called on to face is the minimum wage based on an assumed standard of living, that must be paid whether the laborer produces the value of his wage or not. The acceptance of that theory can lead only to sovietism. If the laborer is paid more than the value of his product, the operation soon becomes bankrupt unless the difference is made up, and the only unlimited pocketbook is the U. S. Treasury. In that lies the kernel of the demands for nationalization by the coal miners and railroad employees."

J. D. A. Morrow, vice-president of the National Coal Association, opened the Tuesday afternoon program with an address on "Co-operative Effort in the Coal Industry." "Co-operation of two kinds were required," he said; "that within the industry among the operators and others, and that of the industry with the public, the consumers of coal. There are at the present time," he said, "influential political leaders in many states, there are men high in official circles at Washington, who deliberately desire to bring the coal industry of the United States under the same kind of political control which has crippled our railways and which would soon ruin any industry. If we can develop the right kind of understanding and co-operation between the producers of coal and those who transport and consume it, we need have no fear. After all, that business will succeed best which serves best."

Morrow Pleads for Better Co-operation

Mr. Morrow concluded with a plea for greater co-operation. "We have enjoyed the cheapest coal and the best supplies of fuel of any nation on the globe," he said. "Our great manufacturing industries have been built on the cornerstone of cheap fuel, but our great coal industry, which has made all our other industries possible, has been developed by private initiative. It can be maintained in a condition to serve the public efficiently only by the operation of private initiative. If the consumers of coal are to enjoy the advantages of private operation of the coal mines of this country they must co-operate with the owners of those mines to insure the maintenance of that fortunate condition, in spite of the efforts of socialistic agitators and self-seeking politicians to fasten government regulation upon this industry."

In a few words George H. Bailey, counsel for the American Mining Association, outlined the "Late Legislative Developments in Relation to the Coal Industry in Washington" by describing some of the many acts that have recently been introduced in Congress. C. E. Lesher, editor of *Coal Age*, followed with an address on "Selling the Coal Industry to the Public," in which he pointed out the difference between the contact of the coal industry with industrial coal consumers and the vast public that buys coal for household use, and urged that greater attention be paid by the coal men to educating the voter on the subject of coal.

Wednesday morning C. H. Markham, president of the Illinois Central R. R., talked on the railroad situation, concluding with a summary of the conditions that have led up to the present labor crisis in the railroad industry. He pointed out that the labor unions are threatening to strike in defiance of the established law of the country and are therefore deserving of no sympathy from the public.

"Some Items on a Prosperity Program" was the subject of an address by George Otis Smith, director of the Geological Survey. An abstract of his paper will be printed in a subsequent issue.

Members of the American Institute of Mining and Metallurgical Engineers met at luncheon on Wednesday noon.

The relationship between the coal industry and the public and between the coal operators and labor were subjects of discussion on Thursday morning. T. H. Watkins, president of the Pennsylvania Coal & Coke Co., delivered an address that in the opinion of many covered the subject most comprehensively. The importance of coal to the industrial nations of the world, the pioneer work of the coal operators in the development of this country, the danger of unfair meddling of politics with this business, the distinction between the industrial steam coal business and that of household coal, and the interrelation of the coal business and all other enterprise were all fully discussed. He said:

"Directly concerned in the handling of the coal industry are three principals: the public, the operator and labor; it is immaterial which you mention first. They are all dependent one upon the other, each one of these groups more or less selfish, more or less ignorant in regard to what affects the other."

American Coal Cheapest During War

Mr. Watkins then reviewed the history of coal through the war period and the subsequent time of readjustment. He noted that during the war "Wages had been increased; freight rates had been increased, and yet coal was sold generally throughout the country and delivered at a lower price than in any country on the face of the globe."

On the present situation he remarked that "if it were not for the fact that a great many of our industries are prostrate today, the railroads of our country would be unable to handle the fuel needed for normal consumption. There are over 150,000 out-of-order coal cars, in addition to 110,376 idle coal cars in order, and at this time last year there was a shortage of equipment. It is absolutely essential that our railroads should be made efficient, and yet we see their inability to procure funds at reasonable rates in order that they may be put in condition to meet the normal growth of our country's needs."

The uncertainties of the immediate future brought about by the policy and program of the United Mine Workers was blamed on the leaders of the movement, "who have apparently thrown to the winds all conservatism and all sense of responsibility to the public and to the employer. We see men of real ability in this organization discarding all sense of equity and ignoring all economic conditions, all principles of collective bargaining, all moral obligations to the employers with whom they have dealt in the past and, I might say in a true sense, all obligations to those whom they are supposed to have intelligence enough to represent. . . .

Abuse of Power a Precursor of Disaster

"It is the old story over again—power, more power, then abuse of power—until finally the people rise in their strength to destroy any organization, whether of capital, labor, king or kaiser, which attempts to exercise autocratic control, ignoring property rights, freedom of contracts within the law and personal liberty."

He accepted for the coal operators a share of the responsibility for this condition, asserting the cause to be the agreement, entered into many years ago when times were different, to collect the check-off for the benefit of the union organization.

"I cannot believe that the operators in those days realized what they were doing, and to what it would lead. No other organization of employers in the world ever adopted this system. Other labor unions were built up and depended upon the voluntary payment of the dues to their own officers, but this organization depends upon the employers collecting the dues from all members of the organization from the pay envelope semi-monthly. . . .

"A union that cannot exist on its own merits—on the voluntary payment of its dues by its members—should not be allowed to function in this land of free and equal opportunity to all. So I say the operators are to blame, and are

helping to carry forward the menace to our institutions that I believe surrounds the present policy of the United Mine Workers of America.

"The time is not far distant," he said, "when there will have to be a new deal, a new arrangement, one based on a wholesome recognition of the rights of labor, one based on the rights of the public, and one based on the rights of capital employed in this great industry."

The evil effects in the coal business of cut-throat competition and profiteering were stated to be serious. He pointed out for instance, that "there is just as much danger to the interests of the nation as a whole in cut-throat competition and in selling coal below cost as there is in exorbitant prices. The inevitable effect of cut-throat competition, selling coal below cost, and bidding for each other's customers, is to produce a condition of unrest back at the mines, where the labor lives, through attempts to unduly reduce wages, which should be a fair remuneration on fairly uniform working time. . . .

"The offering of coal by producers who do not have their own selling agencies, who depend upon jobbers and wholesalers for their market and depend on the spot market for the disposal of their output, is causing a confusion today that is extremely unfortunate and helps cast discredit upon the class of producers who are dependable in their contractual relationship with their customers and who never seek a spot market for their output, depending on annual contracts as a business policy, and who live up to their contracts no matter how high the spot market may be in times of coal scarcity caused by strikes or lack of transportation."

Check-Off Abuse Worse Than Lawless Leaders

H. N. Taylor charged that the "abuse of the check-off system that is in vogue and a part of the organized labor contract is even more serious to public welfare than the radical, lawless leader, because it is by this means that he is able to accomplish his end. In my opinion, it is the check-off system which is responsible for the growth of radicalism in the miners' organizations. In the early days of the contract, the check-off was a comparatively harmless thing. It was used only to check off nominal dues and sick benefits. Today its purpose is abused until it is a menace to public welfare. It is used to check off a large percentage of the miners' wage, and the vast sums obtained are used for purposes far remote from the purpose intended in the original contract. The huge sums realized from the check-off have been expended to carry on a lawless war condition in more than one of the non-union coal producing states. . . . The check-off enslaves the rank and file of the miners' organization. The individual miner's earnings are taken from his pay envelope in the proportion levied upon him, and the funds are often used for radical propaganda in which he may not personally be interested and to which he is frequently opposed. . . .

"Gentlemen," he said, "it is up to union labor to do its share of the readjusting, not only in the public interest, but to help themselves. If the miners continue their refusal to make a readjustment of an abnormal wage scale and on April 1 call a nationwide strike, the operators must assume a public duty of standing for the public rights, and the well-thinking men of this country must stand behind them in this battle for the good of American industry and American freedom against a labor autocracy."

The general session of the convention on Thursday evening was devoted to standardization. H. C. Morris, chief of the Fuel Division, Bureau of Foreign and Domestic Commerce, read a message from Herbert Hoover promising the support of the Department of Commerce to promote business and asking for suggestions from the American Mining Congress as to how best the government could co-operate in promoting foreign trade in coal.

At this session C. E. Lesher, editor of *Coal Age*, read a paper on "Standardization as a Factor in Stabilization of the Coal Industry," in which particular stress was laid on the benefits that would accrue from more uniform and standard methods of marketing. Lieutenant Colonel George S. Gibbs, of the General Staff, U. S. Army, gave a talk on "Standardization as a Factor in National Defense."

At the sessions on Friday the papers were more generally devoted to the subject of foreign trade. A clear businessman's address on the coal-export situation was made by C. A. Owen, president of the Imperial Coal Corporation of New York, which will be published in *Coal Age* in a subsequent issue.

Dr. H. M. Payne followed Mr. Owen with a brief résumé of the possibilities of the foreign trade in coal that brought the situation before the industry from one coast to the other. Comment on the side lines after the session showed a growing realization on the part of operators at a distance from the coast of the value to them of large export business in coal. As one man expressed it: "I am in favor of large exports of coal from the fields of West Virginia, the districts best able to meet foreign competition, because I want West Virginia off my back."

Director Bain of the Bureau of Mines talked at the afternoon sessions on the mineral resources and mining development in the Far East. Excerpts from his paper will be published later.

Charles M. Schwab was the principal speaker at the annual banquet Friday evening, at which more than 800 delegates and guests gathered in the gold room of the Congress Hotel. In his inimitable style he told of his experiences in early youth and his later years, stories about men high and low, stories that illuminated the human side of Schwab and made apparent his wonderful success with men. He promised the diners he would be serious for a few minutes and then read a short prepared statement that dealt so largely with coal that it is published here in full.

"As a large consumer of iron ore and coal, and as a producer of both, I am naturally deeply interested in the problems of the mining industry and in the efforts which the Mining Congress is making to arrive at their solution. To my mind, there is nothing in the present business situation which time and the laws of trade and economics will not straighten out. The danger lies in the effort to force an adjustment through legislation.

Short Time and Unemployment Heavy Burdens

"We are in difficulties, there is no doubt about that. Prices have dropped irregularly. Wages have gone down in some lines, and are maintained in others. Short time has reduced the earnings of many workmen, and unemployment has put a heavy burden on many more. The products of the farm have dropped to about pre-war levels, and the high cost of transportation invades deeply the farmer's narrow margin. Yet the railroad workers resent any reduction in wages which will make a lowering of freight rates possible. The building trades in your good city are resisting the reductions in rates and the changes in rules provided in the very wise award handed down by Judge Landis.

"Everywhere the process of readjustment is creating discord and discontent. Everywhere our people want to hold on to what the war brought in the matter of increases in income, and want to lay the sacrifice involved in deflation on some other back. It is perfectly natural for a baby to cry when you remove the bottle before it has had its fill. It is perfectly human to resist a reduction in one's income, and to submit only after considerable argument and effort.

"What a splendid world this would be if we could get back to normal by the mere process of passing a few laws! We have tried legislation on some things, and it hasn't worked well. We have tried putting directive control of our railroad systems into a single hand, and the memory of that experiment is vividly with us. Russia embarked on the plan of centralizing the control of all industry in government hands, and no one is anxious to take another chance at that experiment. Yet many of our people clamor for relief through legislation whenever, after an orgy of prosperity, economic laws insist on reasserting themselves. And our legislators are altogether too prone to yield to these clamors, with the result that inelastic, repressive legislation checks initiative and thwarts enterprise.

"I know of no better stimulus for creative ambition than the hope of personal reward. Intelligent self-interest—not selfishness—cannot be equalled in securing results in business. It surpases any form of communal co-operative

effort. And when competition has free rein, there is ample restraint and ample protection to the public interest.

"The American business structure is the result of over a hundred years of initiative, enterprise, courage and effort. It has grown to its present size because it has learned through many hard knocks to conform to sound economic principles. Those twin brothers supply and demand have in the long run fixed prices fairer to the consumer than could the wisest commission sitting in Washington, and they have imposed heavier penalties for errors in judgment than would a bolshevist court.

"I need only point to the terrible losses in silks, in leather, in sugar within the past year to indicate the severity of the penalties to those who guess wrong or who fail to observe economic laws. What I am trying to get over is that economic laws are constantly at work checking excessive consumption and stimulating reduction by raising prices in times of great demand, and reducing production and encouraging consumption by lowering prices in times of depression. There is no commission or governmental agency that would adjust the balances as well or as wisely.

Government May Drop Shipping for Coal Business

"At the very time when the government is trying most desperately to get out of the shipping business, it seems to be headed straight for the coal business. The high prices prevailing for coal during the last year [1920] are generally supposed to be due to a combination of the great coal producers, who by the power of monopoly have raised prices to extortionate heights. It is also supposed that the coal deposits are approaching exhaustion, and that for both reasons government control or at least regulation of the industry is imperative. Yet the testimony given some months ago before the Senate Committee on Manufactures showed that there exist in the United States proper some eleven thousand coal mines controlled by seven thousand operators.

"The greatly increased demand for coal incident to the European war, as revealed before the same committee, almost doubled the number of mines, so that the 5,776 operations existing in 1913 increased to 11,000 in 1920. Can there be monopoly in an industry so widely distributed, so widely owned? The very fact that so many new operations started as the result of increased demands shows that there is no monopoly in the ownership of coal deposits, for, believe me, a monopoly has altogether too much sense to spread itself in this fashion. The coal deposits, not counting Alaska, were stated by government experts and coal operators to be between three and four trillion tons. They are for all our purposes inexhaustible, and on neither premise, therefore, is government interference or regulation justified.

"I have been in competitive industry so long that I am constantly on guard against an increase in overhead, and I am opposed to the creation of new methods that transfer men from the producing column to the overhead column. I have to be shown that the transfer will bring returns, that it is in reality helpful to production, before I give consent. Yet we have witnessed for some years a constant increase in our national and state overhead expenses. The creation of new department for supervising this, regulating that, or controlling the other, has been going on merrily, and with each additional function assumed by the state or nation some person or group of persons has been transferred from the producing group to the overhead group.

"No manufacturing plant would thrive very long if it continued to increase the personnel of its office by reducing the number of workers in its shops. We suffer today from an excess of national, state and municipal overhead. There are too many of our people employed by our various governments, and too few in productive industry in normal times. Every time you create a new commission or new government department, every producer groans under an additional burden.

"I feel most strongly that our legislators ought to bear that fact in mind, and that they ought to give American industry an opportunity to adjust itself without loading it up with any further overhead. I don't want to take your time to go into the details of high coal costs, but want to submit just a few thoughts that have occurred to me as aids to an improvement in the bituminous coal industry. Undoubtedly you have had the same ones many times, but they will lose nothing by repetition.

"The productive capacity of your mines in normal times is 50 per cent greater than your demand, and it follows therefore that your mines, even in fairly prosperous times, must shut down a third of the time. It means that 700,000 men must be idle one-third of the time and that their wages must be increased so that they can live for twelve months on the earnings of eight. It means that two billions of capital invested in the industry is profitably employed during only two-thirds of the time, that deterioration of timbers and machinery during the idle time must be paid for, that pumping and ventilating machinery must be kept going whether there is coal output or not. All those adverse factors which add so materially to the cost of coal must inevitably be passed on to the consumer.

"Your problem is to distribute your demand more uniformly over the twelve months, and this can only be done by such a concession in price as will induce large consumers to undertake the expense and suffer the deterioration of heat values incident to storage, and to pay the interest on the investment. The waste due to the intermittent operation of the coal industry is a heavy public burden which ought to be reduced, and only a distribution of the demand over the twelve-months period will do it. Make it worth the consumer's while to store the coal and he will do so. There, I believe, lies the solution of one of your major difficulties."

Officers for the ensuing year, all of whom are re-elected, are W. J. Loring, president; D. B. Wentz, first vice-president; E. L. Doheny, second vice-president; T. T. Brewster, third vice-president and J. F. Callbreath, secretary.

Workmen's Compensation in Pennsylvania Takes a Further Drop

THE Pennsylvania State Insurance Department has announced a further reduction in the rates for insurance under the Workmen's Compensation Act. This reduction is the result of studies of experts of the department and of the Pennsylvania Compensation Rating and Inspection Bureau.

The average reduction over the existing rates is 7½ per cent. It is estimated that this will mean a saving of $1,500,000 to the employers of Pennsylvania during 1922. A general reduction of 20 per cent was made last year. The new rates, according to E. H. Downey, compensation actuary and expert of the State Insurance Department, are lower than ever quoted in that state and lower than those of any other state at the present time.

Among the rates are: Anthracite mining, $3.25; bituminous mining, $2.25; stone quarrying, $2.60; blast-furnace work, $2; work at open-hearth steel mills, $1.75; steel-foundry work, $1.30; work in iron foundries, $1.10; work in malleable-iron foundries, 65c.; machine-shop work, 80c.; carpentry, $1.10; masonry, $1.25; road construction, $1.05 and railroad construction, $1.60.

Illinois Leaders Will Not Leave Funds With New Officials of Kansas Union

WALTER NESBIT, secretary-treasurer of the Illinois district, a home of insurgency in the United Mine Workers, has demanded that the $43,000 left of the $100,000 fund lent to the Kansas mine workers to fight the industrial court law of that state be returned. The Illinois leaders are still as much against the industrial court as ever, but as Thomas Harvey, provisional secretary-treasurer, is opposed to Alexander Howat they do not want their "money in the hands of a man of another camp," to quote Mr. Nesbit. Much of the fund was spent in last year's political campaign in which Howat and his followers tried to defeat Governor Allen's re-election.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

BUSINESS conditions continue to show a moderate improvement in nearly all sections of the country, declares Archer Wall Douglas, chairman of the Committee of Statistics and Standards of the Chamber of Commerce of the United States, in his monthly review of the business situation in *The Nation's Business.*

"Fall and winter seasonal goods are beginning to move and the outlook is for fairly good business the remainder of the year," he says. "As the season advances there appears to be a better prospect of a good holiday and Christmas trade. One of the most striking developments is the great improvement that has come about in the South, due to the rise in cotton prices. The good effects of this boom will not be confined to the Southern states, but will be reflected in other districts.

"The story of the sudden rise in the price of cotton is a dramatic one. In August there seemed nothing ahead for another twelve months but the practice of grim fortitude and endurance which carried the South through previous eras of depression and trial, for hard times and the people of the South are old acquaintances, and more than once they have been close to the ragged edge of disaster. This time they were dead broke, although they possessed all manner of real wealth in an abundance of food, the greatest crop of corn ever raised, more livestock than ever before and much cotton carried over from the previous season.

"But there was scant demand for these commodities and then only at ruinous prices. So their obligations could not be met for lack of ready funds. Then came the government September report and the South came back after a sudden and dramatic fashion. The burden of obligations will be mostly disposed of before the winter is past. Cotton is being sold freely, and the farmer will dispose of most of his holdings by the new year.

"Business already has felt the impulse of the incoming currency and will grow gradually better. Such change as is apparent in industrial life generally is rather for the better. Textiles are in fair shape and leather maintains both its demand and appreciation in prices. There is some increase in the output in steel and iron products but the recent rise in prices is not altogether convincing as to its being permanently higher. There is better demand for lumber at somewhat higher figures. The belief is general that next spring will usher in renewed construction activity. The oil business seems to have struck bottom and started upward."

Men Available in Case of Strike

In the event of a railroad strike, there are at least 300,000 trained railroad men available to assist in the operation of trains, according to Dr. Julius Parmalee, director of the Bureau of Railway Economics. He has estimated that there were during the war period more than 2,000,000 workers on the payrolls of the carriers, whereas the most recent statistics show there are now approximately 1,700,000 in the employ of the lines. It is figured that the difference between the two totals, except for some union workers, represents in round numbers the men who might be called upon to keep trains moving.

Get Big Argentine Car Contract

Representatives of the Baldwin Locomotive Works and the Middletown Car Co., a subsidiary of the Standard Steel Car Co., have signed a joint contract with Argentine State Railways for railroad equipment costing $13,000,000.

Freight Loadings Drop 5,338 Cars

Railroad loadings of revenue freight for the week ended Oct. 8 totaled 895,740 cars, as compared with 901,078 cars for the preceding week, or a decrease of 5,338 cars, the American Railway Association announces. This record represents a decrease of 115,926 cars as compared with the corresponding week last year and 86,431 cars compared with the corresponding week in 1919. The total freight loading since Jan. 1 this year has been 30,033,162 cars, as compared with 34,860,503 in 1920 and 31,966,129 in 1919.

300,000 to Work on Roads

Employment for 300,000 or 350,000 for six months will be made possible by the Federal Highway Bill which is expected to pass Congress within the next few days. The bill, which is now in conference, carries a $75,000,000 appropriation, of which $25,000,000 is to be available for distribution among the states as soon as the bill becomes law, and the remainder six months later.

N. Y. Factory Workers Increase

The most pronounced gain in manufacturing activities in New York State since the close of 1919 was shown in September, Industrial Commissioner Sayer made known recently. Notwithstanding the fact that substantial reductions in employment were still reported by a number of factories, the total number of factory workers employed last month was approximately 3½ per cent greater than that employed in August.

Woolen Looms 96 Per Cent Active

Plants of the American Woolen Co., according to a statement of William M. Wood, president of the company, never were in a better position than right now, especially with reference to the loomage of the company, which is 96 per cent active, with 100 per cent activity reported in some of the mills. The activity, the statement proceeds, reaches its focus in the mills at Lawrence, which city, in proportion to its size, Mr. Wood states, is one of the most active communities industrially in the country.

U. S. Steel to Spend $10,000,000

Subsidiary companies of the United States Steel Corporation will at once proceed to spend $10,000,000 for extension of plants with the idea of affording employment to employees made idle because of decreased operations, according to a resolution adopted by the finance committee of the corporation at a regular meeting in New York City. This announcement is taken as an indication of improved operating conditions by the leading manufacturer of steel products as well as a desire on the part of the corporation's management to aid in reducing the number of idle workers in the steel industry.

Cut in Freight Rates Expected to Avert Rail Strike; Coal Stocks Sufficient for Only Brief Tie-up

EFFORTS of the government toward averting the threatened railroad strike are said to include a freight-rate reduction to afford the public some benefit from the reduction of wages of rail employees last July. The railroad executives are reported to be contemplating a general reduction of 17 per cent on coal, although they insist that the former wage reduction has been followed by similar rate reductions. They mention a reduction of rates on cargo coal from points in Ohio, western Pennsylvania and West Virginia to Lake Erie ports with an estimated loss in revenue of $4,116,000. President Harding, Secretary of Commerce Hoover and Secretary of Agriculture Wallace are reported to be in favor of a rate reduction. It is said that a rate reduction and submission to the Railroad Labor Board of a proposed wage reduction would prevent the strike.

It is said that the plans of the administration for dealing with the situation in case a strike occurs are based on precedents prepared by the Department of Justice from the proceedings of the government against the bituminous coal miners in 1919, and that while the Lever law, under which an injunction was obtained by the government against the miners, has been repealed by Congress, the government will proceed against the rail strikers in equity suits to prevent a conspiracy against the government, as the strike would cripple the transportation system. In 1919 the government proclaimed the doctrine of government rights and their preservation against the striking coal miners and was upheld by the court. The government contended that no body of men had a right to conspire against the rights of the people involving the necessities of life.

Planning to Move Food by Motor and Boat

The Department of Commerce is making plans to transport fuel and other essentials by motor and water in the event the transportation system is tied up by a strike. It is said that large industries have been laying in supplies of coal in response to recent appeals of Secretary Hoover and the Interstate Commerce Commission and that efforts of the department to continue transportation of fuel will be directed to preventing stoppage of industrial activity. Government officials conversant with the situation do not fear a coal stringency this winter unless the strike occurs. Industry has not picked up to a sufficient degree to consume enough coal to cause a depletion of stocks.

At the Cabinet meeting Friday, Oct. 21, it is understood the President was urged, in the event of a strike, to exercise the war-time authority to prevent interference with the transportation of necessities, which would include coal. Such action would be under the National Defense Act, which is in force until a formal declaration of peace, which declaration has not yet been made. If the act is invoked the War Department would operate trains to supply fuel where needed. It is understood the railroad unions at Chicago agreed to the Railroad Labor Board's proposal that the railroads reduce freight rates corresponding to the wage reduction of last July, less rate reductions made since then, and that the roads should not ask for further wage cuts until the July wage reduction had been equalized by the rate cuts. The unions, however, refused to withdraw the strike order, asserting that settlement of the issue must be made before Oct. 30.

Hasty surveys of the state of coal stocks reveal that supplies are sufficient to weather a brief strike only. With the mobile reserve of coal suddenly frozen up only a week would be necessary to bring about acute industrial suffering and physical suffering as well if it should happen to be cold. This is the opinion of one of the government's foremost coal specialists. It is pointed out that while the total coal in storage is reasonably large, its distribution is not such as to afford anything like the general relief that might be assumed from the total tonnage. Communities would be affected unevenly if there were as much as a week's paralysis of transportation. Tidewater ports, Lake ports and many railroad junction points would be congested with coal but the average inland city would suffer severely.

Among railroad officials there is a distinct current of optimism. They think the chances are much against any strike. Even if the unions should do all they threaten, there is a feeling that if it has to come this is the best possible time. The railroad managements seem to be in an unusually favorable position. The labor leaders must attribute the strike either to the 12-per cent wage reduction, ordered by a tribunal established by law, or against a proposed reduction which the railroads already had promised to pass on to the shippers. The feeling among railroad officials who come in direct contact with the men seems to be that there is a general feeling among the employees that they cannot win, and as a result the labor leaders have much less support than is generally supposed. There is a feeling that these leaders are on a high limb hoping against hope that someone will provide a soft mattress to which they can jump.

The rather unexpected announcement of the intention to strike had the immediate effect of causing a flood of orders for coal. One large operator tells how he was aroused half a dozen times the night after the strike announcement to answer long-distance telephone calls from customers anxious to place orders. Within the next few days, however, many large consumers of coal were convinced that there would be no strike and a considerable proportion of cancellations is reported.

A hasty telegraphic survey of the situation with regard to domestic coal leads to the conclusion that stocks in the hands of retailers are equivalent to five weeks' normal requirements. In that connection it is pointed out that in time of emergency there is a tendency toward hoarding and that what should be a five weeks' supply is likely to be absorbed in a much shorter period.

Utilities Have Large Reserve Supplies of Coal

Public utilities in the District of Columbia are said to be fairly well fixed for fuel supplies in the event of a rail strike. They have stored up substantial coal reserves.

B. F. Nigh, secretary of the Michigan-Ohio-Indiana Coal Association, last week received a telegram from Julius Gutheim, chief of the car service division of the American Railway Association, asking for information relative to the state of stocks of coal in the hands of retailers in the territory covered by the association.

Mr. Nigh ascertained that Columbus retailers have a supply for at least two or three weeks and perhaps a longer period. Because of its nearness to the coal fields Columbus dealers do not keep as large stock as in many sections where transportation difficulties have to be overcome.

A résumé of reports received from the three states named above is:

A. B. Mayer, Indianapolis, Ind.: "Coal supply in stock in dealers' yards a fair average of former years. I doubt whether there will be any large or increased demand in case of strike."

G. Blackama, Grand Rapids, Mich.: "Stocks in retailers' yards normal. About five weeks' supply on hand. Strike agitation is stimulating demand to marked extent."

Charles A. Albright, Cleveland: "Stocks in retailers' hands small. Coal moving rapidly."

West Crescent Coal Co., Toledo: "Stocks of both hard and soft coal in retailers' yards in Toledo is considerably larger than in past years. Little, if any, increased demand on account of strike agitation."

Oakley & Oldfield, Kalamazoo, Mich.: "We think stocks in retailers' hands are about normal. Consumers are very poorly supplied. Believe demand will greatly increase in view of strike."

Ewald Scheiwe, Detroit: "Stocks in retail yards biggest in years. No cause for any alarm. No increased demand on account of strike agitation."

Glen Alden Co. Will Reopen Its Mines

THE district convention which was called to declare a general strike of the whole northern anthracite district was to be held Oct. 24, but the Glen Alden Coal Co. on Oct. 23 forestalled the convention by promising to open its idle mines as soon as they could be made ready for operation. The company is cleaning up the mines in preparation for reopening.

Many persons expected that the Glen Alden Coal Co., in Scranton, Pa., would open up its idle mines Oct. 19, being assured of safety from prosecution for mine caving by the verdict of Judge H. M. Fuller, of the Luzerne County Court. They hoped that the Lackawanna judges would declare themselves willing to accept his decision and that the company would be willing to work with this assurance until, and unless, a higher court decided that the Kohler Law was unconstitutional. The union issued a statement expressing the hope that the Glen Alden would order the reopening of its mines. Hugh A. Dawson, after conferring informally with the union leaders in Scranton, announced that he would endeavor to have a special session of the Legislature called to repeal the penal section of the Kohler mine-cave law, saying that the expense of the session should be balanced against the wage loss by the idle mine workers of more than $800,000 monthly.

Marchers Shut Down Co-Operative Mine

WORKERS in the Oak Knob and Fox Hill mines at Lincoln City, Ind., forty miles east of Evansville, were forced to quit work Oct. 20 by a force of 150 men said to have come from the union mines at Ayrshire and Winslow and other points in Pike County, Indiana. The miners at Lincoln City, who had been working both mines on shares, were warned not to return to work until they had been unionized.

The big force of union miners, traveling in automobiles, reached the Oak Knob mine first. There they threatened the engineer with cremation, saying they would throw him into the furnace unless he shut off the ventilating fan. When he did so the other men were forced to come out of the shaft. The Oak Knob miners were forced to accompany the visitors to the Fox Hill mine.

Floyd W. Parsons Now Editorial Director Of Gas Age-Record: Still with Post

FLOYD W. PARSONS, who as editor founded *Coal Age* and for the past two years has been in charge of the department entitled "Everybody's Business" in *The Saturday Evening Post*, has become editorial director of the *Gas Age-Record*. Mr. Parsons will continue as a contributor to *The Saturday Evening Post* and other national magazines.

For many years Mr. Parsons was associate editor of *The Engineering and Mining Journal*, having entire control of those sections of the paper which related to coal mining. When it was decided that a new paper, *Coal Age*, should be started and the coal-mining features in *The Engineering and Mining Journal* should be discarded Mr. Parsons took charge of the new paper. This was in 1911. His success in this direction and the interest he took in promoting the work of the Fuel Administration during the war are well known to all our readers, who will wish him success in his new enterprise.

Connellsville Coke Companies Under New Ownership; Three Plants to Resume

SIMULTANEOUSLY with the announcement that Frank E. Peabody of Pittsburgh in conjunction with the Midvale Steel & Ordnance Co., the Wheeling Steel & Iron Co. and the Reading Iron Co. had acquired control of the American Coke Corporation and the Reilly-Peabody Fuel Co. it was announced that operations at the three plants would be resumed immediately and that their capacity of 50,000 tons of coke monthly would be reached within sixty days. Mr. Peabody and his associates acquired control of the companies from Eugene S. Reilly and H. P. Monahan.

The new officers of the American Coke Corporation are F. E. Peabody, president; R. E. Peabody, vice-president; W. Russell Carr, vice-president; C. M. Rhoads, secretary and treasurer; T. J. Atkinson, general sales manager.

The Reilly-Peabody Fuel Co. will hereafter be known as the Peabody Fuel Co., the officers being the same as in the American Coke Corporation.

Anthracite Shipments Drop 55,703 Tons in September, Due to Scranton Shutdowns

SHIPMENTS of anthracite during September, as reported to the Anthracite Bureau of Information, amounted to 5,519,112 gross tons, as compared with 5,575,115 tons in August, a decrease of 55,703 tons. The loss in production due to the shutting down of some mines in the Scranton district that cannot be operated under the provisions of the Kohler Act was something over 200,000 tons, about three-fourths of which were made up by increased shipments from other districts. The total shipments for the coal year, beginning April 1, have amounted to 34,350,584 tons, as compared with 33,479,753 tons for the corresponding period in 1920, a gain of 870,831 tons.

Shipments by the initial carriers, in gross tons, were as follows:

	September, 1921	August, 1921
Philadelphia & Reading	1,081,085	1,116,844
Lehigh Valley	966,600	924,649
Jersey Central	576,875	544,002
Lackawanna	736,571	953,014
Delaware & Hudson	711,199	756,982
Pennsylvania	426,344	360,817
Erie	631,882	628,280
New York, Ontario & Western	123,742	98,355
Lehigh & New England	265,114	192,167
Totals	5,519,412	5,575,115

Bituminous Coal Loaded Into Vessels at Lake Erie Ports During Season to End of September*

(In Net Tons)

Ports	Railroads	1921 Cargo	1921 Fuel	1921 Total	1920 Cargo	1920 Fuel	1920 Total	1919 Cargo	1919 Fuel	1919 Total
Toledo	Hocking Valley	3,392,526	90,626	3,483,152	2,533,666	51,508	2,585,174	3,476,476	97,686	3,574,162
	Toledo & Ohio Central	912,039	25,463	937,502	1,155,803	44,646	1,200,449	1,030,810	31,539	1,062,349
	Baltimore & Ohio	2,019,800	59,071	2,078,871	933,093	28,423	961,516	1,886,659	44,918	1,931,577
Sandusky	Pennsylvania	1,221,981	35,303	1,257,284	1,066,276	15,015	1,081,291	1,102,597	30,193	1,132,790
Huron	Wheeling & Lake Erie	1,418,326	40,134	1,458,460	1,376,311	73,418	1,449,729	1,183,769	41,148	1,224,917
Lorain	Baltimore & Ohio	2,176,645	87,837	2,264,482	2,163,365	152,418	2,315,783	2,240,013	121,721	2,361,734
Cleveland	Pennsylvania	1,768,313	73,258	1,841,571	752,653	115,458	868,111	1,773,256	198,259	1,971,515
	Erie	355,964	12,071	368,035	243,997	14,116	258,113	189,235	5,598	194,833
Fairport	Baltimore & Ohio							16,692	12,954	29,646
Ashtabula	New York Central	959,835	52,381	1,012,216	988,367	196,637	1,185,004	1,384,993	118,556	1,503,549
	Pennsylvania	1,922,167	63,910	1,986,077	1,210,112	70,349	1,280,461	1,525,198	77,201	1,602,399
Conneaut	Bessemer & Lake Erie	1,090,156	14,732	1,104,888	1,797,497	30,624	1,828,121	1,105,605	7,108	1,112,713
Erie	Pennsylvania—West	770,091	27,030	797,121	149,137	12,926	162,063	613,242	34,255	647,497
	Pennsylvania—East	140,393	24,799	165,192	234,116	59,245	293,361	152,678	11,771	164,449
Totals		18,148,236	606,615	18,754,851	14,604,393	864,783	15,469,176	17,681,223	832,907	18,514,130

* Compiled by Coal & Ore Exchange, Cleveland, Ohio; H. M. Griggs, Manager.

Borderland Injunction Against Operators And Miners Is Delayed

POSTPONEMENT to Oct. 28 of the Federal court hearing on an application for a preliminary injunction in the suit attacking all essential details of present co-operative agreements between union miners and operators was agreed on recently by counsel in the case, and approved by Judge A. B. Anderson, who will conduct the hearing. Counsel for the United Mine Workers of America, defendant in the suit along with several operators employing only union miners, asked a delay of the hearing, to have more time for preparation of the defense.

The suit was brought by the Borderland Coal Corporation, of West Virginia, on behalf of more than sixty non-union operators in the Williamson field of West Virginia, where the union is seeking to organize the miners. Besides seeking an order forbidding further efforts on the part of the union to organize the Williamson field, the operators ask the court to enjoin the collection of union dues through the operators and the cancellation of wage agreements between the union and the operators, the contention of the complainants being that the union is an unlawful organization.

Further action in the removal proceedings growing out of the government's case against local miners and operators charged with conspiracy to violate the Sherman anti-trust laws has been stopped pending a conference between L. Ert Slack, of Indianapolis, who has charge of the prosecution of the case, and Attorney General Daugherty. Mr. Slack says that arguments which were to have been heard in Chicago several weeks ago on a petition for removal were postponed by instructions from the Attorney General, who said that all pending removal proceedings should be suspended pending a conference which he wishes to have with Mr. Slack at Washington. No time has been set for the conference, Mr. Slack said.

Mingo Hearing On: Murray Offers Plan for Settlement, Taft to Name Administrator

FINAL hearings in the investigation by the Senate Committee on Labor of the West Virginia coal-strike situation were begun Monday, Oct. 24. Monday and Tuesday were devoted to hearing representatives of the miners; Wednesday and Thursday representatives of the operators were to be heard and on Friday and Saturday witnesses were to be called by the committee. Thereafter the committee will draft its report and recommendations for submission to the Senate. Members of the committee feel that remedies which may be applied in this case will have equal force in settling other industrial disputes.

Philip Murray, vice president of the United Mine Workers of America, opened the miners' case, submitting what he said was a definite plan for the settlement of the coal controversy. It involves the exercise by the committee of mediation to obtain an agreement between operators and workers which will safeguard what he said are the fundamental rights of miners and operators and provide a reasonable basis for working regulations and conditions, the agreement to be interpreted and applied by an administrator appointed by Chief Justice Taft of the U. S. Supreme Court. Mr. Murray said the following safeguards were essential to regularity of production and peace of coal mines:

Freedom of speech, assembly and movement; rights of workers to organize and bargain through their representatives; protection of workers against discrimination because of membership in labor organizations; protection of unorganized workers against intimidation or coercion by members of labor organizations; assurances that democratic institutions will not be subordinated to industrial control by operators paying and controlling deputy sheriffs and constables or private guards; restoration to former occupation of miners barred from employment because of membership in labor organizations.

Mr. Murray attributed the labor troubles in West Virginia primarily to the influence of the United States Steel Corporation, the Pennsylvania R.R. and allied interests, which he said control a large part of coal lands in the independent field. He denied that the union favored the expropriation of private property or that unionization decreases output. He also denied charges that West Virginia miners and outside operators were in collusion. Mr. Murray said government ownership would require careful deliberation and exhaustive study before it could be applied.

Twelve Hundred Indicted for Armed March

ABOUT the middle of October the Logan County (W. Va.) Grand Jury reported 232 new indictments against members of the army of miners who attempted to invade Logan County. In all the special and regular grand juries in Logan County returned 1,217 indictments for complicity in the insurrection. This is said to be the largest number any grand jury in the state investigating a single violation of the law has ever returned. Among others against whom indictments were granted were Frank Keeney and Fred Mooney, president and secretary, respectively, of District 17, United Mine Workers of America, and William Blizzard, another district official who was said to be the general in charge of the march. The charge against the officials is murder in connection with the killing of John Gore, a deputy sheriff, at Blair Mountain.

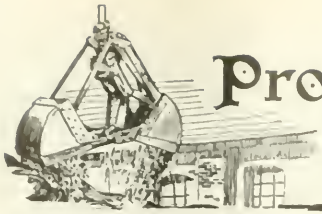
Not only have indictments been returned in the state courts but it seems to be generally understood that an effort will be made to bring many of those indicted before the federal court on charges of treason and for inciting, abetting and sympathy with rebellion. Evidence showing the probable manner of financing the armed rebellion of miners and the march into Logan County was presented to the grand jury in the investigation, miners testifying that $1.50 a month in addition to the regular assessments and dues was checked off the wages of each for some time prior to the insurrection. Two hundred and fifty of the indictments returned charged conspiracy to commit murder.

Keeney and Mooney, in addition to being indicted in Logan County, have been indicted by the Kanawha County Grand Jury for "inciting insurrection in connection with the recent miners' march on Logan County." The officials of District 17, just mentioned, now face charges in four counties—Mingo, Logan, Boone and Kanawha—all incident to the recent armed march. More than 1,200 witnesses have been examined so far by the Kanawha Grand Jury.

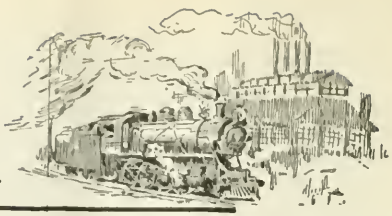
Union May Not Interfere With Contracts Which Preclude Union Membership

JUDGE I. C. HERDDON, of the McDowell County (W. Va.) Circuit Court, has made permanent the injunction restraining the United Mine Workers from inducing the employees of the Algoma Coal & Coke Co. and of other operators in the Pocahontas region to join the union, a contract of service having been made between the operators and the individual miners by which they severally agree not to accept membership in that organization.

In making the injunction permanent the Court perpetually enjoins the defendants, including John L. Lewis, William Green and all other officials or members of the United Mine Workers, from in any way molesting or interfering with or attempting to molest or interfere with the employees of the plaintiffs in the performance and fulfillment of their contracts of service. It also restrains the defendants from compelling or inducing by violence, threats, intimidations, abusive or violent language or by persuasion the employees of the companies in McDowell County, West Virginia to break their contracts of service with the plaintiffs. It also restrains the defendants from inducing or attempting to induce the McDowell miners to join the United Mine Workers of America so long as they are under contract with the Pocahontas operators and it also enjoins the defendants from entering upon the grounds or premises of the Pocahontas companies for the purpose of interfering with employees, interfering with the miners in the performance of their contracts of service or for the purpose of persuading miners to join the United Mine Workers of America.



Production and the Market



Weekly Review

ANOTHER increase in the weekly production of bituminous coal, this time of 573,000 tons, indicates to what extent the seasonal demand is mounting. Statistics of the American Railway Association bear this out; during the second week in October the number of surplus coal cars decreased to 82,535, a reduction of more than 15,000 for that period. Car shortages have already appeared in certain producing sections, which, coupled with the approach of winter, presage much loss of output during the coming season with all the evils that accompany a car shortage.

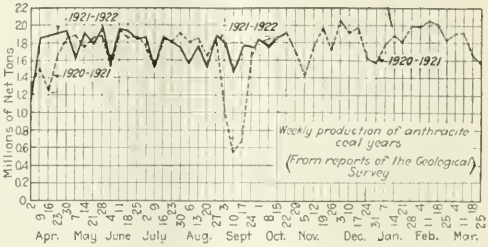
Rail Strike Threat Has Little Effect on Market

Production has been moving steadily upward since early in September, therefore the announcement of the impending railroad strike has failed to materially affect output. At this writing the refusal of buyers to be stampeded into the market because of a threatened tie-up of transportation seems to be justified. The various rail union heads more or less apologetically announced their strike program and several have followed this with a withdrawal of their unqualified support of the "Big Five" transportation unions.

Only in the Middle West has there been a distinct market flurry because of the railroad situation. In other sections buyers are still on a current basis, especially as freight-rate reductions appear to be imminent. New York, Philadelphia and Baltimore are taking slightly more coal, prompted by a better industrial situation and a cautious policy regarding transportation difficulties. New England remains strictly a buyers' market with Hampton Roads shippers urging all the tonnage the consumer will take, to the detriment of the all-rail coals.

The recent offer of the Shipping Board to charter vessels to American exporters at a nominal price is based on the hope that foreign trade might be revived and unemployment lessened. The plan is to charter the vessels through the Department of Commerce at $1 per month on a bare boat form of charter, provided the department could induce a lower freight rate to seaboard for coal through the railroad commission.

Prices, which have been firming up for some time, have been further strengthened by the week's developments. *Coal Age* index of spot prices stands at 93 as of Oct. 24, compared with 90 on Oct. 17.

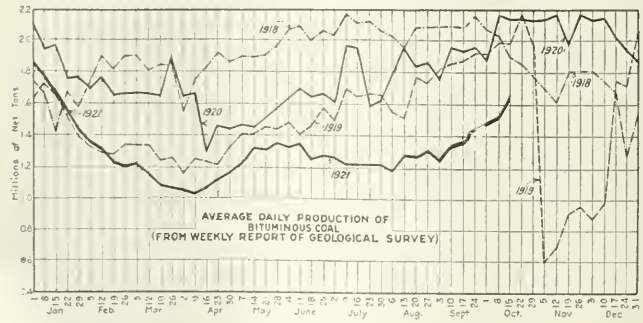

Millions of Net Tons
1921-1922
1920-1921
Weekly production of anthracite coal years
(From reports of the Geological Survey)
Apr. May June July Aug. Sept Oct. Nov. Dec. Jan. Feb. Mar.

Anthracite production is holding steadily and the demand is assuming healthy proportions. Independent producers easily obtain premiums on their family sizes while the steam coals have so improved their position that but little of this tonnage is going under company schedules.

Production of beehive coke is increasing to a degree perhaps out of proportion to the demand. The result is that this market, while more active than for the past few months, received a price set-back last week.

BITUMINOUS

Production increased sharply during the week ended Oct. 15. According to the Geological Survey, the output was 9,696,000 net tons, 573,000 in excess of that for the preceding week. In spite of this increase, however, production is still much below the level of any corresponding week in the past four years. Preliminary reports of the following week—Oct. 17 to 22—show increased loadings of 2,141 cars


Millions of Net Tons
1918
1920
1921
1919
AVERAGE DAILY PRODUCTION OF BITUMINOUS COAL
(FROM WEEKLY REPORT OF GEOLOGICAL SURVEY)
Jan. Feb. Mar. Apr. May June July Aug. Sept Oct. Nov. Dec.

Estimates of Production

(Net Tons)

BITUMINOUS COAL

Week Ended	1921	1920
Oct. 1 (*b*)	8,890,000	11,350,000
Oct. 8 (*b*)	9,123,000	12,103,000
Oct. 15 (*a*)	9,696,000	12,110,000
Daily average	1,616,000	2,018,000
Calendar year	316,177,000	424,149,000
Daily average, calendar year	1,299,000	1,739,000

ANTHRACITE

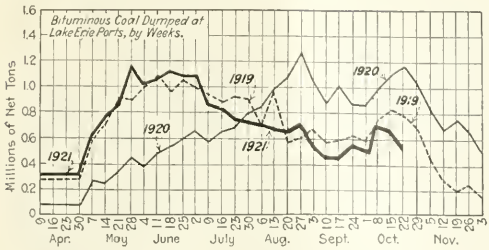
Oct. 1	1,832,000	1,855,000
Oct. 8	1,793,000	1,898,000
Oct. 15 (*a*)	1,843,000	1,906,000
Calendar year (*b*)	70,741,000	69,697,000

COKE

Oct. 8 (*b*)	86,000	400,000
Oct. 15 (*a*)	94,000	404,000
Calendar year	4,293,000	16,874,000

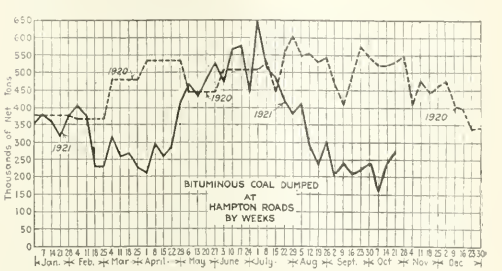
(*a*) Subject to revision. (*b*) Revised from last report.

in the first two days, as compared with the corresponding days of the week preceding.



All-rail movement was somewhat heavier during the week ended Oct. 15, when 2,923 cars were forwarded over the Hudson gateways. This compares with 2,595 cars in the preceding week and 5,163 in the corresponding week of last year.

Although late in the season, Lake coal dumpings are holding up rather well, as shippers are pushing the movement to take advantage of the preferential rates from the mines to lower docks which expire Oct. 31; there is an additional incentive in the probability that any holdovers in dock stocks next spring will be a welcome asset because of the possibility of a miners' strike at that time. Lake dumpings during the week ended Oct. 22 were 583,752 net tons—563,-319 cargo and 20,433 vessel fuel—as compared with 1,138,-217 tons in the corresponding week of last year. The total movement for the season to date is 20,866,700 tons, about 1,200,000 in excess of 1920.



Coastwise business was in a spurt during the week ended Oct. 20. At the Hampton Roads piers 243,948 gross tons were dumped for all accounts, 30,000 tons in excess of the preceding week, but as only six cargoes cleared for export it can be seen to what extent the New England market is being utilized by the shippers of Southern

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	Sept.20, 1921	Oct.10, 1921	Oct.17, 1921	Oct.24, 1921†
Pocahontas lump	Columbus	$4.90	$4.75	$4.50	**$4 50@$4.85**
Pocahontas mine run	Columbus	2.75	2.75	2.65	2.50@ 2.75
Pocahontas screenings	Columbus	2.20	2.05	1.95	*1.50@ 1.65*
Pocahontas lump	Chicago	4.75	4 75	4 75	4.50@ 5.00
Pocahontas mine run	Chicago	2.95	2.60	2.90	2.75@ 3.50
*Smokeless mine run	Boston	5.05	4.85	4 85	**4 75@ 5.00**
Clearfield mine run	Boston	1.95	1.95	1.95	1.75@ 2.15
Cambria mine run	Boston	2.35	2.40	2.45	2.10@ 2.75
Somerset mine run	Boston	1.75	1.85	1.90	1 60@ 2.15
Pool 1 (Navy Staodard)	New York	3.25	3.15	3.20	**3 25@ 3.50**
Pool 1 (Navy Standard)	Philadelphia	3.10	3.10	3.15	3.00@ 3.30
Pool 1 (Navy Standard)	Baltimore	2.75	2.75	2.90	2.75@ 3.00
Pool 9 (Super. Low Vol.)	New York	2.40	2.40	2 50	**2 40@ 2 75**
Pool 9 (Super. Low Vol.)	Philadelphia	2.40	2.40	2 45	2.25@ 2.60
Pool 9 (Super. Low Vol.)	Baltimore	2.40	2.45	2.45	2 35@ 2.60
Pool 10 (H. Gr. Low Vol.)	New York	2.20	2.15	2.20	**2 00@ 2 60**
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2.05	2.05	2 15	2.00@ 2.25
Pool 10 (H. Gr. Low Vol.)	Baltimore	2.15	2.30	2.20	2.10@ 2.30
Pool 11 (Low Vol.)	New York	1.90	1.80	1.85	1.75@ 2.00
Pool 11 (Low Vol.)	Philadelphia	1.80	1.85	1.85	1.75@ 2.00
Pool 11 (Low Vol.)	Baltimore	2.00	2.10	2 00	2.00
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.85	1.75	1.75	**1 65@ 1.95**
Pool 54-64 (Gas and St.)	Philadelphia	1.70	1.75	1.75	1.65@ 1.85
Pool 54-64 (Gas and St.)	Baltimore	1.70	1.85	1.75	*1.60@ 1.75*
Pittsburgh sc'd gas	Pittsburgh	2.65	2.65	2.65	2.60@ 2.70
Pittsburgh mine run (St.)	Pittsburgh	2.20	2.20	2.20	*2.10@ 2.20*
Pittsburgh slack (Gas)	Pittsburgh	2.15	2.15	1.95	*1.80@ 1.70*
Kanawha lump	Columbus	3.45	3.20	3.20	**3 25@ 3 75**
Kanawha mine run	Columbus	2.15	1.95	2.05	**2 00@ 2.30**
Kanawha screenings	Columbus	1.20	1.20	1.10	**1 00@ 1.25**
Hocking lump	Columbus	3.25	3.20	3.20	**3 10@ 3.50**
Hocking mine run	Columbus	2.15	2.00	2.00	**2.00@ 2.20**
Hocking screenings	Columbus	1.20	1.05	1 00	**1 00@ 1.25**
Pitts. No. 8 lump	Cleveland	3.25	3.25	....	3.00@ 3.50
Pitts. No. 8 mine run	Cleveland	$2.15	$2.20	$2.15	**$2 10@ $2.25**
Pitts. No. 8 screenings	Cleveland	1.55	1.55	1.55	**1 60@ 1.75**
Midwest					
Franklin, Ill. lump	Chicago	3.65	3.80	3.90	**3.50@ 4.50**
Franklin, Ill. mine run	Chicago	2.90	2.70	2.85	**3.25@ 4.25**
Franklin, Ill. screenings	Chicago	1.90	1.40	0.95	**2.50@ 3.25**
Ceatral, Ill. lump	Chicago	2.70	2.50	2.50	2.00@ 3.00
Central, Ill. mine run	Chicago	2.40	2.25	2.25	1.75@ 2.75
Central, Ill. screenings	Chicago	1.60	1.45	1.20	**1.25@ 2.25**
Ind. 4th Vein lump	Chicago	2.95	2.95	2.95	2.35@ 3 50
Ind. 4th Vein mine run	Chicago	2.40	2.55	2.50	**2.35@ 2 75**
Ind. 4th Vein screenings	Chicago	1.65	1.50	1.60	**1.50@ 2 15**
Ind. 5th Vein lump	Chicago	2.90	2.70	2.70	2.15@ 3.25
Ind. 5th Vein mine run	Chicago	2.40	2.50	2.50	2.25@ 2.75
Ind. 5th Vein screenings	Chicago	1.65	1.45	1.45	**1.25@ 2.15**
Standard lump	St. Louis	2.75	3.40	3.40	**3.50@ 3 75**
Standard mine run	St. Louis	1.95	1.85	1.75	**1.75@ 2.25**
Staodard screenings	St. Louis	0.60	0.55	0.60	**0 75@ 1.00**
West. Ky. lump	Louisville	2.75	2.95	3.15	*2.50@ 3.25*
West. Ky. mine run	Louisville	2.25	2.25	2.30	**2 10@ 2.65**
West Ky. screenings	Louisville	1.25	1.30	1.40	*0.75@ 1.75*
South and Southwest					
Big Seam lump	Birmingham	3.75	3.75	3.75	3.25@ 4 25
Big Seam mine run	Birmingham	2.15	2.15	2.15	2.00@ 2.30
Big Seam (washed)	Birmingham	2.40	2.30	2.30	2.15@ 2.40
S. E. Ky. lump	Louisville	3.50	3.65	3.75	**3.75@ 4.00**
S. E. Ky. mine run	Louisville	2.15	2.20	2.30	*2.00@ 2.40*
S. E. Ky. screenings	Louisville	1.50	1.25	1.25	**1.20@ 1 50**
Kanaas lump	Kansas City	5.75			
Kansas mine run	Kansas City	4.25			
Kansas screenings	Kansas City	2.50			

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	Oct. 10, 1921 Independent	Oct. 10, 1921 Company	Oct. 17, 1921 Independent	Oct. 17, 1921 Company	Oct. 24, 1921† Independent	Oct. 24, 1921† Company
Broken	New York	$2 61	.....	$7.60@$7.75	.....	$7.60@ $7.75	.....	$7.60@$7.75
Broken	Philadelphia	2 66	$7.60@$8.20	7.75@ 7.85	$7.60@ $8.20	7.75@ 7.85	$7.60@ $8.20	7.75@ 7.85
*Broken	Chicago	5 63	13.40	12.80	13.40	12.80	13.40	12.80
Egg	New York	2 61	7.75@ 8.00	7.60@ 7.75	7.75@ 8.25	7.60@ 7.75	**8.00@ 8.25**	7.60@ 7.75
Egg	Philadelphia	2 66	8.10@ 8.35	7.75@ 7.85	8.10@ 8.35	7.75@ 7.85	8.10@ 8.35	7.75@ 7.85
*Egg	Chicago	5 63	13.40	12.80	13.40	12.80	13.40	12.80
Stove	New York	2 61	8.50@ 8.75	7.90@ 8.10	8.50@ 8.75	7.90@ 8.10	**8 50@ 9 00**	7.90@ 8.10
Stove	Philadelphia	2 66	8.25@ 8.75	8.00@ 8.35	8.25@ 8.75	8.00@ 8.35	**8 50@ 8 75**	8.00@ 8.35
*Stove	Chicago	5 63	13.40	12.90	13.40	12.90	13.40	12.90
Chestnut	New York	2 61	8.25@ 8.50	7.90@ 8.10	8.25@ 8.50	7.90@ 8.10	**8 50@ 9 00**	7.90@ 8.10
Chestnut	Philadelphia	2 66	8.00@ 8.50	8.05@ 8.25	8.05@ 8.50	8.05@ 8.25	**8.25@ 8 75**	8.05@ 8.25
*Chestnut	Chicago	5 63	13.40	12.80	13.40	12.80	13.40	12.80
Pea	New York	2 47	5.00@ 5.50	6.05@ 6.45	5.25@ 5.75	6.05@ 6.45	**5 50@ 6 00**	6.05@ 6.45
Pea	Philadelphia	2 38	4.50@ 5.50	6.15@ 6.25	4.75@ 5.50	6.15@ 6.25	**5 00@ 5 50**	6.15@ 6.25
*Pea	Chicago	5 63	12.40	11.15	12.40	11.15	12.40	11.15
Buckwheat No. 1	New York	2 47	3.00@ 3.25	3.50	3.00@ 3.25	3.50	**3 25@ 3 50**	3.50
Buckwheat No. 1	Philadelphia	2 38	2.75@ 3.00	3.50	2.75@ 3.00	3.50	**2.75@ 3 25**	3.50
Rice	New York	2 47	2.00@ 2.25	2 50	2.00@ 2 40	2.50	**2.25@ 2 50**	2.50
Rice	Philadelphia	2.38	1.75@ 2.00	2.50	1.75@ 2.00	2.50	1.75@ 2.00	2.50
Barley	New York	2 47	1.25@ 1.50	1.50	1.25@ 1.50	1.50	1.25@ 1.50	1.50
Barley	Philadelphia	2 38	1.00@ 1.25	1.50	1.00@ 1.25	1.50	1.00@ 1.25	1.50
Birdseye	New York	2 47	.....	2.50	.....	2.50	.....	2.50

*Prices and freight rates, net tons; quotations f.o.b. cars, Chicago.
†Advances over previous week shown in **heavy type**, declines in *italics*

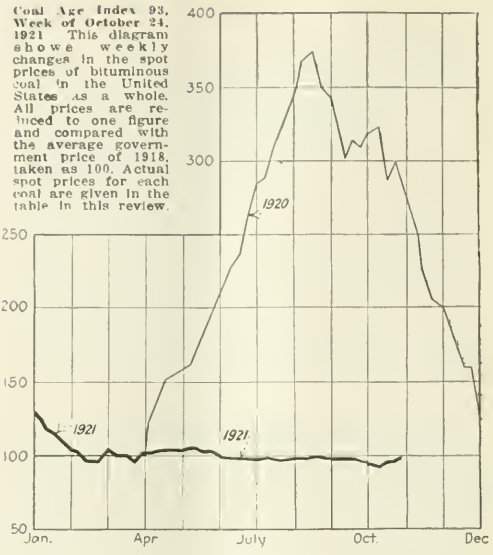
coal. Exporters are concentrating their attention on South America and the West Indies, the only markets that are now taking coal where British competition has not, at least, temporarily eliminated the American trader.

The domestic market is progressing more satisfactorily, although as in the steam section, expectation of freight reductions is playing havoc with future orders. Householders are coming into the market because of the cooler weather but they are not buying their full requirements at this time. Resultant sizes have been strengthened, especially in the Middle West, by the strike talk and prices have moved up from last week's distress quotations. Should the strike fail to demoralize coal deliveries there is no doubt that the spot steam market will mark time in those sections where recent buying has been predicated on the possibility of a transportation tie-up.

ANTHRACITE

Production of hard coal during the week ended Oct. 15 was 1,843,000 net tons, according to the Geological Survey, as compared with 1,793,000 in the preceding week. The seasonal domestic demand has been augmented by purchases made as a precaution against the possible rail strike. Independent prices on steam sizes have firmed up to very near the company schedule, while their domestic quotations range 50c.@$1 over the old-line figures.

Cumulative production to the end of September was 66,800,000 net tons, about 1,700,000 tons ahead of 1920 and exceeded only three times in the past eight years, the most recent being 1918, a year of very large washery production. The decision of the Glen Alden Coal Co. to reopen immediately six idle collieries has averted a general strike. The decision means the return to work of 5,000 miners who have been out of employment since the Kohler bill became effective in July. Shipments via all-rail to New England over the Hudson were 2,961 cars in the week ended Oct. 15, a slight decrease from the preceding week. Lake dumpings are still good, being 96,350 net tons in the week ended Oct. 19, as compared with 103,240 the week before.



Coal Age Index 93, Week of October 24, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.

COKE

Production of beehive coke amounted to 94,000 net tons during the week ended Oct. 15. This was an increase of 8,000 tons over the week before and reflects the gradual improvement in production noted recently.

The Frick Coke Co. has resumed operation of 600 ovens, after an idleness of more than six months. Within the next ten days more ovens will be reopened.

Foreign Market And Export News

Coal Paragraphs from Foreign Lands

GERMANY—Production in the Ruhr during the week ended Oct. 8 was 1,767,000 metric tons, according to a cable to *Coal Age*. This compares with 1,778,000 tons in the preceding week.

German production, exclusive of the Sarre district and the Palatinate, from January to August, 1920, was as follows: Coal, 84,000,000 metric tons, as compared with 67,000,000 tons for the corresponding period in 1919; lignite, 71,000,000 tons, as compared with 60,000,000; and coke, 16,000,000 tons, as compared with 13,000,000 tons. During the month of August alone the output was 10,700,000 tons, as compared with 8,800,000 tons last year; lignite, 9,600,000, as compared with 8,100,000; and coke, 2,200,000, as compared with 1,900,000.

ITALY—Quotations cabled to *Coal Age* show Cardiff steam firsts unchanged at 43s. 6d. on the Genoa market

BELGIUM — The situation on the coal market is quite unchanged. In the industrial coal section stocks continue to accumulate and have now reached a total of over 627,000 tons.

NEW SOUTH WALES — Exports of coal from Newcastle, N. S. W., during September, 1921, were 322,000 tons.

SPAIN—Austrian coal is quoted f.o.b. Barcelona as follows: Screened 100 pesetas, large 95, small 75@80. The freight rate from Gijon is now 16 pesetas.

SPITZBERG—The first cargo of coal shipped from the Island of Spitzberg arrived in Rotterdam in August. Dutch observers are of the opinion that Scandinavian countries are best adapted for the importation of this coal although the price, laid down at Dutch ports, permits successful competition with English and German coals.

CZECHO-SLOVAKIA.—The output during the second quarter of 1921 shows a tendency toward stabilization, and the individual working capacity of the miner has increased. The total output for the three months was 29,253,356 quintals of bituminous and 50,423,510 quintals of lignite; 3,370,236 quintals of coal coke, 176,632 quintals of coal briquets, 5,589 quintals of lignite coke and 444,816 quintals of lignite briquets. (A quintal=100 lb.)

United States Coal and Coke Exports and Imports During September

Exports of coal continued to decrease during September, the returns to the Bureau of Foreign and Domestic Commerce show. In the corresponding month of last year, exports of bituminous coal exceeded 4,000,000 tons. This year they were less than a million and a quarter tons. The detailed figures are as follows, in gross tons:

	September, 1920	September, 1921
Anthracite	325,234	287,268
Bituminous	4,011,424	1,211,610
Exported to:		
France	449,704	17,045
Italy	150,580	17,898
Netherlands	290,786	.....
Sweden	144,502	.....
Switzerland	51,667	.....
Canada	1,763,246	1,034,816
Panama		9,606
Mexico	15,847	13,688
British West Indies	19,519	6,305
Cuba	125,156	31,748
Other West Indies	18,805	3,653
Argentina	276,680	33,659
Brazil	135,561	24,411
Chile	38,007	1,455
Uruguay	48,549	.....
Egypt		5,916
Other countries	482,815	11,410
Coke	80,377	17,634
Anthracite	2,510	137
Bituminous	126,197	112,762
Imported from:		
United Kingdom	.....	435
Canada	103,991	96,632
Japan	350	8,464
Australia	21,506	7,230
Other countries	350	1
Coke	2,150	1,450

British Overproduction Must Find Outlet

Export Quotations Again Reduced—Foreign Demand Unsatisfactory—Grave Operating Problems Confront Producers—Heavy French Stocks Accumulate

Production in the United Kingdom during the week ended Oct. 8 was 4,287,000 gross tons as compared with 4,114,000 in the week preceding. Cabled quotations to *Coal Age* show further slight reductions for export. Foreign buyers are not active, apparently withholding orders in the belief that still lower prices must come.

A provisional estimate places the September exports from Great Britain at 3,400,000 gross tons, or about 300,000 tons in excess of the August figure. Because of high freight and mine costs in the United States it has been possible for British exporters to secure an order from San Francisco and numerous inquiries have been received, aggregating a large tonnage.

The fact that the English are underselling American coals in Italy by $2 per ton has not eliminated the latter from that market. It is believed that the British quotations are only temporary, induced by an anxiety to clear surplus stocks and provide production. In further favor of the returning American competition is the labor dispute in Great Britain, the necessity of reducing wages being caused by the ending of the Government subsidy.

The Miners' Federation has summoned an emergency meeting in London to deal with the complications which have arisen in connection with the fixing of wages for October. The miners contend they are entitled to 112 per cent on the 1915 standard rate, the owners arguing for 51.68 per cent.

In the North Wales area 3,000 miners have been unemployed since the stoppage and the closing of the collieries involves a further 15,000 men. In other districts, 2,500 miners have received 14 days' notice to stop work.

British Seek French Buyers

Many collieries are not making a profit and owners are debating the advisability of closing down. The iron and steel trades are making no demands and only 50 out of 500 blast furnaces are operating. The only normal call is from the public gas works and the railroads, the household demand having fallen partly because the public learned how to economize during the stoppage.

Consumers are still being importuned to buy English coals at prices which are extremely attractive. These quotations are so low that competition of home coals is extremely difficult, even with the reductions in costs that have been made. The French Midi Ry. has made another purchase having contracted for 50,000 tons of Monmouthshire large at 25s.

PRODUCTION OF COAL IN FRANCE, JAN.-JUNE, 1921, IN METRIC TONS

Jan.	2,427,588
Feb.	2,204,211
Mar.	2,320,318
April	2,316,250
May	2,162,307
June	2,408,381
Total	13,839,055

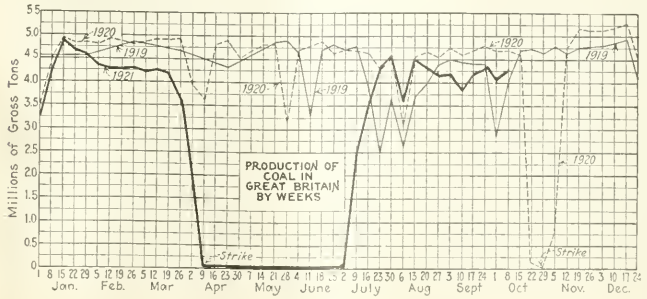
To this total may be added 4,436,000 tons from the Sarre district, making in all 18,275,000 tons.

Exports at Minimum; Hampton Roads Busy With Coastwise Tonnage

The coastwise trade was given a strong stimulus by the prospect of a railroad strike. The price of Pools 1 and 2 advanced very noticeably during the week, Pool 1 being quoted $5.15@$5.25, and Pool 2 $4.80@$4.90, an increase of about 30c. Rates on coal to New England also advanced during the week, barges and schooners being chartered for $1@$1.15, as against 90c.@95c. for the week before.

Export business remained dull, with no coal moving except in small quantities to South America and the West Indies. Accumulations decreased slightly during the week, while vessel tonnage awaiting cargo dropped down to approximately 10,000 tons. The bunker business has not been as brisk as usual, but prices advanced along with cargo coal.

The Virginia Ry., serving the Sewall's Point Piers, has announced that it does not anticipate any severe tie-up even if the railroad strike does occur, because of a large number of men said to be already in sight for handling trains if the unions walk out. The N. & W. and C. & O. were not included in the first three groups ordered out, and no announcement has been made as yet by them as to the prospects for continued service in the event of the strike.


PRODUCTION OF COAL IN GREAT BRITAIN BY WEEKS
Millions of Gross Tons
1920
1919
1921
Strike
Jan. Feb. Mar Apr May June July Aug Sept Oct Nov. Dec.

PIER SITUATION

	Week Ended Oct. 13	Week Ended Oct. 20
N. & W. Piers, Lamberts Point:		
Cars on hand	1,655	1,286
Tons on hand	87,751	68,517
Tons dumped for week	99,569	123,301
Tonnage waiting	12,500	8,100
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	1,336	1,461
Tons on hand	66,800	73,050
Tons dumped for week	74,856	75,203
Tonnage waiting	14,000	700
C. & O. Piers, Newport News:		
Cars on hand	782	776
Tons on hand	39,100	38,650
Tons dumped for week	36,273	45,444
Tonnage waiting	4,715	1,575

Pier and Bunker Prices, Gross Tons

(Foreign Bunker Quotations by Cable to Coal Age)

PIERS

	Oct. 15	Oct. 22†
Pool 9, New York	$5.75@$6.00	$5 90@$6.10
Pool 10, New York	5.50@ 5.65	5 65@ 5 80
Pool 9, Philadelphia	5.80@ 6.00	5 80@ 6.00
Pool 10, Philadelphia	5.50@ 5.70	5 50@ 5.75
Pool 71, Philadelphia	6.00@ 6.25	6.00@ 6.25
Pool 1, Hamp. Rds.	4.90@ 5.00	5.15@ 5.25
Pools 5-6-7, Hamp. Rds.	4 25@ 4.40	4.25@ 4 50

BUNKERS

Pool 9, New York	6.10@ 6.20	6.25@ 6 35
Pool 10, New York	5.80@ 5.90	6 00@ 6 15
Pool 9, Philadelphia	5.80@ 5.90	6 00@ 6.25
Pool 10, Philadelphia	5.75@ 6.00	5.75@ 6.00
Pool 71, Baltimore	6.00@ 6.25	6.50@ 6.00
Pool 1, Hamp Rds.	5.00@ 5.15	5 25@ 5 40
Pool 2, Hamp. Rds.	4.75@ 4.90	5 00@ 5 10
Welsh, Gibraltar	47s. 6d. f.o.b.	47s. 6d.f.o.b.
Welsh Rio de Janeiro	65s. f.o.b.	65s. f.o.b.
Welsh, Lisbon	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, La Plata	60s. f.o.b.	60s. f.o.b.
Welsh, Madeiria	52s. 6d. f.a.s.	52s. 6d. f.a.s.
Welsh, Teneriffe	52s. 6d. f.a.a.	52s. 6d. f.a.s.
Welsh, Genoa	55s. t.i.b.	55s. t.i.b.
Durham, Newcastle	35s.@37s.	35s.@37s.
Belgian, Antwerp	110 fr.	110 fr.

C.I.F. Prices, American Coal

(In Gross Tons)

	Oct. 15 Low Vol.	Oct. 15 High Vol.	Oct. 22† Low Vol.	Oct. 22† High Vol.
French Atlantic	$8.80	$8.35	$9.10	$8.95
United Kingdom	8.95	8.75	9 05	8.90
West Italy	8.85	8.60	9 40	9.25
Scandinavia	9.80	9.40	9.75	9.60
West Indies	6.80	6.30	7 00	6.80
The Plate	....	....	9.90	9.75
Rio Janeiro	....	....	9.40	9.25

These quotations are purely nominal and as far as can be learned, no business is being done in these markets.

Current Quotations British Coals f.o.b. Port, Gross Tons

Cardiff	Oct. 15	Oct. 22†
Admiralty Large	30s. 6d.	*29s.@30s.*
Steam, Smalls	19s. 6d.	19s.@20s.
Newcastle:		
Best Steams	27s. 3d.	*25s.@27s.6d.*
Best Gas	27s. 3d.	*25s.@26s.*
Best Bunkers	26s. 6d.	*25s.@26s.*

†Advance over previous week shown in heavy type, declines in *italics*.

AUSTRALIAN COAL MINERS have accepted the operators' stipulation for separate local working agreements. It is also agreed that if the negotiations are unsuccessful the dispute will be referred to arbitration. The original demands were for a national agreement with a refusal to resort to arbitration.

The Victorian Electricity Commissioners of Australia are contracting for the purchase from the Zeitz Co. of Germany of the briqueting plant for

use at the lignite mines at Morwell The cost is stated to be £110,000.

Export Clearances, Week Ended Oct. 20.

FROM HAMPTON ROADS

	Tons
For Atlantic Islands:	
Sw. SS. Gothia, for Barbados	2,642
For Argentine:	
Br. SS. Ryde, for Argentine	4,837
For Canada:	
Br. Bark Maid of England, for Bathurst, N. B.	1,005
For Chile:	
Am. SS. Orcus, for Chilean ports	1,017
For Cuba:	
Br. SS. Finchley, for Havana	3,283
For Mexico:	
Am. SS. Panuco, for Vera Cruz	1,014

FROM PHILADELPHIA

For Atlantic Islands:
SS. Santurce, for Guanica, Porto Rico
Br. SS. Blackheath, for Alexandria

Switzerland Liquidates Coal Losses

During the period of high demand last year Switzerland, like other European states, which are dependent upon foreign coal importations, had the required fuel imported by the State and for the account of the State, and the losses which were unavoidable had to be carried by the government. The Swiss Coal Association at Basle (Schweizerische Kohlengenossenschaft, Basel) an organization, called forth by the Federal Department for economical policy, had been intrusted with the purchase of the coal required for the winter 1920-21. This association got into a difficult position. Considerable quantities of coal were bought at high prices, chiefly from the United States, and this was very difficult to dispose of, requiring a great sacrifice which the organization alone was not able to endure.

The exclusive right of importing coal, which had been granted the association by the government, would have made it possible to make up for the losses, but with this end in view it would have been necessary to keep prices far in excess of the general market. Therefore, in order to allow the Swiss industries to acquire coal at normal prices the Federal authorities decided that the State would have to bear the losses and that as soon as possible the general coal trade would again be given free rein. The association consented to liquidating after the federal government had agreed to reimburse the paid in capital, including the current interest, following which the association was dissolved and coal is now being freely imported.

Average Daily Italian Coal Receipts in Italian Controlled Vessels

(In Metric Tons)

Port	June, 1920	June, 1921
Leghorn	1,149	2,127
Trieste	1,002	1,418
Palermo	992	1,301
Messina	732	1,144
Genoa	676	1,113
Spezia	978	1,087
Civitavecchia	1,300	1,000
Bari	....	923
Naples	1,163	824
Catania	....	820
Venice	830	817
Ancona	772	814
Salerno	....	774
Taranto	....	718
Savona	932	633
Reggio	....	601
Barletta	....	554
Brindisi	792	536
Torre Annunziata	1,261	513

Reports From the Market Centers

New England

BOSTON

Strike Prospect Discounted—Market Unchanged—Prices Continue on Low Level — Anthracite Producers Well Supplied with Orders.

Bituminous—The possibility of labor difficulty on the railroads has apparently had no effect whatever upon buyers. Not only are the latter well stocked for the present, but they are inclined to discount any serious interruption to service on the Eastern railroads. Among railroad men here there is a strong sentiment that an actual walk-out could have only a beneficial effect on the general situation. The prevailing inclination is to await developments, for there is practically no anxiety over the outcome.

A certain volume of coal is being absorbed in weekly quotas, but the pressure is still from the buyer to the seller, and there is observed no increase in buying power in any direction. A few small foundries have started up on a 50 per cent basis, not so much because of new business as to operate the plants in cold weather and furnish work for old hands. The textile mills are only maintaining the rate of production that was characteristic of the summer months, and in many cases there is enough experimenting with oil and electricity for power that coal has been allowed to accumulate to such extent that several large units will hardly be in the market again until well into next season.

Early in the week certain owners of coastwise vessels and barges tried to advance marine freights on the strength of high winds and fog, but aside from a few small barges from Hampton Roads no bottoms have been chartered at any advance and delivered prices here have remained unchanged. Over the Philadelphia and New York piers only a minimum tonnage is being dumped; prices there are also on the lowest basis of the season and shippers see no prospect of better conditions in the near future.

From rehandling points at Providence, Boston, and Portland coal is being sent inland to points actually west of the Connecticut River, and not only is this a regular feature but Hampton Roads coals are being sent to New York Harbor to bunker steamers in competition with Pennsylvania coals and ships are being sent with cargoes around Nova Scotia to the St. Lawrence River to serve points that ordinarily are reached all-rail from central Pennsylvania. These are conditions that make some of our factors reflect seriously on the need of radical revision of the commodity tariffs that are 75 per cent higher than during much of the war period.

Central Pennsylvania operators continue hopeful of better prices and hesitate to commit themselves for more than a few weeks at a time, but meanwhile they are dragging the bottom, so far as orders are concerned. There is little hope now of any spurt in all-rail business for the balance of the year.

Anthracite—While in many respects it is a weather market, the current demand for domestic sizes is reasonably steady. Certain of the old-line companies have made an extraordinary showing in the volume moved this season, as compared with previous years. A surprisingly small proportion has gone into storage. Retail demand here is constant now, and the dealers look for good business well into December.

Tidewater—East

NEW YORK

Demand for Anthracite Stronger—Bituminous Market Quiet after Short-Lived Flurry—Strike Threat Discounted—Quotations Firmer.

Anthracite—There is more strength in the market, due to the activity developed by the threatened rail strike. Newspaper stories that New York City, with its coal yards filled, would have only about two weeks' supply of coal on hand, added to the influx of orders.

Because of the scarcity of stove and chestnut, egg coal began to move faster than for the past few months. Pea continues to move slowly.

Reports from the coal fields show that some of the smaller mines which were closed because of the lack of demand are now preparing to resume operations. Independent coals show a strengthening in most instances.

The steam coals are more active. Local retail dealers, however, are not adding to their already large supplies unless they have orders calling for these sizes.

Bituminous—The market is quiet, but not so quiet as it was before the strike threats appeared in print. Consumers whose reserve stocks were not large entered the market and quickly absorbed the free coals, after which the rush subsided. Quotations did not show any appreciable increase over those of the previous week.

There still exists some anxiety over the strike situation and operators are

receiving many inquiries. Some large consumers have requested that deliveries be speeded up.

The railroads appeared in the market and are said to have bought heavily in anticipation of trouble. There was some increased effort to place contracts running up to April 1 but the operators were not anxious to tie up more of their output. Most of them look for better prices for spot coals with the advance of cooler weather, although discounting any likelihood of much increased business from the threatened rail trouble.

Not so much is heard here regarding shipments of Pocahontas and New River coals to local consumers. It is necessary to make shipments of at least 1,000 tons at a time and with the exception of public utilities and some individual industries there are few who have facilities for handling such quantities.

PHILADELPHIA

Anthracite Demand Improves—Bituminous Braced by Strike Talk — Spot Prices Firm — Producers Conservative.

Anthracite—Without anything like a rush for coal there is at least an increase in the retail demand. There is no doubt that the rail strike talk has impelled some buying.

Consumers cling sharply to their objections to present prices. Dealers receive many requests for prices which never result in orders, indicating the manner in which the user is shopping around. Due to this tendency of the consumer there are many variations of so-called standard retail figures.

The steam sizes, with the possible exception of rice, are in much better demand. Buckwheat has become fairly difficult to obtain at spot prices and independents are reaching the point where they are able to get the full $3.50 price for it. The companies report a strong demand for barley and the independents have little if any for the spot market.

Bituminous—Early in the week the shippers received numerous inquiries for prices. Many of these requests were probably put out for the purpose of getting information, although a larger proportion than for some time resulted in actual business. For the most part, however, the larger buyers continued to treat the probability of a strike as remote.

Big buyers feel certain of a freight reduction and are basing their purchases on this belief. Railroads still constitute the one considerable taker of fuel. Even now the rail lines have much coal stored in cars on the tracks, and one line which some years ago took a large number of low-side wooden cars out of service is utilizing this equipment in that manner.

The general feeling is that only a fictitious prosperity can come out of a strike. However, producers do not hesitate to inform consumers that they are ready to serve them and that present prices are extremely low. This conservative attitude has already served to keep market prices from jumping upward.

The very best grades, such as Pools 1, 71 and 9, constitute the bulk of the trading, and there is at times a tendency to shortness of Pool 1, at least prompt shipment cannot always be guaranteed.

BUFFALO

Getting Ready for Rail Strike—Good Supply Precludes Much Increased Buying—Anthracite More Active.

Bituminous — If the railroad strike takes place there may be a rush for coal, but it is not at all certain, for jobbers are urging consumers to lay in all they can. The increased demand is not large enough to affect prices and it will not be unless the strike cuts off the sources of supply for some time.

So much preparation is being made to resist that the strike force will be discounted before it takes place. There are plenty of business men, who may be badly affected by a tie-up, who say that they are ready to stand a "good one," as one of them puts it, and have it over.

Sales on the road are few as consumers are well covered. Prices remain at $3 for Youghiogheny gas lump, $2.75 for Pittsburgh and No. 8 steam lump, $2.50 for Allegheny Valley and all mine run, and $1.85@$2 for slack, adding $2.36 to Allegheny Valley and $2.51 to other coals for freight.

Anthracite — The trade is showing more activity. Distributors have no surplus and refuse to sell to retailers unless they are old customers. Independents are putting their prices up.

Lake—Shipments are fairly good. Loadings for the week ended Oct. 19 were 96,350 tons, of which 41,100 tons cleared for Duluth and Superior, 26,700 for Milwaukee, 17,800 for Chicago, 7,200 for Manitowoc, 1,300 for Racine, 1,100 for Kenosha and 850 for Marinette.

Coke — Demand does not increase, though the furnaces are a little more active. If there is to be much business in iron before next spring there is nothing to indicate that the trade here is preparing for it. A moderate revival seems to be the idea.

BALTIMORE

Railroad Strike Threat Remains Keynote of Bituminous Situation—No Decided Rush of Orders—Prices Stable—Anthracite Market Improves.

Bituminous—While the keynote, especially for future trading, has largely to do with the strike threat on the railroads this phase is by no means dominating. Apparently feeling that some way will be found out of the difficulty in view of the fact that labor cannot afford to force the issue at a time when the railroads are in the best strategic position in years as to public opinion and the upbuilding of a new operating system, business men are not ordering supplies of coal in any considerable quantities.

Of course there are some cases of ordering of reserves, and in addition there is the usual stimulation incident to the approach of colder weather. The better grades are now being quoted in many cases from 15c.@25c. above the figures of a week ago. This applies to both gas and steam coal.

The bunker trade remains poor, and sales of Pools 71 and 9, or equivalent, are being made in many cases on a basis that is below the line price net ton basis. This is due in some cases, of course, to endeavor to avoid demurrage charges impending. The export situation continues light, although there are reports of chartering and contract inquiries of a substantial nature that seem to promise improvement in the next few weeks.

Anthracite—There is more response in the way of ordering, as a result of the railroad strike threat. The near approach of winter is naturally inducing those consumers who have no coal to lay in supplies at once, but on the other hand there is a decided nervousness indicated in the urgent messages received in many coal offices from customers who have delayed buying, or who have bought only small quantities.

Yard supplies, which had been overabundant, have been materially lessened. After a wretchedly poor delivery of coal during August and September, which curtailment of receipts left the city supply about two months short of normal, there has been an increase recently of movement from mines.

Canada

TORONTO

Heavy Domestic Demand—Stove Coal Scarce — Bituminous Market Quiet — Prices Unchanged.

Dealers have been kept busy filling domestic orders, which are coming in rapidly. Yard supplies are sufficient to last for some time and shipments of nut and egg are coming forward steadily, but there is still a decided shortage of stove, which is much in demand.

Bituminous markets continue quiet. Slack is in somewhat better call, and is getting rather scarce. The trade has not yet been noticeably affected by the threatened railroad strike. Quotations are unchanged.

Northwest

MINNEAPOLIS

Slight Market Pick-Up Due to Strike Threat—Seasonal Movement Hampered by Freight Rate Discussions.

Despite the threatening of a rail strike, the coal movement is not showing the pick-up that it should. There is some increase, of course, for people

have been running so close in their supplies that they realize any interruption to the traffic movement would mean an early exhaustion of their stocks.

The Northwest has a good supply of coal on the docks, and would be in good shape if the roads in this section were able to move at all. The stocks are the largest in four or five years. Even if the strike should stop further Lake movement the tonnage on hand would go well through the winter. Of course the Northwest would be in a bad way in the spring when the expected coal strike is due. It is commonly believed that the dock companies propose to store as much as possible so that they will be supplied if the April 1 strike occurs.

For some weeks past, the docks have been shipping a fairly good tonnage into the interior. This movement will be better distributed than usual because of the retail orders all running to smaller lots. If severe weather sets in quickly, there will be less difficulty in supplying all needs, temporarily, than if people were taking larger quantities.

The application before the I. C. C. for a revision of coal freight rates is one more case where such action tends to delay people buying coal. All summer and fall this phantasy of reduced freight rates has hung before the eyes of the coal buyer. It has encouraged waiting and delay, though they threatened a serious congestion of orders, if severe weather should set in. Perhaps it will do no serious harm at this time for all know that they must have coal to meet cold weather, and a reduction of freight costs, effective in thirty days, would do nothing toward keeping warm during those thirty days. Previous disappointments have also shown that predictions are far from realities in the matter of accomplishing freight reductions.

MILWAUKEE

Rail Trouble Fails to Stir Market—Demand Fluctuates with Weather Conditions — Fires Force Marketing of Screenings.

There is a fluctuating demand for anthracite and domestic soft coals, but as a rule orders are light. The prospect of a halt in receipts, should there be a railway tie-up, does not seem to disturb industrial circles, as it is generally felt that Milwaukee has sufficient stocks to tide over any emergency.

Dock fires continue to force the sale of screenings at a low figure. This puts Western screenings at a disadvantage. The general schedule for anthracite and bituminous is firmly maintained. Dock men are burdened with hard coal screenings, which are absolutely stagnant. They have been offered as low as 75c., delivered, and in some cases have been used for filling purposes. Before prohibition, when malting plants were running to capacity, these screenings were easily sold at a fair price for use in malting kilns.

Receipts by Lake during October promise to be heavier than those of the month previous. Thus far they amount to 82,023 tons of anthracite, and 175,392 tons of soft coal, making the season's receipts to date 829,745 tons of the former and 2,215,464 tons of the latter, a gain of 177,812 tons of anthracite and 460,709 tons of soft coal. A number of cargoes of soft coal will be delivered late in the season, and will be held afloat until needed.

DULUTH

Threatened Strike Causes no Buying Impetus—Dock Supply Adequate for Winter—All Prices Are Firm.

The threatened strike of railroad men is causing but little speeding up of buying. Country dealers are either well supplied or else it is felt that the strike will fail to cause serious difficulty in the coal market.

Dealers are taking a normal amount of coal now and shipments from Lower Lake ports are holding up. Last week thirty-three cargoes arrived, of which six were anthracite, and sixteen cargoes are on the way, two being hard coal.

Sufficient coal is on the docks now to more than supply the Northwest for the winter, but a possible shortage looms next spring, and coal men are holding prices in anticipation of increased demand at that time.

Buckwheat still sells at $6 on some docks. A disposition to firm up is noticeable, however. Nearly all damaged screenings have been cleaned out at $3, and good screenings are $4.

A surplus of steam coal will be left on the docks by spring, caused by the business depression. Dock men, however, say that sales will not be reduced as much as was formerly thought when it became known that the Mesaba iron mines would be shut down most of the winter. It has been brought out that the iron range uses but 500,000 tons annually, which is but one-tenth of the sum total of coal shipped from the Head-of-the-Lakes docks in one season.

Retail delivery in Duluth is good. Strong demand has developed in the last week and dealers are having difficulty in supplying customers, because of limited hauling facilities.

Inland West

COLUMBUS

Strike Agitation Causing Some Increased Demand — Domestic Moving Better—Lake Trade Still Active.

The market is increasingly active, due partly to the strike agitation and also to colder weather. This is shown in domestic sizes particularly, although some increased demand for steam grades is reported. While there is no special alarm, dealers in certain sections, where stocks are low and where there may be transportation difficulties, are stocking up.

A survey of the situation shows that there are fairly good stocks in central Ohio territory. Consumers are about as well supplied as usual for the time of the year. This is especially true in the city sections, while in rural communities less coal has been accumulated by householders.

There has been no increase in prices as a result of the better volume of business. Hocking lump retails $6@$6.50. West Virginia splints are $7.25@$7.75 and Pocahontas $9@$9.50. Anthracite is rather firm around $15. Mine prices have increased with the better call and are shown in the Weekly Review.

Steam demand shows a fair increase. This applies especially to public utilities and municipalities. There is a better market for screenings and prices have advanced as a result. Nut, pea and slack is now selling $1@$1.30. Railroads are also buying better and this is having an appreciable effect on the market. Some buying on the part of manufacturers and general steam users is reported.

The Lake trade is still rather active, as far as loadings at the lower docks are concerned. A large part of this comprises coal mined in West Virginia and Kentucky. Ohio mined coal is not showing up heavy. The T. & O. C. docks at Toledo during the week ended Oct. 15 loaded 35,424 tons as compared with 42,752 the previous week, making a total of 983,620 tons for the season. Up to Oct. 16 of last year these docks had loaded 1,355,141 tons. During the same week the H. V. docks at Toledo loaded 181,461 tons, making 3,838,423 tons for the season, compared with 2,989,670 tons last year.

DETROIT

Strike Threat Fails to Affect Market—Stocks Are Ample — Domestic in Seasonal Demand—Prices Unchanged.

Bituminous—No important increase in buying demand from steam consumers is apparent in the Detroit market that can be ascribed to the threatened strike of railway workers. Buyers are manifesting little interest in the prospective tie-up.

Public utility companies are reported to be in fairly comfortable position. The Detroit City Gas Co. has about 30 days' supply of coal, while the Detroit Edison stock is said to be ample for six weeks' requirements. Fifty of 200 public schools have a full winter supply, while there is sufficient reserve to carry the others 30 to 60 days.

The attitude of the industrial consumers is probably due to a realization that with transportation shut off, it would be impracticable to continue operation of factories. Some of the manufacturing plants that have been running on short production, perhaps would not be reluctant to close for a time, giving opportunity for orders to accumulate.

Buying of domestic coal is proceeding more actively than in recent weeks, but the improvement is due rather to weather conditions than the prospective strike. Ohio domestic lump is quoted $3.15@$3.25, egg $2,40, mine run $2 and nut and slack $1.15. West Virginia lump is $3@$3.25, egg $2.50, mine run $1.90 and nut and slack, $1.25. Smokeless lump and egg is $4.75, mine run $2.65 and nut and slack $1.65.

Anthracite—Retail yards seem to have a moderate supply, but stocks would be quickly cleared out by a sufficient drop in temperature to cause a strong buying movement.

ST. LOUIS

Impending Rail Strike Creates Uncertainty—Steam Coals Fail to Respond—Railroad Buying Heavy.

The threatened railroad strike furnishes a good excuse for some of the sky pilots in the coal business to get fancy prices, but the more conservative element feels that there will not be any serious strike. The domestic situation has not responded to the extent that is common in such instances.

Certain steam users are storing a little coal ahead and the railroads are doing likewise. Demand is chiefly for Standard and Mt. Olive grades. Carterville is just in fair call. Some little hard coal is moving. Coke is fairly active, both gas house and byproduct.

Scarcity of ready money and a tightening of credits has caused a slow movement of domestic. Dealers throughout the West have a pretty fair supply on hand and in the larger cities there is a heavier tonnage than at any period in several years.

Effective Oct. 15, the price of domestic coal was advanced 25c. per ton. The prices are: Carterville $8, Mt. Olive $6.75, and Standard $6.

CINCINNATI

Buyers Discount Needs if Strike Occurs —No Rush of Orders—Prices Steady.

Following the rail strike talk the general attitude shown by coal buyers was: "Come on, and let's see them do it." Domestic buyers were inclined to place orders only where their yards were short. Steam users maintained the philosophical attitude based on the theory that if coal could not be moved neither could goods—so why worry.

In most instances the general range of prices on Kentucky nut and slack was 90c.@$1.15, and on West Virginia $1.25@$1.50. Mine run, both Kentucky and West Virginia, was advanced to $1.85@$2.25. Lump and block was steady with West Virginia quotations $3@$3.25 and some sales as high as $3.75; Kentucky, $3.25@$3.75.

A slight recovery in the price of prepared smokeless was noted, spot sales of lump and egg being $4.25@$4.50, nut $3@$3.50, mine run $2.25@$2.75, and slack $1.10@$1.50, with an occasional sale at $1.75.

Retail prices were stationary. Smokeless was quoted: Lump $9.50@$10.25, mine run $7.50 and slack $6.25. Bituminous lump was $7.25, with special brands selling up to $8.25. Mine run was $6.25@$6.75 and slack $4@$5.25.

CHICAGO

Market Flurry Follows Strike Threat —Storage Piles Low—Domestic Prices Steady.

During the last few days there has developed quite a flurry in steam coals. Screenings have advanced nearly $1. This situation has been brought about entirely by the current talk of a railroad strike. The big industries in Chicago are in no position, on account of low storage piles, to operate their plants any length of time, once communications have been cut off with the mines.

Sales agents have been scrambling for Eastern domestic coal. Pocahontas, for instance, which was offered very freely at as low as $1.75 last week is now holding firm at $2.50@$2.75 with but few operators willing to book an order on any other basis than that of price current at time of shipment. The demand for high grade Illinois domestic has also increased, but this coal is being sold at $4.05, the price at which they have been available all season. A very notable thing has developed, operators are not taking advantage of the present situation to the full extent. If they cared to do so, they could advance their prices very much more than they have been, and find ready buyers. The general feeling among the more representative operators is that this is an excellent opportunity to show that the coal men can be relied upon to treat the public fairly. This is in spite of what has happened all spring and during the summer months, making the temptation to even up the score all the more strong.

The trade has had a great many visitors this week on account of the convention of the American Mining Congress. Many new and interesting angles in regard to the coal industry have been developed at this meeting. The big percentage of coal men present at the convention proved very gratifying to all the local coal operators.

CLEVELAND

Strike Fear and Improved Industrial Outlook Quickens Demand—Mine Output Better — Inquiries for Forward Buying.

The possibility of a railroad strike and gradual improvement in the business situation have combined to moderately stimulate the industrial demand. There has been a division of opinion as to whether the strike actually would occur, but most plants desire to be on the safe side and are preparing to lay in sufficient coal to tide them over for a few weeks. In addition to this consideration a growing number of buyers are coming to the conclusion that further reductions of mine prices are unlikely this year. As a result some plants are inquiring for their needs for some months ahead.

The industrial situation in and around Cleveland continues to display a stronger tone. The strike threat is overhanging the horizon and creating some uncertainty, but fundamental improvement continues. Steel mills are operating better and in the Youngstown district plants are running at the best rate seen this year. Automobile plants are showing some signs of curtailment during the winter, although a number of Cleveland manufacturers report large operations. Truck plants are speeding up, with sales at the highest point of the year. All these indications of an upswing are being reflected in better inquiries and orders for coal, although the trade is still subnormal for the season.

The Cleveland Electric Illuminating Co., recently closed for 100,000 tons of No. 8 mine run at $2.25. Production is steadily increasing, and prices are firm for all grades.

The Lake season is nearly over, with the final shipments being rushed before the end of the month when preferential rates on coal consigned for Lake shipments expire. The domestic demand continues to climb as the winter chill gets nearer.

Quite a jump was noted in receipts of bituminous coal during the week ended Oct. 15. Total receipts amounted to 1,219 cars, divided: 790 industrial; 429 for retail dealers, thus registering an increase over the previous week of 91 cars to industries and 134 cars to retail dealers. The normal requirements of Cleveland, both steam and domestic, are between 1,500 and 2,000 cars per week, but for several months past the weekly receipts have been between 600 and 1,000 cars.

South

BIRMINGHAM

Steam Market Slow but Outlook Is Better—Domestic Less Active—Quotations Unchanged — Production Showing Much Improvement.

While there has been little progress made in the way of actual improvement, the outlook for better trade conditions is more promising than it has been for some time. Industrial conditions generally are much healthier and indications point to the early need of a much larger tonnage than the market is now consuming.

The movement of commercial coal is better than it has been, but practically all new business is of a spot character. Railroads are taking more coal and there has been some additional bunkerage business booked recently for delivery at New Orleans and Pensacola. The threatened railroad strike has not had much effect on consumers and there seems to be little concern felt over the probability of a tie-up.

Domestic coal has been slowed up by

the warmer weather which has followed a short cool spell, the effects of which enabled retailers to reduce their stocks some but not sufficiently to speed up shipments from the mines.

There has been a heavy increase in production following the revival of iron-making, the output as a whole having improved around 50,000 tons per week. A good tonnage of coke is being shipped into Mexico for smelter use and the requirements for furnace coke are 100 per cent greater than two months ago. Production is now around 230,000 tons per week.

LOUISVILLE

Coal Buyers Are Not Taking Strike Cloud Seriously—General Demand Not Keen Enough to Force Prices.

A few orders from industrials have been received. These are preparing to have a little extra tonnage to carry them through in the event of a rail tie-up. Retailers are also busier.

The consumer is beginning to realize that prices are not likely to go lower until next spring and that coal may be scarce if the railroad trouble is prolonged. Shortage of cash has been the principal drawback to stocking, especially among the working people.

Some of the local retailers have only two or three weeks' supply on hand, and as a result are ordering a little more freely. A last minute rush movement during the period before the strike may force prices up on prepared, if screenings do not move better.

In event of a strike the Louisville will be in a good position, due to river facilities for bringing in coal.

West

DENVER

Production Feels Impulse of Better Buying—Prices Mounting.

Operators have been making good strides in production. This is due, in part, to stimulation caused through anxiety over the threatened railroad strike and to cool weather and demand for steam sizes.

Steam coal was selling for 75c. a ton wholesale a month ago; today it is bringing $1.80@$2.15 and a delivery price of $4.50@$4.90, while coking coal is delivered for $7.40.

In the week ended Oct. 1 the output was 205,463 tons of a possible full-time production of 303,639 tons, and for the week ended Oct. 8 it was 204,742 tons of a possible 287,016 tons. Car shortage and mine disability average about 10 per cent of production.

Prices are mounting, Weld County lignite bringing $4 at the mine and $6.95@$8 retail, while Louisville lump is $5.75 at the mine and $9.75 retail. Bituminous lump is $6 at the mine; southern Colorado grades retail $10.75 and Routt County $11.50@$12.

News From the Coal Fields

Northern Appalachian

CONNELLSVILLE

Offerings Exceed Demands — Market Weaker — Production Further Increased.

The general tone of the coke market is easier. Actual prices are not materially lower, but they have slipped off a trifle. A fortnight ago the ordinary asking price on spot furnace was $3.50, while a buyer could always find an odd lot at about $3.35 if he was willing to take a few carloads, and the theory of the market then was that the odd lots would be gathered up and the market be left on a $3.50 basis. Instead of that, the offerings have become more numerous as there has been little absorption, and there are offerings now at $3.25.

The balance between demand and supply has been disturbed, and this may be attributed either to ovens being blown in too rapidly or furnaces not buying as much as they were expected to take. Recently there was quite a fair aggregate of inquiry, but not all the furnaces that were considering the matter of blowing in have done so. No additional furnace coke contracting is reported.

In foundry coke the recent stiffening has disappeared, there being a great decrease in the volume of inquiry. The price range is the same as for weeks past. The market is quotable as follows: Spot furnace, $3.25@$3.50; contract furnace, $3.40@$3.50; spot foundry, $4.25@$4.75, per net ton at ovens.

The *Courier* reports production in the week ended Oct. 15 at 16,000 tons by the furnace ovens, an increase of 1,700 tons and 40,640 tons by the merchant ovens, an increase of 1,740 tons, making a total of 56,640 tons, an increase of 3,440 tons.

PITTSBURGH

Increased Demand Makes Actual Trading Market—Real Prices Developed—Buffalo District and Canada Buying.

Demand has increased sharply in the past week, from almost nothing to what would be a very moderate volume in normal times. For weeks past the market has been quotable on little more than an asking price basis, while with the demand now developed there is a regular trading market. Price comparisons are unfavorable as on the whole there appears to be a decline, but the comparison is between asking prices formerly and trading prices now, so that the market is really in better condition.

The improvement is attributed in part to fear of a general railroad strike, but it is held that a very considerable part of the improvement rests upon general and more permanent conditions. The demand has been most marked in the case of Buffalo territory and Canada.

Quoted figures on gas slack have had quite a decline, but simply to the steam slack level, there being insufficient demand for gas quality to make a separate market. Steam slack has not declined. Steam mine run and ¾-in. are only a shade below former asking prices. In 1¼-in. domestic a wide range of prices has developed, some sellers shading by 50c. or more. The range is somewhat of a puzzle and in some quarters is attributed to differences in "salesmanship" for want of a better explanation.

We quote the actual market, disclosed by sales, as follows: Steam: Slack, $1.60@$1.70; mine run, $2.10@$2.20; ¾-in., $2.60@$2.70; 1¼-in., $3@$3.25. Gas: Slack, $1.60@$1.70; mine run, $2.10@$2.25; ¾-in., $2.60@$2.70.

EASTERN OHIO

Market Strengthened by Strike Talk—Industrial Situation Improves—Prices Advance—Lake Tonnage Good.

Advances reported in Ohio industries during the last few weeks are being maintained. Notwithstanding the observation of Columbus Day, production during the week ended Oct. 15 was 398,000 tons, a trifle above the preceding week.

Accumulated production for the year now approximates 14,000,000 tons, against rated capacity of 25,650,000 tons. The association mines worked a little better than 50 per cent of possible worktime during the week. There is a steady but constant increase in the loaded car movement, and this factor is being felt by operators in that the carriers are taking larger quantities for present fuel needs and for storage purposes.

At the present rate of production, between 35 and 40 per cent of the output is going to carriers for fuel.

Public utilities have also become more active and are placing further orders, both present and future. The city water works of Cleveland has just closed a contract for 30,000 tons of slack to be delivered between now and April 1 at a price said to be $1.50 a ton.

A small increase has been registered in the stocks on hand at the Lower Lake docks, but the number of cars dumped, receipts and cars on hand are all running at about the same rate as during recent weeks.

Announcement of the impending rail crisis has been immediately followed

by a quickening in many lines of industry and a new demand for both steam and domestic coal. Industries generally have not been carrying much in excess of a few days' fuel supply on hand, and to safeguard against any exigencies of the next few weeks, many plants are now putting in coal. There has been a stiffening in spot prices, especially in slack.

ANTHRACITE

Strike Increases Demand—Glen Alden Mine Still Closed.

The threatened railroad strike is causing a greater demand and mines are operating at capacity to meet it. The decision of Judge Fuller, of Luzern County, will have no effect on the reopening of the mines in Lackawanna County unless the judges in that county agree to accept his decision as final, pending an appeal.

The Glen Alden Coal Co. states that if it can be assured of no prosecutions in case of caves it will reopen six mines. At present there seems to be no chance that this may occur.

FAIRMONT AND PANHANDLE

Better Production—R.R. Fuel Picks Up —Domestic Market Strengthens—Lake Tonnage Off.

Fairmont

Production improved slightly during the week ended Oct. 15. The market was somewhat brisker on domestic coal but the poor demand for slack was the greatest hindrance to a larger production. Lake shipments have virtually ceased and Curtis Bay tonnage was also light.

Northern Panhandle

Railroad fuel constituted the bulk of production as in preceding weeks. Mining for steel interests added somewhat to the total figure and a better line of domestic inquiry was appearing. Lake shipments were at a minimum as was export tonnage.

UNIONTOWN

Market Retarded by Rail Strike Possibility — Consumers Uncertain — Prices Weaken.

Consumers are not making any unusual preparations to protect themselves against the threatened railroad strike. The possibility of a tie-up has reacted adversely on the market, there being an appreciable lessening in demand.

The attitude of consumers seems to be to await a settlement of the situation. In event of a strike it would be impossible to move their finished product and therefore there would be no advantage in creating a surplus fuel supply. Negotiations looking toward the settlement of the railroad question have given strong indications of reduced freight rates and that possibility is a strong factor in consumers paring their coal orders to immediate requirements.

The reticence of furnace coke buyers to commit themselves has caused quotations to drop from $3.35@$3.75, a base prevailing for several weeks, to $3.25 @$3.50. Foundry is quotable $4.25@ $4.50. Coal carries quotations of $1.50 @$2.

UPPER POTOMAC

Market Shows Signs of Life — High Wage Scale Still Retards Production.

By the middle of October there was a slight improvement in operating conditions but it was confined largely to mines producing on the same basis as in the Somerset field. The high mining rate in the region as a whole, made it impossible for most producers to accept orders at prevailing prices. Improvement was most marked in Garrett County.

Middle Appalachian

LOW-VOLATILE FIELDS

Market Activity Confined to Prepared Sizes—Rail Trouble Strengthens the Demand — Steam Coals Difficult to Move.

New River and the Gulf

New River operations were enabled to run only because of a demand for lump coal. The market was so weak that a great many of the larger companies announced an indefinite suspension. Despite the low production, however, cars were none too plentiful, there being just about enough to supply the needs of the region.

Winding Gulf production still hovered around 40 per cent, the demand being limited to prepared sizes. Operators were optimistic as to the outlook for the remainder of the month because of the imminence of railroad labor trouble.

Pocahontas and Tug River

Pocahontas production dropped to about 270,000 tons. About the only spot demand in evidence was for egg and lump. With the decline in demand, the car situation had improved somewhat and such production losses were insignificant.

More coal was being produced proportionately in the Tug River section than in any other region in southern West Virginia, the output reaching about 90,000 tons during the week. Most of the tonnage was going to Western points, and there was little activity in Eastern markets, especially at Tidewater. It was next to impossible to market any slack, the prices for which remained at a low level.

HIGH-VOLATILE FIELDS

Prepared Market Stiffens — Steam Trade Lags—Strike Talk Increases Inquiries.

Kanawha

Demand was confined almost exclusively to domestic sizes and steam grades were almost impossible to move during the second week of October. Much of the output went to Western markets. Idleness was still general throughout the region although some increase in production was anticipated as a result of the threatened rail strike.

Logan and Thacker

There continued to be a good production in the Logan region with the output confined to a few of the larger companies. With a railroad strike in prospect hurry-up orders were being received, and there was still a good deal of coal moving to the Lake and Michigan markets.

Thacker production was not over 40 per cent. There was a fair demand only for prepared sizes at prices under normal. Railroad fuel constituted the bulk of production. An inadequate car supply was a small factor in the week's production loss.

Northeastern Kentucky

Due to a larger output of prepared coal, production was on a slightly increased basis. The Lake movement continued good, but the steam market was inactive and prohibited acceptance of much of the domestic business offered.

Virginia

Contract orders were all that maintained production at most mines. Prices were soft, but inquiries increased after receipt of the news of the threatened railroad strike.

Middle West

MIDWEST REVIEW

Market Greatly Strengthened—Strike Talk Causes Rush Orders—Stimulation May Prove a Setback.

Improved conditions have existed in the coal market during the past week. Demand for domestic coal has been so great that operators have had no difficulty in holding fast to circular prices. The steam market, also, has improved, and prices have advanced 25c.@$1 a ton, according to the grades.

Dealers are worried over the labor situation so far as the railroads are concerned, and are coming into the market in order to get a little surplus should a strike eventualize. Practically all orders that have come in for domestic coal during the last week have been placed on the basis that the coal be shipped promptly.

A number of industries find they are not as well fixed with coal as they thought, and consequently have been ordering heavily. It is a curious thing to note that on the days when the strike threats appear ominous, the orders increase, while on the days when a settlement is generally predicted, the orders fall off.

Whether or not this stimulation will prove a blessing to the industry is a difficult thing to predict. In the event that all questions between the railroads and labor should be successfully settled, it will mean that the factories which

have been buying so heavily the last few days will be out of the market a corresponding length of time. Therefore, it is very safe to forecast an extremely weak steam market in the event that the threatened strike is settled amicably.

The matter of reduced freight rates has been receiving very wide publicity all over the country, and once the strike is settled, it is thought that the retailers will buy only in a hand-to-mouth fashion until such time as the rate reduction becomes effective. Everybody is feeling poor, and it is felt that the dealers can be relied upon to buy just as little coal as possible until the final reduction in freight rates is made.

The flurry we are now experiencing has developed the fact that a car shortage is entirely possible, and at an early date. A number of mines in Indiana and Illinois have been short of cars this week. The demand, of course, has been fairly good and the mines have been enjoying satisfactory running time. But should there develop a real demand, the country will find itself suffering from what we believe will be an acute car shortage. If production, at its present low level, has developed a car shortage, it can be easily understood what will happen in case the demand makes it necessary to run the mines full time.

WESTERN KENTUCKY

Threatened Rail Strike Causes Slightly Better Demand—Prices Firm—Outlook Improves.

Operators are getting a few industrial inquiries, as well as some from retailers because of the threatened strike. Retailers as a whole are fairly well stocked, having three to six weeks' supplies in hand. Many industrial concerns have carried scarcely any stock, and as a result are rushing a few orders through for protection.

The volume of strike business is not large, and, with general demand quiet, this business has not been sufficient to materially influence the market. Prices, while firm, are showing no evidence of advancing.

If there is a strike it will probably be followed by a rush demand, which while probably not forcing steam markets, will have a tendency to strengthen prepared sizes.

SOUTHERN ILLINOIS

Threatened Railroad Strike Puts Market on Its Feet—Some Car Shortage in Sight—Prices Advance.

In the Carterville field the threatened railroad strike caused a change to take place over night. Everything began moving, and screenings, which were lagging at $1 and under, went up to $1.25@$1.50. Independent operators are trailing association prices, with a couple of them quoting $4.30 on domestic. Railroad tonnage is unusually good, everything considered.

At many mines short time is encountered on account of a lack of sufficient number of cars for a day's run. Everything indicates an advance in all prices with colder weather, even though a strike does not materialize. Similar conditions prevail in the Duquoin and Jackson County field.

The Mt. Olive district shows up heavy in tonnage with the price jumping from $3.25 to $3.50 for St. Louis shipments on domestic sizes. Country prices are $3.75. The open market price on screenings ranges $1@$1.25. Railroad tonnage is heavy.

The Standard field also felt the effect of the threatened strike. Screenings jumped to $1 and mine run to $2.50, the high point. Railroad tonnage is heavy and considerable coal is moving for storage purposes. For the first time in many months screenings moved freely. Working time averages three to four days.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Cold Weather and Rail Trouble Strengthen Demands — Domestic in Best Call.

Cold weather, threatened tie-up of railroad transportation, and a general speeding up of industries has had a stimulating effect in demand for all grades of coal during the past week. Block is moving readily at 25c.@50c. above low price for September and egg is more in demand. There is also more activity in mine run but orders are small. Screenings are moving better with but little price recovery.

West

UTAH

Production Increases — Retail Buying Still Slow.

Production has increased to 75 per cent, with some of the smaller mines running full time. Dealers, however, report business as slow. There appears to be little disposition on the part of the consumer to buy more coal than he needs for immediate use.

Coal mined in Utah during the nine months ending Sept. 30 amounted to 2,988,095 tons, according to figures compiled by Carl A. Allen, chief mining inspector for the Industrial Commission of Utah.

News Items From Field and Trade

ILLINOIS

The Victory Coal & Mining Co., operating at Duquoin, has suspended operations. The mine, which is an old one, was only recently re-equipped.

Dail Pittman, general manager of the **Coal Belt Coal Co.**, Herrin, announces that the company is about ready to resume operations at its mine located near that city.

Fred R. Sullivan, representative of the Nason Coal Co., of Chicago, in western Illinois and eastern Missouri territory, has been made associate sales manager of the company.

The Nason Coal Co., of Chicago, announces the appointment of **R. H. Anderson** as sales manager to succeed **F. A. Barthelme**, resigned.

The Sangamon County Mining Co. has purchased the Latham mine at Latham. W. A. Brewerton is the head of the company. New machinery and equipment is being ordered.

The Spring Creek Coal Co., Springfield, established a new hoisting record for this mine recently when they hoisted 1,652 tons in eight hours, the previous highest record being 1,097 tons. John Strebel is superintendent. This mine is almost entirely equipped with Hollow Axle Mine Car Trucks.

INDIANA

Negotiations have been completed whereby **Cosgrove & Co.**, Johnstown coal operators and part owners of the **Grazier Coal and Coke Co.** have purchased the remainder of the stock in the Grazier company, J. C. and H. F. Grazier, organizers and principal owners, both died within recent years. The property includes several mines at Foustwell, together with tipples, miner's homes and other property.

KENTUCKY

K. C. Megulre, of the Harlan Coal Co., was in Pineville recently.

Announcement has been made of the sale of the **Big Four Coal Co.**, owned by G. C. Criscillis and E. F. White, of Williamsburg, to G. H. Forester and others of Asheville, N. C., who will at once take charge of the plant, which is said to be one of the largest in the Whitesburg neighborhood.

Henry Ford has been visiting his mine on Wallins Creek, known as the Banner Fork Coal Corporation.

Suit has been entered in the District Court of the United States for the Eastern District of Kentucky, at Catlettsburg, by M. M. Tyree as plaintiff, against the **Kentenia Coal Co.**, to recover $72,838.08, with interest from Jan. 1, 1921, alleged to be due Tyree as net proceeds of approximately 27,000 tons of coal originally purchased by Tyree from the Opperman Coal Co., of Logan County, W. Va., and shipped to or upon the order of Kentenia company, and sold by the latter for the account of Tyree. The demand is for payment of prices realized by the Kentenia company upon sale of the coal as agent for Tyree, after deducting amounts paid by defendant directly to the Opperman company at prices based upon contract between Tyree and the Opperman company and commissions of 8 per cent upon gross sales, which are alleged to have amounted to a sum in excess of $20,000.

One of the largest realty deals that has been made in eastern Kntucky for some time has been closed by the **Enrich Realty Co.**, of Cleveland, who purchased from the **Powell-Paxton Co.** a tract of 2,300 acres of valuable timber and coal lands in Harlan County, for the reported price of $100,000.

John P. Gorman has sold his holdings in the Marion and the Dudley Coal Companies, with operations in the Hazard district to W. S. Dudley and his associates in the **Kentucky Land Co.** This is said to represent holdings of over $100 000 in stock values. Mr. Gorman will retire from active business.

The Consolidated Fuel Co. at Dalma, have ordered a shaker screen picking table and loading boom equipment.

The Bailey-Ferguson Coal Co., Prestonsburg, and the **Stevens Branch Coal Co.** of the same place are installing a three-track shaker screen tipple equipment, including picking table and loading boom for the lump coal.

The Hillson-Jones Coal Co., has changed its name to the **H. B. Jones Coal Co.** The company operates a retail yard in Louisville, but is controlled by the Jones interests, which operate mines in eastern Kentucky

MICHIGAN

H. S. Durant has been appointed sales agent, and **M. W. Floto**, assistant sales agent of the Detroit office of the American Steel & Wire Co., to succeed **M. Whaling** and **T. J. Usher, Jr.**, resigned.

The McBard Coal Co. of Cincinnati has opened a Detroit office in the Free Press Building in charge of H. C. Howland, formerly with the National Coal Supply Co.

MINNESOTA

John A. Howe, vice-president and general manager of the Carnegie Dock & Fuel Co., spent a day at the Duluth-Superior harbor recently, inspecting the company's property.

Mr. and Mrs. Joseph Pursglove, of Cleveland, and **Mr. and Mrs. David Pursglove**, of St. Clairsville, Ohio, recently motored from Celveland to Minneapolis, St. Paul and Duluth on a combined business and pleasure trip. While at Minneapolis they were the guests of **R. O. Eastman**, who is vice-president of the Pursglove Coal and Dock Co., of that city.

NEW MEXICO

The United Verde Extension Mining Co. has secured coal-mining rights on 200 acres of land at Gallup. The purchase was from the **Matual Coal, Light and Power Co.**, which has retained surface rights to forty acres within the Gallup townsite, this tract to be devided into town lots. With the coal land is included a right of way for a railroad to the main line of the Santa Fe from the property's coal tipple. Until copper production is resumed at Clemenceau, the Gallup coal property will be operated, under lease, by **H. R. Wypur and associates.**

NEW YORK

The Producers Fuel Co., New York City, has taken over the output of the Monon mine, of the **Monongalia Coal Co.**, at Monon, W. Va., the Ormont mine, of the **Abrams Creek Coal Co.**, at Oakmont, and the mine of the **Osage Coal Co.**, at Osage, W. Va.

The receivers for the **Tidewater Coal Exchange, Inc.**, now in a state of dissolution, have applied to the Delaware courts and received permission to sell the 500 cars of coal in the pools at Baltimore. Complete plans for the dissolution have been completed.

The Egan Knote Co., Inc., exporters and bunker suppliers of coal, New York, announces the change of name to the **R. M. Egan Co., Inc.**

Harrison D. Ecker, recently manager of export and bunker sales of the Tuttle Corporation, and formerly with the Consolidation Coal Co. and other prominent interests, will make his headquarters with the Quemahoning Creek Coal Co., New York, specializing in the general bunker business at Atlantic ports and the export trade.

Bids for furnishing 15,000 tons of slack coal to the Buffalo waterworks, delivery to extend to April 1, were tendered by seven companies, that of the **Valley Camp Coal Co.**, of Cleveland, at $1.80 per net ton, mine price, on a $2.51 freight rate, being lowest.

Frank B. Tinsley, who is well known in the New York trade, has been elected a vice president and director of the Fidelity Coal Co., of Philadelphia, with New York City offices at 90 West St., and of which R. S. Feeney is president. Mr. Tinsley, like Mr. Feeney, was formerly connected with the Seller Coal Co. of New York City.

The Eastern Fuel Co. has added to the sales force of the New York office, **J. F. Whelan**, formerly in charge of the Matlack Coal & Iron Corporation, offices at Newport News and Philadelphia.

Everett Drennen, president of the West Virginia Coal & Coke Co., was a recent visitor in New York.

OHIO

The H. M. Schaff Coal Co. of Cleveland has been chartered with a capital of $50,000 to mine and sell coal. The charter permits the company, to build, acquire by purchase or lease and to operate docks. Incorporators are H. M. Schaff, J. F. Mellott, Thomas L. Johnson, H. A. Forsythe and H. V. Forsythe.

The Houston Coal Co. of Cincinnati, has entered suit in the United States District Court against the Navy, seeking to recover $314,730.74, which is claimed as due on coal requisitioned at the time of the shortage and paid for at a price fixed by the government authorities. The Houston company claims that tonnage seized between April 1920 and Feb. 1921 was paid for on a basis of $4 while the actual market price was $8 a ton.

C. J. Neecamp, secretary of the Northeast Kentucky Coal Association with headquarters at Ashland, who also looks after traffic matters for the association was in Columbus recently attending the Ohio rate hearings.

Announcement has been made by the **Kanawha Valley Coal Co.** of the opening of a branch office at Dayton, in the Schwind Building. This branch will be in charge of C. A. Ogle. O. J .Cox heads the company.

T. V. Bush has resigned as traffic manager in charge of Western sales of the Raleigh Coal & Coke Co., to become coal service agent of the Chesapeake & Ohio, with headquarters at Cincinnati, where he will direct the movement of westbound freight.

W. F. Griffing, representing the **W. C. Deegan Consolidated Coal Co.**, of Huntington, W. Va., has opened a Columbus office in the Butler Bldg., to offer for sale the securities of the company.

R. A. Colter, general manager of the C. G. Blake Co., of Cincinnati, has returned from a trip to the Pacific coast made as a vacation and for business. While in the west Mr. Colter looked into coal shipping possibilities from Seattle, San Francisco and other ports.

The Pittsburgh-Ohio Coal Co. was recently organized in Pittsburgh, capitalized at $400,000. It is organized under the common law and has headquarters in the Bessemer Building, Pittsburgh. It has purchased in fee 270 acres in Jefferson County, underlaid with the No. 8 Pittsburgh seam and has options on 439 adjoining acres. The property lies between the operating properties of the Superior Coal Company and the Wayne Coal Company. The officers of the company, all Pittsburghers, are: A. F. Smith, president and general manager; F. H. Groves, vice-president and treasurer; and Charles W. Champion, secretary. They expect to start development shortly, partly by stripping and partly by drift mine operation. The property is located on the Bessemer & Lake Erie.

PENNSYLVANIA

M. L. Coulter is now chief engineer for the Clearfield Bituminous Coal Corporation, Indiana, having removed from Punxsutawney.

J. Earl Golden, formerly mine inspector for the Travelers Insurance Co., Appolo, is now engaged as mining engineer with the Hillman Coal & Coke Co., Hillcoke.

Judge J. N. Langham, of the Common Pleas Court of Indiana County in an opinion rendered recently, sustained the exceptions filed by the **Penn-Mary Coal Co.**, defendant in a Workmen's Compensation case in which H. C. Kelly is the claimant and who was awarded compensation by the Pennsylvania State board. The court finds that Kelly, who claimed he had been injured while working for the defendant company, had not reported the alleged injury to his employer for four months after the time he said it happened. The medical testimony, the opinion states, shows that the effect of Kelly's condition could have been or might have been due to the injury, but the court holds that this is not sufficient.

W. J. Rainey, Inc., has closed its Philadelphia branch. The business will be handled in the future from its general offices, New York. Francis Y. Casey, formerly Philadelphia representative, has been appointed assistant manager of sales, and Gilbert S. Sank will be associated with the sales department.

The Cedar Hill Fuel Co. has been chartered for mining coal and dealing in mineral lands, Philadelphia; capital, $25,000, treasurer, F. D. Casanave, Jr. Philadelphia; incorporators, C. W. Nickford and E. C. Blandy, Osceola Mills and S. H. Eastmell, Phillipsburg.

The Glasgow Coal Mining Co. will mine buy and deal in coal and coke; South Fork, capital, $50,000; treasurer, J. E. Reese, Scalp Level. Incorporators: J. E. Reese, Scalp Level; George E. Flenner and Howard Miller, South Fork.

The County Realty Co., a subsidiary of the H. D. Walbridge Co. of New York City, which controls the Penn Public Service Corporation of Johnstown, has purchased 1,400 acres of coal and 500 acres of surface land in East and West Wheatfield townships, Indiana County. The coal was bought from the **Operator's Coal Mining Co.** through George T. Robinson. This gives the corporation approximately 3,000 acres of coal land and it is estimated will supply fuel for the next 75 years.

The Penn Public Service Corporation has completed plans for the erection of a huge hydro-electric plant at Foxburg, which will increase the capacity of the electric service corporation by more than 500,000 horse power. The waters of the Clarion River will be utilized in securing power and the plans call for two huge reservoirs, one at Foxburg and the other at Clarion. The plant will cost $5,000,000.

R. C. Kann, New York City, treasurer of the **Hudson Coal Co.**, has notified the Secretary of the Commonwealth, Harrisburg, of an increase of capital stock from $5,000,000 to $5,160,000. This notice was followed a few days later by another stating that the capital had been increased in the amount of $3,984,950, making the total capitalization $9,500,950.

The Oliphant Coal and Coke Co. has increased its capital stock from $100,000 to $250,000; Frank R. Crow, treasurer, Fayette County.

The Domestic Coke Co., Fayette County, has notified the State Department that it has dissolved.

VIRGINIA

The Clinchfield Coal Corporation, Moss, has installed complete steel tipples, apron conveyors, shaker screens, picking tables and loading booms, for Mines Nos. 8 and 9. These handle 300 tons of coal per hour.

In order to make Hampton Roads a more attractive port not only for bunkers but for cargo coal, a movement is now on foot to induce coal-bearing railroads to reduce their trimming charges. The minimum trimming rate is 11c., and the Hampton Roads Maritime Exchange is asking the roads to bring this rate down to the Baltimore rate, which is 6¼c.

WASHINGTON, D. C.

Argument will soon be heard by the United States Supreme Court in a long pending coal litigation involving alleged discrimination in car supply. In 1904 and 1905 it is alleged the **W. F. Jacoby and Co.** bituminous mine at Rigler, Clearfield County, Pa., was put out of business by the Pennsylvania in giving greater car supply to the Berwind-White Coal Co. the Lehigh Valley Coal Co. and others. Jacoby prosecuted a claim of $21,094 damages through the I. C. C. and the Pennsylvania District Court and the case is now on appeal from the Circuit Court of Appeals which decided in favor of the railroad company. The case was once before up in the Supreme Court, when it decided in favor of the coal company, but on re-argument reversed itself. The railroad claims that the Jacoby mine was not on an equal footing with the other mines and that the damages are excessive.

An important case under the Lever law has been argued before the Court of Claims. It is the complaint of the **J. M. Macdonald Coal Mining Co.**, of Cincinnati, operating a mine in Harrison County, W. Va., which seeks to recover from the government $58,036 because prices allowed coal operators by the Fuel Administrator forced the mine to operate at a loss, estimated at $22,200 between July, 1918, and January, 1919. While the government contends the case is without merit the same issues having been decided last term by the Court in the Pine Hill Coal case under paragraph 4 of section 25, there is a feeling that the Macdonald company has a good case and its decision is awaited with keen interest because of its possible application to other complainants.

Representative Sisson of N. Y. has introduced a bill to reimburse the **Berwind-White Coal Mining Co.**, $118.40 for damages on account of a collision between an army tug with one of the coal company's barges in New York harbor Aug. 23, 1918.

WEST VIRGINIA

The Puritan Coal Co., near Williamson, has purchased complete coal handling equipment for handling coal from the Winifrede and Thacker seams.

At a recent stockholder's meeting of the **Fairmont Mining Machinery Co.**, the following directors were elected to serve for the ensuing year or until their successors are named: B. A. Linderman, president, Austin Machinery Corporation, Chicago; O. A. Seyferth, director Austin Machinery Corporation, Chicago; Walton Miller, president, National Bank of Fairmont, Fairmont; F. R. Lyon, vice-president, Consolidation Coal Co., Fairmont; M. L. Hutchinson, president, Hutchinson Coal Co., Fairmont; C. D. Robinson, president, Robinson Coal Co., Fairmont, and Virgil Hyland, Clarksburg. At a meeting of the directors, the following officers were elected: B. A. Linderman, president; O. A. Seyferth, vice-president and general manager; Walton Miller, treasurer; J. C. Evans, secretary and M. L. Hutchinson, chairman of the board.

A new company for Mineral County has been organized with the title of the **Mineral County Coal Co.** This concern is capitalized at $25,000, and headquarters are to be at Keyser. Active figures in the new concern are Henry E. Burgess, of New Creek; May Paris, Margaret Gilmore, Roy E. Wiseman, Emory Tyler, Richard W. Thrush, G. E. Burgess, Beulah Wells, H. L. Arnold, H. C. Hedges and Oscar Cosner of Keyser.

The Dixie Pocahontas Coal Co. of Huntington, has been organized for the purpose of operating in the Pocahontas territory, being capitalized at $100,000. Leading figures in the organization are James F. Poindexter, Joseph Maloney, John S. Marcum, J. R. Marcum and C. D. Poindexter, all of Huntington.

Under authority granted by the secretary of state the name of the **Ryan Coal Co.** has been changed to the **Clarksburg Gas & Coal Co.** and hereafter the general office of this company will be at Wheeling instead of Fairmont.

Much interest is being taken by the miners of Marion and Harrison counties, in northern West Virginia, in the mining extension school of the **West Virginia College of Mines**, a number of miners having enrolled for instruction. The attendance has exceeded expectations in view of the fact that there is so little activity in the mining industry. Classes are being conducted by Adam Crawford of the University.

BRITISH COLUMBIA

There is one outstanding feature of the coal mining in the Nicola-Princeton section of the lower British Columbia interior, namely, the vigorous opening up of the Coalmont field by the **Coalmont Coal Co.** Development is proceeding along such lines that before long the company should be one of the main producers of the Province. An aerial tramway was installed recently and is now working most successfully, which will increase the output.

ONTARIO

The Windsor City Council has obtained contracts for an unlimited supply of anthracite direct from the Pennsylvania mines for the fuel yard which will be sold to householders at $15 per ton.

The Austin Machinery Corporation, of Chicago, has incorporated a new subsidiary company in Canada, **the Canadian Austin Machinery, Ltd.** Headquarters will be at Woodstock.

Richard B. Chase, secretary of Jewitt, Bigelow & Brooks, Detroit, visited Toronto recently on his way back from Montreal.

Charles H. Bowman, representing C. C. Bowman, coal dealer of Pittston, Pa., was a business visitor in Toronto recently.

Traffic News

In the complaint of the **Little Cahaba Coal Co.**, the I. C. C. decides that the rate on coal from Piper to Fairfield, Ala., during Federal control, was not unreasonable.

The Omaha Chamber of Commerce Traffic Bureau has asked the commission to reopen its case on the ground that the commission erred in finding that the reconsignment rules and charges on coal and coke effective Aug. 20, 1920, West of the Mississippi River, on the C., B. & Q. were not unreasonable. The complainant also objects to the commission taking judicial notice of the results of its car shortage investigation in 1920 and other errors are also assigned.

The commission has dismissed the complaints of the **Michigan Alkali Co.** and the **Ford Collieries Co.**, on advice that they have been satisfied. These cases related to rates on coal to Conneaut Harbor, Ohio, from Pennsylvania for trans-shipment by Lake to Wyandotte and Alpena, Mich., and to Lake cargo coal to east-bank Lake Michigan destinations.

The Peerless Coal Co. of Ill., has asked the commission to rehear its complaint, in which the commission recently decided that rates on coal from points on the Springfield Terminal Ry. to interstate destinations were not unreasonable. The company asks opportunity to show that the Springfield group rates are not lower than other group rates in Ohio, Pennsylvania and Indiana and are not lower than other group rates in Illinois, but are higher.

The Providence Gas Co. has asked for rehearing of the complaint of the **Seaboard By-Product Coke Co.**, to consider extraordinary conditions surrounding the movement of coke from Seaboard, N. J., over the Poughkeepsie bridge to New England. The commission had established rates on coke from Seaboard, N. J., to New England, practically the same as the gas company enjoys from Harbor Junction Wharf, R. I.

The Northwestern Traffic and Service Bureau of Minneapolis in complaints to the I. C. C. alleges unreasonable rates on coke from Wood River, Ill., to Akron, Ohio, and from Terre Haute, Ind., to Onslow, Ia., and also unreasonable rates on anthracite coal from Milwaukee to Vesta, Minn.

The commission will hear the case involving rates on coal from the **Detroit, Toledo and Ironton R.R.** mines, at Atlantic City, N. J., on Oct. 31.

The I. C. C. has denied the petition of the **Duquesne Coal & Coke Co.** for reargument of its case in which the commission found that rates on bituminous coal from mines west of Pittsburgh in Pennsylvania and West Virginia on the Pittsburgh and West Virginia Ry. to points North and East were prejudicial.

The commission has authorized the **B. & O. R.R.** to establish rates on bituminous and cannel coal from stations on its road to Canton, Ohio, the same as rates on the Pennsylvania.

The Terra Haute, Ind., Paper Co. alleges unreasonable rates on coal from Pinento, Seifert, Coal Bluff and Clinton, Ind., to Terre Haute.

The Northwestern Traffic and Service Bureau of Minneapolis alleges unreasonable rates on soft coal from Zeigler, Ill., to Hitchcock, S. D., due to misrouting.

The Tuffli Bros. Pig Iron and Coke Co., of St. Louis, alleges unreasonable rates on coke form Benham, Ky., to Abilene, Kan.

In the complaint of **W. L. Carney**, an I. C. C. examiner recommends that bituminous coal shipped from Densmore, Pa., to Chicago and from mines in Indiana to Chicago were misrouted but denies Carney reparation because he was not the real party in interest.

Trade Catalogs

The Schoop Metal Spraying Process—Metals Coating Company of America, Philadelphia, Pa. Pp. 15; 4 x 9 in.; lustrated.

"Rund-a" Shallow-Pit Coaling Plant — Roberts & Schaeffer Co., Chicago, Ill. Bulletin, 43. Pp. 24; 8½ x 11 in.; illustrated. Describing locomotive coaling plants and equipment for the handling of railroad coal. —Advertiser.

Novo Reliable Power—The Novo Engine Co., Lansing, Mich. Catalog 921, pp. 105; 6 x 9 in.; illustrated. Showing designs and uses of the various Novo gas, gasoline and kerosene outfits.

Lubrication of the Steam Turbine—The Texas Co., New York, N. Y. Pp. 36; 6 x 8 in.; illustrated.—Advertiser.

Big Blast Hole Drills—The Sanderson Cyclone Drill Co., Orrville, Ohio. Catalog B-45. Pp. 96; 8 x 10½ in.; illustrated, charts and tables. Describing their application to quarry and open-pit mining.

Repair-Part Machinery Diagram Sheets—Roberts and Schaefer Co., Chicago, Ill. Bulletin 44. Pp. 24; 11 x 8½ in.; illustrated. Reference book for ordering repair parts for coal tipples and Marcus patent screen installations.—Advertiser.

Davis-Bournonville Oxy-Acetylene Apparatus — Davis-Bournonville Co., Jersey City, N. J. Pp. 16; 6 x 9 in.; illustrated. A revised circular on acetylene generators, weldings and cutting torches, portable outfits and welding supplies.

Synchronous Condensers — General Electric Co., Schenectady, N. Y. Bulletin 41311-A. Pp. 12; 8 x 10½ in.; illustrations and charts.—Advertiser.

Jeffrey Straitflo Fans—The Jeffrey Mfg. Co., Columbus, Ohio. Bulletin 348. Pp. 8; 7½ x 10½ in.; illustrated, charts and tables. —Advertiser.

Type "E" Direct Current Motors and Generators—Allis-Chalmers Mfg. Co. Bulletin 1106-A. Pp. 8; 8 x 10 in.; illustrated. —Advertiser.

Stratton Steam Separator—The Griscom-Russell Co., New York, N. Y. Bulletin 1140. Pp. 15; 6 x 9 in.; illustrated.

Curtis Steam Turbines for Mechanical Drive—General Electric Co., Schenectady, N. Y., Bulletin 42019. Pp. 8; 8 x 10½ in.; illustrated.—Advertiser.

Association Activities

Northeast Kentucky Coal Association

At a meeting of the association held in Huntington, T. L. Lewis, secretary of the New River Operators' Association was one of the principal speakers, Mr. Lewis addressing himself to conditions prevailing in the coal mining industry.

President Cadwalader Jones and J. E. Buckingham, a member of the board of directors, outlined the situation in the different sections of the Northeast territory, the latter making a motion that a policy committee be named to report at a subsequent meeting of the association. J. G. Smyth, chairman of the railroad relations committee reported that the committee had taken up the question of Tidewater rates and embargoes and had secured some cooperation from the railroads in both cases. Mr. Smyth reported that there had been an improvement in the transportation facilities up Big Sandy, the Chesapeake & Ohio having expended $429,000 toward improving facilities. A motion was adopted to push the revision of the Tidewater rate for the Big Sandy until some satisfactory solution was reached. Secretary Neecamp submitted a report on the Ohio rate case hearings at Columbus. Chairman C. W. Connor of the legislative committee stated that while the production tax had not been pressed by the Kentucky legislature it was likely to bob up at a future session.

Baltimore Coal Exchange

The Baltimore Coal Exchange has elected the following officers to serve for the coming year: Hugh C. Hill, president; William Magee, first vice-president; Henry G. Von Heine, second vice-president; Julius Hellweg, secretary and J. E. Waesche, treasurer.

Coming Meetings

The National Industrial Traffic League will hold its annual meeting Nov. 9 and 10 at the Sherman Hotel, Chicago, Ill. Executive secretary L. H. Beek, Conway Building, Chicago, Ill.

The Coal Mining Institute of America will hold its annual meeting at Pittsburgh, Pa., Dec. 7, 8 and 9. Secretary H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

American Gas Association. Annual convention Nov. 7 to 12 at Congress and Auditorium Hotels, Chicago, Ill. Secretary, O. H. Fogg, 130 E. 15th St., New York City.

The Illinois Mining Institute will hold its fall meeting in the City Hall, Springfield, Ill., Saturday, Nov. 19. Secretary, Martin Bolt, Springfield, Ill.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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Survey Needs More Money for Coal Reports

WITH a period of car shortage of more or less—we hope less—severity impending, the word that the Geological Survey will soon find it necessary by reason of lack of money to discontinue that part of its weekly report covering working conditions at the mines and time lost because of car shortage, strikes, no market, etc., has caused dismay among coal producers. So much a part of the tools of the trade has this feature of the weekly report become, and so thoroughly established as the best, even though not a perfect measure of conditions, that we cannot get along without it.

The Survey is asking for more money—a larger appropriation—to sustain this feature of its work on coal and coke statistics. There should be no delay in the gaining of assurance that there will be no suspension of this valuable service. Once before these reports were saved by private support, when for one year the National Coal Association paid the salaries of four clerks to carry on the work. This time the reports will stop unless Congress can be induced to put up more money.

A Thorny Path Confronts the Coal Industry

CONTEMPLATE for a moment the hurdles before the coal industry. We are prone to think that the past five years have carried enough of trouble and dismay for any man, but the end is not yet. The old world is not yet shaken down for a period of peace and prosperity and to the coal industry remain the hardest jumps of all.

Three obstacles intervene to keep the coal men on edge between now and next summer, and at each one is waiting an eager element in Congress and in the country to catch the struggling industry should it stumble. The possibility of railroad strikes, the Borderland suit before Judge Anderson in Indianapolis and a suspension of coal mining next April are the hurdles and the Kenyon and Frelinghuysen bills are the traps to catch the unwary.

Senator Kenyon is understood to have introduced his two coal regulatory bills a few weeks ago with no idea of forcing their immediate consideration. He desires only to have them ready for an "emergency," subject to call when the occasion demands. A Congress that buried the Calder and Frelinghuysen bills would give scant consideration to Senator Kenyon's proposals under normal conditions. But can anyone foretell what might be the attitude of a majority of Congress if there were a serious shortage, inordinately high prices for coal and the country in an uproar?

Perhaps something of this was in the mind of Major Coyle, president of the American Wholesale Coal Association, when he sent a message to his members a few days ago as follows: "Bearing in mind the deplorable results of Oct. 31, 1919—results from which the nation has not yet recovered—we recommend, through the directors, to the membership of this association that in this or any other emergency which may arise we put aside immediate profit in favor of completing business now in hand. Let no charge of boosting prices be brought against our membership. Let each man keep his own house in order and thus defeat any radical demand for government muddling."

Equally sound and, we suppose, warranted was his request to the National Association of Purchasing Agents "that you co-operate in keeping a cool head and a steady hand in whatever crisis may develop in transportation. It is to the interest of all concerned that trade be kept in its normal channel, that your purchases be made only from persons of known responsibility and that no condition shall arise through you or us which might give to the more radical element any color of excuse to repeat the errors of two years ago."

The burden of these utterances, of course, is: "Don't run the price up." To which we would add: Be careful of the prices on domestic coal—hard or soft. Lump and prepared sizes of bituminous coal are high enough now; it is the steam grades that are obviously in line for advances. But two weeks ago screenings in Illinois were sold as low as 75c., and 85c. was a common figure. No one who bought this coal at such figures but knew it was well below cost of production. Like the hard-coal operators, a majority of the operations in Illinois and other Western fields have seasons when fine coal has no market and must be treated as a byproduct of the preparation of domestic sizes, from which it is screened. The recent flurry caused by the prospects of a railroad strike sent prices of screenings up a dollar a ton, but domestic lump and prepared sizes were held steady. We may safely expect and consider warranted gains in prices of steam coals in all markets as the winter advances and as the demand becomes stronger.

Should Judge Anderson, of Indianapolis, decide that the contention of the Borderland Coal Co. and other coal companies in the non-union field on the Norfolk & Western in southern West Virginia, that there exists a conspiracy between the union operators in Indiana and the union miners—a conspiracy, of which the check-off is an evidence—to forcibly organize these fields, and should he order discontinuance of the check-off, then we may expect almost any kind of a protest from the United Mine Workers. Such a decision, of course, is possible, and serious difficulty might flow from it. A court order restraining the operators in the Central Competitive field from collecting the check-off, in the opinion of many, might cause organized resistance from the miners affected, and result in the suspension of mining. Should this occur and be sustained for any period, a shortage of coal would certainly develop in many sections and at many plants and homes. An "emergency" might thus be precipitated.

One of the features of the Kenyon bills is a provision

for taking over the coal industry by the government in the event of a national emergency such as would be caused by a strike of the magnitude of that of 1919. Such a strike is in prospect next April. The union leaders have signified in no uncertain terms their opposition to a reduction in wages. It is patent to all that the cost of coal must come down in company with other basic commodities, and that the cost cannot be substantially reduced until wages are lowered. A conflict is inevitable, with an anticipatory period during which demand for storage coal may become sufficiently strong to upset the market and precipitate inordinately high prices—that is, cause profiteering. Another opportunity for the declaration of an emergency.

The logical way to forestall such possibilities is to sell enough coal now and in the ensuing months, and thus to so stock the country that suspension of mining operations would lose their force in causing trouble. It is idle to expect that every seller of coal will so restrain himself in times of stress as to not ask or accept more than reasonable prices for his coal.

We do not believe that steam-coal buyers and consumers are one whit less concerned with keeping the coal business free from government control and regulation, and thus on a freely competitive basis, than are the coal producers and distributors. Their part in retaining the business on an even keel through impending difficulties is to keep sufficient stocks on hand each to insure against shortage during possible interruptions of several months.

Wages and Salaries

NOTHING is so conducive to amicable adjustments of disputes as full appreciation of the other fellow's viewpoint. Argument on the railroad labor wage question points to some of the tactics that will be indulged in next spring when coal miners and operators begin to negotiate a new wage scale.

To all those in the coal industry who are going to be on the side asking the day laborer and miner to accept a reduction we pass on a thought found outcropping here and there among managers. It is simply this: Be you operator, owner or stockholder, president, manager, or other coal company executive, mine superintendent or just plain boss, have you faced the issue squarely—the issue of a reduction in wages, for union labor and for you?

Salaries kept pace with wages in the prosperous times; they must follow downward in the period of deflation. The idea is not new; for months past companies large and small, here and there, have been reducing costs by reducing the salaries of office force, though denied the opportunity of reducing union miners' wages. Along with non-organized mines, the non-union salaried personnel of the coal companies are accepting the inevitable. In some areas this deflation of salaries is yet to come. The East has led here, large companies in eastern and western Pennsylvania having been among the first to show their union miners that they are willing to take what they ask the miner to accept in lowered income. Some parts of the West have yet to face this trying ordeal. In these fields things are so well organized that many of the officer class have not thought in terms of what a wage reduction next spring is certain to mean to them.

Nor has this upleasant matter confronted only the operator and miner. The owners of the mines and the stockholders in coal companies have long since felt the pinch of hard times. Few coal companies have paid dividends this year; the average company has lost money and none but the fortunate has prospered and profited.

When the time comes early next year to discuss with the union miners a wage reduction those who so far have suffered no diminution in these never-to-be-forgotten salaries—salaries warranted under such conditions as obtained in 1920, but subject to deflation as well—must graciously step down with the rest. Deflation is unpleasant. It will be easier to understand and sympathize with the aspirations of the miner for a continuance of his wage and his resistance to a cut when you are contemplating or have experienced a reduction in yours.

A Timely Canvass of Coal Stocks

A SURVEY of stocks of coal in the hands of consumers as of Nov. 1 is to be conducted by the Department of Commerce and the Geological Survey. This is indeed fortunate, for lack of this information since the canvass of last April has led to all sorts of speculation in regard to our position with respect to supplies, needs and rate of consumption. Three years ago at this time stocks of bituminous coal in the hands of consumers were some 63,000,000 tons. The quantity now may possibly not exceed one-third that figure. The important thing is to find out just what it is and the corresponding rate of consumption. If there is a comfortable supply of coal above ground, well and good; if not, then knowing how we stand will assist the country in deciding what course to follow in December and the months before the possible suspension of mining in April.

The Survey bases its estimates of stocks on reports from some 5,000 consumers of coal, who have generously responded to each call for data during the past three years. We can but point out that as consumers they have as much at stake in the collection and dissemination of reliable reports of stocks of coal as anyone. Every consumer receiving a questionnaire should fill it out promptly, for the final report is valuable only as it is timely.

E. M. POSTON, PRESIDENT of the New York Coal Co., of Columbus, Ohio, and E. E. Clark, who was a member of the 1902 Anthracite Coal Commission, have been appointed by Secretary Hoover as members of a permanent committee of fourteen for the Unemployment Conference.

THE BUREAU OF MINES has completed arrangements for investigation of kiln processes, to be conducted at the Columbus, Ohio, station. The object will be to produce fuel economies in the burning processes.

SECRETARY OF INTERIOR FALL will shortly make a Western trip of inspection, giving special attention to mining, more particularly observing the field administration of the mineral- and coal-leasing law.

THE GEOLOGICAL SURVEY reports a disinclination on the part of some coal operators to furnish data in connection with unemployment to be compiled by the Department of Labor on the ground that it will be the first of a series of requests for information which may follow.

THE THING LABOR UNIONS throughout the world seem to be unable to see is how hire ever can be lower. — *Manila Bulletin.*

Heat from Steam Pipe of Pump Ignites Coal in Slope at Springhill, Nova Scotia; How Fire Is Extinguished*

Prop Ignited Spontaneously, Setting Coal Afire, and Mine Was Sealed — In Reopening, Slopes Were Cleared by Sections, Which Were Opened as Analyses Showed This Was Expedient

By J. C. Nicholson
New Waterford, N. S.

On Nov. 26, 1916, a serious fire occurred in the pipe slope of No. 3 mine, at Springhill, N. S., 1,050 ft. from the surface. This pipe slope was used mainly for pumping purposes, an 8-in. steam line extending down it from the surface to a large pump at the 3,200-ft. level. The temperature in this slope was high because pumping had to be carried on continuously to cope with the large amount of water encountered. All the timber and fine coal in this slope was extremely dry, and the difficulty to be expected in extinguishing a fire that had gained appreciable headway can be better imagined than described.

An attempt was made to seal off this slope and confine the fire to a small area, but on account of the intense heat and the nature of the roof it was found impossible to build stoppings tight enough to be effective. A pipe line was then put in from the surface and an effort made to extinguish the fire with water. This method was found to be ineffective, as the fire had gained considerable headway before the water was turned onto it.

Fought Fire Three Days Without Sealing

After fighting the fire for three days it was decided to seal up all mine openings at the surface. Soon after this was done a slight explosion occurred which blew out the stoppings in the main slope, as well as in the pipe slope. Without delay heavy stoppings of plank covered with clay to a total thickness of 6 ft. were built across the slopes. A 1½-in. pipe was put through each stopping for the purpose of getting samples of the air from behind it. The first analysis of air was made on Dec. 2, four days after sealing up. The results obtained are given in Table I.

TABLE I. ANALYSIS OF ATMOSPHERE, PRESSURE AND TEMPERATURE IN SEALED FAN SLOPE

Gases	Percentage		
Carbon dioxide	5 1	Barometer	30 in.
Oxygen	7 9	Thermometer	30 deg. F.
Carbon monoxide	0 5		

Because of a slight defect in the apparatus the methane content of the air could not be obtained at this time. On Dec. 3 a sample was taken through the steam pipe in the pipe slope. This pipe line was afterward found to be broken at the 800-ft. level. The results shown in Table II were obtained.

TABLE II. ANALYSIS OF AIR FROM PIPE IN PUMP SLOPE

Gases	Percentage
Carbon dioxide	7 9
Oxygen	7 8
Carbon monoxide	0 6

On Dec. 8, or ten days after the slope was sealed, carbon monoxide ceased to appear in the samples and the oxygen content decreased to 1.7 per cent. Before opening the main slope on Jan. 17, 1917, a small exhaust fan was installed near the mouth of the slope and a number of 20-in. galvanized iron pipe sections each 5 ft. long were assembled for use, as it was the intention to open the main slope only and take the gases up through the pipe. Before opening, however, samples of air were taken from the fan and pipe slopes with the results shown in Table III.

TABLE III. ANALYSES OF AIR WHEN AREA WAS FIRST OPENED

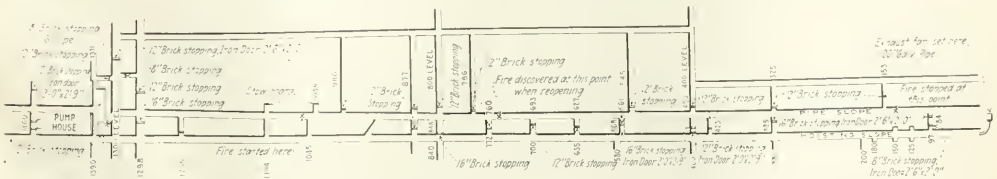
Gases	Percentage in Fan Slope	Percentage in Pipe Slope
Carbon dioxide	6 5	6 4
Oxygen	1 8	1 9
Carbon monoxide	nil	nil
Methane	7 9	12 5

At 2 p.m. the stopping in the main slope was opened and two men equipped with smoke helmets erected the ventilating pipe down to the 100-ft. crosscut. A stopping was built on the main slope at this point, and the one in the crosscut leading to the pipe slope was opened. An 11-in. pipe was led into the pipe slope to supply ventilation. A stopping also was built in this slope below the 100-ft. crosscut. When this latter stopping was completed that at the mouth of the pipe slope was removed and this passage cleaned from the surface down to the stopping. On Jan. 18 the analysis shown in Table IV was made from a sample of air taken from behind the stopping in the pipe slope at the 100-ft. crosscut, the barometer standing at 29 in.

TABLE IV. ANALYSIS OF AIR BEYOND 100-FT. STOPPING IN PIPE SLOPE

Gases	Percentage
Carbon dioxide	6 3
Oxygen	1 5
Carbon monoxide	nil
Methane	13 8

*Paper read before the Mining Society of Nova Scotia and entitled "Mine Fire in the No. 3 Slope, Springhill, N. S.



SPRINGHILL MINES SHOWING WAY IN WHICH PIPEWAY AND HOISTING SLOPE WERE OPENED BY SECTIONS
Entrance to mine is on the right hand side of map. The slopes dip toward the left. The fire started apparently by the heating of a prop 6 ft. from the steam pipe. The long slope became exceedingly hot, and the roof had fallen in places, as always happens when steam lines are introduced in the mines.

On Jan. 24 everything was ready to open the stopping below the 100-ft. crosscut. At 2:30 p.m. the opening was made and the same methods as described above were followed until the 400-ft. level was reached, where a stopping was built on the main slope and an air line extended into the pipe slope. It was not necessary to build a stopping in this latter passageway, as the water which had been used on the fire had washed a large quantity of clay and fine coal down to this point and closed the place entirely, thus blocking it effectively.

During the operation of moving down the main slope the fan, which was 5 ft. x 24 in. in size, was run at an average speed of 450 r.p.m. While cleaning operations were in progress the speed of the fan depended on the conditions prevailing. Although no signs of fire could be found there was ample proof that it had extended up nearly to the 100-ft. crosscut.

On Jan. 29 an opening was made in the stopping below the 100-ft. crosscut in the pipe slope, and fresh air from the 400-ft. level was allowed to pass through. This quickly cooled off this section. Cleaning and timbering operations were then begun. At 2 p.m. on Feb. 5 an analysis was made on air taken from behind the stopping in the main slope. This gave the results shown in Table V, the barometer still reading 29 in.

TABLE V. ANALYSIS OF AIR BELOW 400-FT. LEVEL, MAIN SLOPE

Gases	Percentage
Carbon dioxide	7.0
Oxygen	0.7
Carbon monoxide	nil
Methane	14.94

At 2:30 p.m. an opening was made in the stopping on the main slope, and the air line extended to the 772-ft. crosscut. Here a stopping was put in and plastered with "hardwall," which was found to give excellent results. During this entire operation no sign of fire could be discovered. A careful examination of all stoppings on both sides of the main slope was made and everything found to be in good condition. Telephone wires and water lines accordingly were extended to the 772-ft. crosscut. This work completed, the stopping at this point was opened and cleaning toward the pipe slope begun. Shortly afterward fire sprang up suddenly, but it was partly extinguished with two streams of water. A brick stopping was then built in the crosscut. On the following day the analysis showed carbon monoxide for the first time since the mine was opened. The results of the analysis then made are shown in Table VI.

TABLE VI. TWO AIR ANALYSES AT 772-FT. CROSSCUT

Gases	Percentage at 7 a.m.	Percentage at 11 p.m.
Carbon dioxide	5.8	6.6
Oxygen	2.7	2.4
Carbon monoxide	0.4	0.5
Methane	13.34	12.08

At this point is was found necessary to drive a crosscut from the main slope to the fan slope. After this was completed and a stopping put in below it, the stopping at the top of the fan slope was removed. The air was then short-circuited through the new crosscut to the fan slope, regulation being effected by means of a door in the stopping. On Feb. 26 the stopping at the 772-ft. crosscut leading to the pipe slope was again opened, and a stopping 12 ft. x 14 ft. x 12 in. thick was built in the pipe slope. On account of the intense heat and foul air this stopping had to be constructed by men wearing smoke helmets (not oxygen breathing apparatus). These men were relieved every hour. When this stopping was completed the one in the crosscut was again closed.

On the following day cleaning was started down hill from the 400-ft. level, but had to be abandoned during the night on account of gases given off by the fire. The pipe slope was again closed off at the 100-ft. crosscut, where the stopping was left intact, and a door was kept in readiness for effecting quick closure. Another stopping also was provided on the main slope for the same purpose. These always were closed over week-ends, as it was not found necessary to prosecute the work on Sundays, and it was considered that the men were in better condition after having their Sunday rest.

On March 3 it was decided to rebuild the stopping below the 400-ft. level, and preparations were made to clean the section from this point to the 772-ft. crosscut by opening each crosscut on the way down, thus sweeping out the passages in short sections. This was found to be quite satisfactory under the conditions prevailing. Before opening the stopping at the 560-ft. crosscut the analysis of air from behind it showed hydrogen disulphide for the first and only time. This was quickly cleared away by extending an 18-in. pipe line off the 20-in. line which ran down the main slope. No difficulty was encountered in cleaning up this section. The analysis taken in the pipe slope below the 560-ft. stopping on March 8 was as shown in Table VII.

TABLE VII. ANALYSIS OF AIR IN PIPE SLOPE AT 560-FT. CROSSCUT

Gases	Percentage at 10 a.m.	Percentage at 3 p.m.
Carbon dioxide	8.5	8.8
Oxygen	0.2	0.3
Carbon monoxide	0.5	0.6
Methane	11.07	12.46

The above analysis shows the composition of air in the pipe slope only. That of the air in the main slope below the 772-ft. crosscut was as shown in Table VIII.

TABLE VIII. ANALYSIS OF AIR IN MAIN SLOPE BELOW 772-FT. LEVEL

Gases	Percentage at 7:30 a.m.	Percentage at 2 p.m.
Carbon dioxide	7.4	7.4
Oxygen	2.2	1.4
Carbon monoxide	nil	nil
Methane	15.08	13.31

No further difficulty was encountered until the stopping below the 700-ft. crosscut in the pipe slope was reached. When this stopping was opened, signs of fire were discovered, but as there was another stopping in the pipe slope below the 772-ft. crosscut it was decided to attempt the cleaning of this section without sealing it up and waiting for the fire to die out. Two streams of water from a 2-in. hose were played on the fire at this point until this section was cleaned out.

This was found to be the most difficult section to clean, as at one time the carbon monoxide amounted to 2.2 per cent. The section had to be closed for the night, but it was reopened on the following morning. A quantity of coal that had fallen from the roof was burned to ashes, some of it coked and some of it honeycombed, while a large amount of the accompanying stone was burned to clinker. This rock and coal was from 4 to 7 ft. deep.

This was the last place where any fire was seen although it started about 300 ft. below this point. Though the air analysis showed that no fire existed below the 772-ft. crosscut, the same precautions were taken in opening the lower sections as were observed in those extending from the surface down to this point. On April 13 the place where the fire originated was

reached and, although it had been generally supposed that the fire began from wood lying on the steam pipe, it was found that spontaneous combustion was the actual cause, as ignition started on a prop near the west rib of the pipe slope. The steam pipe was at least 6 ft. from this timber. No doubt the intense heat existing in this passage and the dryness of the wood used for props and packing made ideal conditions for a disastrous fire.

It is unnecessary to point out the danger incurred in carrying steam underground, as the results in some of the mines in Nova Scotia are well known. On account of the intense heat given off it is impossible to keep the place containing a steam pipe in good condition, especially where the roof is bad. Constant heat tends to disintegrate the rock and cause numerous falls. As a track is seldom installed in these pipeways the falls of rock are not removed, with the result that the area of the passage is greatly reduced. This tends to cause greater heat, as the amount of air necessary to keep the place cool cannot be circulated.

Coat Pipe; Inspect Daily; Suspend by Chains

Where it is necessary to carry a steam pipe underground I would make the following suggestions: The pipe should be insulated with good material and a daily inspection made. It should be suspended with chains or rods fastened to permanent supports. All inflammable material should be kept away from the pipe line. A track should be maintained in such a pipeway so that all falling material can be removed promptly. And, lastly, stoppings should be so arranged that the pipeway can be quickly sealed off from the rest of the mine in case of fire.

I would like to call attention also to the importance of analyses of the gases contained within a section on fire. Systematic analysis of samples of the atmosphere from a burning mine or a section thereof has not received the attention in the past that its usefulness warrants.

When an entire mine or a section of it has been sealed to exclude air the samples of the atmosphere within the sealed area become desirable in order to determine the effectiveness of the stoppings. If they are tight this fact is shown by the depletion of oxygen in the atmosphere behind them. A period of anxiety always follows sealing, and any measures that may tend to allay fear that the fire is spreading or that will enable the mine officials to act promptly in case conditions grow worse, is worthy of consideration.

Another reason for the systematic collection and analysis of samples of air from the sealed area is to obtain information regarding the advisability of removing stoppings. Disastrous consequences have sometimes followed the premature reopening of sealed areas. Moreover in some cases fires have burned vigorously after external air was believed to have been excluded. Hence stoppings are sometimes left in place for many months, yet when they are eventually removed some uncertainty is felt as to the results.

I wish to thank C. M. Martin, underground manager at No. 2 mine, Springhill, for the analyses of gases here presented.

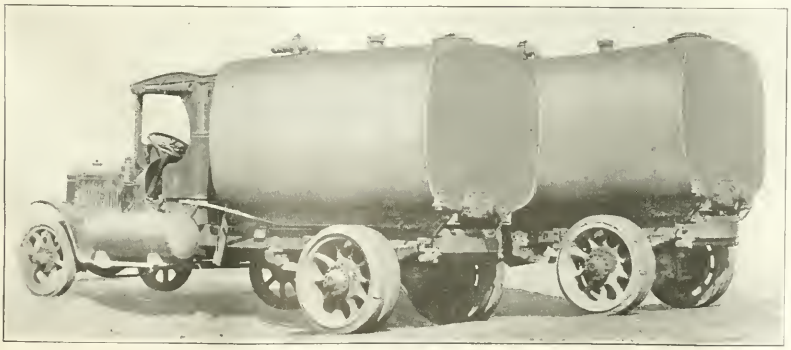
In Minneapolis Trucks Vend Powdered Coal For Apartments, Offices and Factories

A CENTRAL pulverizing plant is operated by the Hennepin Atomized Fuel Co., at Minneapolis, Minn., using for its delivery to hotels, offices, apartment houses, factories and public buildings five-ton Acme tank trucks. The raw fuel is unloaded by gravity into a concrete hopper, from which it passes through a crusher which reduces it to a maximum size of one-inch cube.

Bucket elevators carry the crushed coal to a storage bin, where a variable feed conveyor takes the fuel through an automatic scale into a mechanical rotary dryer. Here the moisture content is reduced to approximately 1 per cent, or 20 lb. per ton. It is then pulverized until 85 per cent will pass through a 200-mesh screen and 98 per cent through a 100-mesh screen. Immense storage bins then receive the atomized fuel for distribution.

The trucks are loaded by gravity from these bins. When unloading into the intake at the building, the tank, which is mounted on a dump chassis equipped with a power hoist, is tilted to an angle of 36 deg. Gravity then carries the fuel through an airtight flexible connection into the storage bin. A blower delivers it to the furnace, the fuel being fed to the side of the blower by a spiral screw conveyor operated by a variable-speed motor. It passes to the furnace through one or more burners, the feed to which is controlled by a valve operated from the boiler-room floor.

As the equipment is airtight the boiler room is clean. The feed is flexible, so that it is possible to meet fluctuating boiler loads. A large percentage of the fuel is saved now that wasteful hand-firing is abolished. Labor is saved both in firing and ash handling. The pulverized coal is hauled to destination without spillage. It is indeed strange that coal companies have not seized this plan for promoting sales of their product.

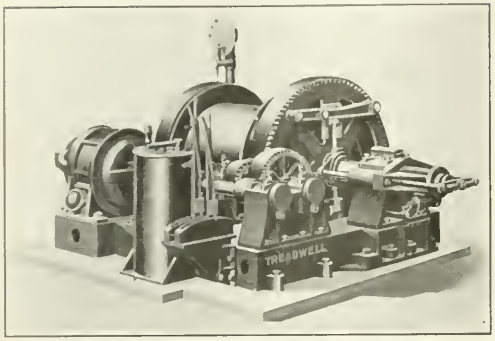


Pulverized Fuel Tanks

Atomized coal is delivered in this airtight tank to the Industries and apartment houses of Minneapolis for use under boilers. The company using these trucks has built up a trade which is now denied to its competitors.

This Hoist Has Improved Double-Toggle Clutch: May Be Operated by Hand

MANY improvements and refinements of design are embodied in a line of new hoists recently placed on the market. One of these machines is shown in the accompanying illustration. Among the details of construction differentiating this hoist from others designed for the same purpose is a double-toggle clutch mechanism which is asserted to be a marked improvement. The clutch in most cases is actuated by a double-acting cylinder, but it may be arranged for hand operation. It drives directly from the rim of the main gear, which carries the friction element, to the flange of the drum.



HOIST MADE WITH A CLUTCH OPERATED BY HAND OR DOUBLE-ACTING CYLINDER

All the joints between sections of the main frame are tongued and grooved, so as to afford a rigid connection. Differential brake has no cast-iron parts, thus no flows and blowholes exist to cause failure.

This construction eliminates all torsional stresses in the drum shaft as well as end stress or thrust upon the bearings and operating mechanism. When thrown the device is self-locking.

Tongued-and-grooved joints between all sections of the main frame, affording rigid connection between the parts, are another constructional refinement. Motor and intermediate bearings are mounted on a one-piece casting, which assures permanency and rigidity. Satisfactory provision has been made for the lubrication of all bearings and cast iron has been entirely eliminated from the mechanism of the differential brake, thus obviating the danger of failure in these parts arising from flaws or blowholes.

Hoists comprising this line of machines vary from 100 to 300 hp. in size and can be arranged for either electric-motor or steam-engine drive. They are built by the Treadwell Engineering Co., of Easton Pa., and were designed by Thomas O. Werner, an expert in hoist engineering with many years of experience. The sound principles of design embodied in their construction and the large manufacturing facilities of the maker as well as the service that can be rendered the purchaser should make these machines popular among users of this class of equipment.

Peel and Season Timber to Save Freight And Prepare Wood for Preservation

PERHAPS no phase of mining is given less attention than preparation and storage of mine timbers, yet timber in many mines constitutes one of the principal items of cost, particularly in metal mines, says the U. S. Bureau of Mines. By better preparation and storage of mine timbers the durability and strength may be considerably increased and the consumption decreased, thus reducing mining costs.

Preparation may be considered under two heads, peeling and seasoning. The principal advantages from peeling timbers are: (1) It lessens weight, (2) increases durability, (3) offers greater resistance to insect and fungus attack, and (4) promotes seasoning.

Peeled timber weighs 6 to 10 per cent less than unpeeled green timber. Therefore peeling at point of shipment effects a considerable saving in cost of freight. In comparatively dry workings peeling will increase the life of timber appreciably, but in wet places this is not so apparent. In dead timber the space beneath the bark is an ideal breeding place for wood destroying insects, which cause both weakness and more rapid decay. Bark also causes the retention of moisture and thus promotes fungus growth.

Seasoning mine timber has the following advantages: (1) It increases the strength and in some cases the durability, (2) decreases the weight and thereby reduces cost of freight and handling, (3) protects from insects and decay before the timber is placed in service, and (4) makes the timber more easily susceptible to preservative treatment.

Records of actual tests show that thoroughly seasoned

Crew Which Took Combination Honors at St. Louis

To Kenilworth, Utah, and the Independent Coal & Coke Co. went the award for the best combination mine-rescue and first-aid team in the international meet at St. Louis. The banners on either side show them the champions of Utah, which goes almost without saying seeing that they carried off the combination prize.

timber may be from 25 to 50 per cent stronger than green timber of similar varieties. Under some conditions seasoning increases the durability, but in general seasoning without preservative treatment does not add greatly to the life. Like peeling, seasoning decreases the weight of timber and thus saves freight and cost of handling. Experiments by the Forest Products Laboratory, Madison, Wis., have shown that round mine timbers up to 11 in. in diameter air seasoned three months lost 15 to 25 per cent of their original green weight, depending upon the size and variety of the timber. In general mine timbers may be sufficiently air seasoned for most purposes in three to six months, depending upon the weather, locality and variety of timber. Timber that is to be treated must be seasoned, as the preservative fluid cannot be injected until at least a part of the water which green timber contains is expelled.

Usually timber storage does not receive the attention that it deserves. Proper storage is essential for proper seasoning, also for preventing checking and initial decay before placing the timbers in service. Timber yards should be well drained and free from vegetation and decaying wood. Timber should be placed on supports at least 12 in. from the ground, and should be so piled that air can circulate freely.

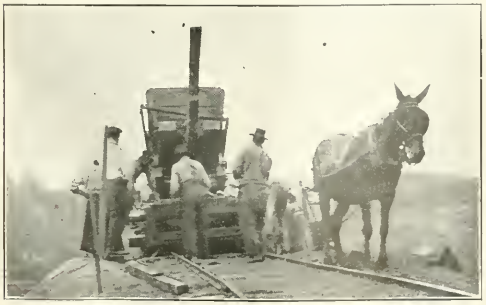
Machine for Hoisting and Automatically Unloading Rock Eliminates Ten Men from Payroll

Dump Builds Its Own Track Up an Eighteen Per Cent Grade—Will Discharge Over 240 Cars of Rock Per Day—Cone Spreader Distributes the Refuse as It Falls

By E. D. Rinehimer
Wilkes-Barre, Pa.

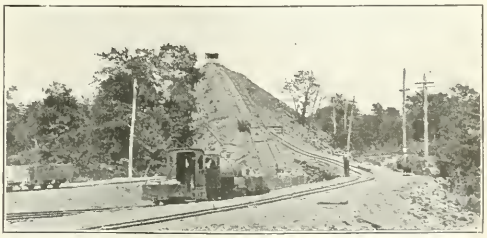
Rock disposal at the mine is one of the problems that sometimes bothers the superintendent. It is seldom, however, that either this or the other difficulties that constantly arise cannot be solved when sufficient time and thought are expended upon them. It often happens also that a method of performing certain operations has been in use for so long that the operator does not realize that an opportunity to cut down expenses is presented through the introduction of some other system until someone calls attention to this fact either through the press or by some other means.

Such an instance is illustrated in the accompanying photograph. This shows a system of handling rock that has been in operation since time immemorial and which is being used today by many operators. Where the mine is an old one the bank grows to such a length that a locomotive displaces the mule, and several cars



DUMPING MINE ROCK BY TURNTABLE TRUCK

This method depends on "brute strength and awkwardness," as the saying goes. The track weighed down with a loaded car running on bad track is pushed only with difficulty and, if given gradient, is hard to push back, for even when empty it is heavy. The crowd has been amplified here by two visiting women but five men is not unusual where speed is desired.



SAXON DUMP AT TOP OF HILL OF ITS OWN MAKING

The hoist on the dump pulls up the loaded mine car and near the top the car leaves the regular grade for a steeper slope on the machine, where the rock is dumped and falls on a cone spreader. Note the two tracks on the rock dump.

HIGH DUMP ON RELATIVELY LEVEL GROUND

To get a high dump like this on level ground without a hoisting plane is quite difficult. A long locomotive haulage road is necessary and it must be built on a steep grade. This is an expensive way of dumping when the dump has reached normal height and is still more expensive while the dump is shallow.

are taken to the dump at one time. The serious objections to both these plans are, first, the limited number of cars that can be handled and, second, the large acreage required on account of the limited grade that can be given the track. Perhaps the most serious objection to this method of slate disposal, however, is the large number of men necessary to do this work, which brings no return to the operator.

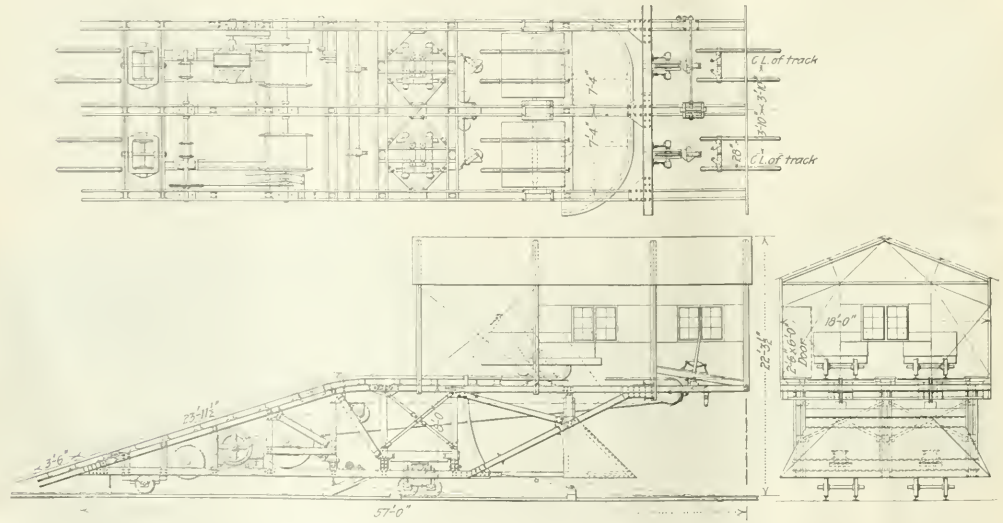
A number of years ago the Vesta Coal Co., realizing the importance of the problem, installed a machine known as the Saxon slate dump. Other operators in the soft-coal regions, seeing the possibilities of this device, put in similar outfits. The Wentz interests were the first anthracite producers to take advantage of this machine, and one was installed at a plant of the Upper Lehigh Coal Co. about six years ago. At this colliery it required originally a locomotive, an engineer, two laborers for dumping, one slate-plane engineer, and one loader at the pocket. In severe weather two more men were needed. After the dump was installed only an engineer and two helpers were necessary, thus showing a saving of from three to four men and a locomotive. On the strength of this success the same interests installed a similar machine at the plant of the Maryd Coal Co., where it originally required eleven men and two mules to handle the rock. The same quantity of waste is now handled by four men, showing a saving of seven men and two mules.

The Hudson Coal Co. in 1918 installed at the Pine Ridge colliery the largest machine of this type that, up to that time, had been built. It was a double-track affair, had a capacity of 240 cars per day of eight hours and operated upon an 18-per cent grade. This installation rendered unnecessary the services of about ten men who otherwise would have been employed.

This same company is now installing a new machine at this colliery. This is being designed and built by the Vulcan Iron Works, of Wilkes-Barre, Pa. The new machine is much larger than the original, being about 57 ft. long and 18 ft. wide. It will weigh when completed approximately thirty-five tons. It will build its own track up an 18-per cent grade, and the principal improvement over the original machine will be an increase in height. This will enable the dump to tip the cars to an angle of about 45 deg. to the horizontal.

Underneath the dump a steel plate chute, or spreader, shaped like a cone, has been placed. This throws the rock clear of the machine to the side or forward, thus building the roadbed. As the tracks are laid before dumping begins, it will be seen that when the bank is built up to them, the machine is ready to advance to a new position. This it does under its own power.

The operator's platform is elevated so that he can see the car as it comes up the bank. It is so constructed as to be level when the machine is working on the dump. A corrugated sheet-steel housing protects the operator and the device is actuated by a 75-hp. G. E. motor.



DUMP DESIGNED FOR USE AT HUDSON COAL CO.'S PLANT

Because coal is valuable is no reason why more money should be expended on provisions for dumping it cheaply than is expended to this same end for the dumping of rock. Rock dumping is a task to be performed as is coal dumping and it should be done just as cheaply as conditions permit. That there is no revenue to be obtained from dumping rock is certain, but equally sure is it that the work is a big creator of deficits if not handled economically, and at how few plants is it so handled!

Electrical Considerations Which Govern in a Choice of Locomotives for Any Given Class of Service

Locomotives with Dynamic-Braking Controllers Deliver Current on Descending Grades and Must Have Additional Motor Capacity — Effect of Low-Voltage — Solid Side Frames Increase Motor Temperature—Series-and-Parallel Control vs. Series-Parallel Control

By H. H. Johnston*
East Pittsburgh, Pa.

WHEN calculating the motor capacity the gear ratio and the drive-wheel diameter necessary for a given motor speed may well be considered. For a given machine raising the gear ratio will mean a reduction in speed and an increase in tractive effort for the same current per motor. The effect of increasing the diameter of the drive wheels will be exactly the opposite, i.e., an increase in speed and decrease in tractive effort for the same current consumption.

A motor having the desired capacity may require other attributes before it can be applied to the locomotive. The gage of the track and the clear distance between wheels for outside-frame locomotives, or the distance between the side frames of inside-frame machines, may not permit the use of the number and type of the motors desired, having the necessary capacity. With narrow gages this difficulty is overcome in some instances by the use of machines having a larger number of smaller driving motors. For example, a three-motor three-axle locomotive might be used instead of a two-motor unit. In other cases it might be advisable where larger machines are required to operate two two-motor units, or two three-motor units in tandem.

Motor Must Be Larger for Dynamic Braking

Motor capacity must be taken into consideration on such locomotives as are to be equipped with dynamic-braking controllers, for during the operation of the control in the braking positions the motors deliver current as generators. Instead of having a cooling period the motors are working under load while descending grades with their trips. Thus additional motor capacity will be required or what margin of reserve the machine would otherwise possess will be decreased by the use of the dynamic-braking system.

One consideration often overlooked by operators is the voltage available at the locomotive. Down in the mine the potential may fluctuate over a wide range of values, and at just the time when good voltage is needed at the locomotive it may not be available. Such conditions are expensive in mine operation and indicate excessive loss of power in transmission as well as in time by slower or retarded operation of the locomotives. Interruptions in the operation of other equipment such as gathering locomotives, coal-cutting machinery, pumps, fan motors, lighting and other devices receiving power from the line are affected either continuously or intermittently by slower speed due to low line voltage. Unnecessary abuse is thus imposed upon the electrical equipment. This is an indication of inefficient operation which can be overcome by remedying the inadequate power supply.

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With 250 to 275 volts at the substation, a potential of 80 to 100 volts at the working face is not unusual. Such conditions are nothing short of a crime, and all equipment designed for 250 volts and operating at, say, 100 volts is working at an efficiency 50 per cent below what it should be. To illustrate what may be the effect on locomotive output we will consider an extreme case.

Suppose a 20-ton haulage locomotive is starting with its load on a 4-per cent grade 6,350 ft. (1.2 miles) from the substation, the load being such that sand is required on the rails in order to obtain greater adhesion. The draw-bar pull amounts to 12,000 lb. or 6,000 lb. with a current draw of 390 amperes per motor. With 50 lb. rails, 4-0 trolley wire, good bonding, track paralleled by a 4-0 wire, and with a 1,000,000-c.m. feeder cable, the total voltage drop in the trolley and return would amount to 142 volts, leaving only 108 volts at the locomotive.

Controller in "Motors-Parallel" Position

In all probability the locomotive operator would notch the controller into the "motors-parallel" position, the result being that the line drop would be equivalent to the generated voltage, and enough torque could not be exerted by the motors to continue the movement of the load. This condition would indicate the need of additional substations, for but little would be gained by installing more feeder copper. Low-voltage conditions are responsible for many electrical-equipment failures, higher maintenance and operating costs.

The capacity of motors necessary for any service is dependent upon two considerations: (1) They must not overheat in continuous service. (2) They must be able to handle satisfactorily maximum loads occurring during any given interval. The normal rating of a mine

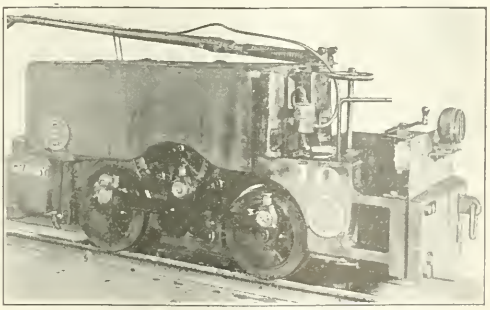


FIG 1. ONE OF THE OLD TIMERS

An early type of electric mine locomotive. The connecting and side rods evidently were heirlooms from the steam and compressed-air locomotives of an earlier day. They no longer form component parts of electrical locomotives.

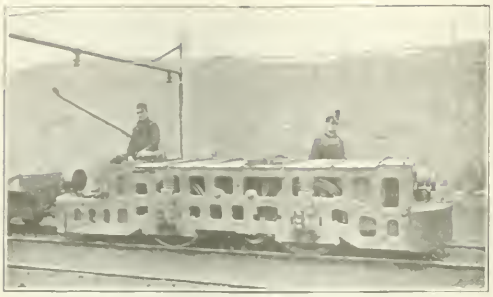


FIG 2. AMPLE OPPORTUNITY FOR VENTILATION
Outside frames with plenty of air openings facilitate radiation of heat from the motor cases. The frames themselves may be either steel castings or heavy plates with the openings cut or burned through them.

motor is the load that may be carried during a run on the stand at the rated voltage and current consumption without giving a greater rise in temperature than 75 deg. C. (135 deg. F.), measured by a thermometer, on the windings of the machine in accordance with the standards of the American Institute of Electrical Engineers.

In this connection it is important to note that external ventilation which exists under a mine locomotive, particularly in haulage service, renders the temperature rise resultant upon given losses in the motor less than that noted in a shop test on the stand. The amount of this ventilation will be greater or less depending upon whether the side frames are open or solid.

Attains Balancing or Free-Running Speed

The tractive effort of a locomotive is consumed in overcoming train, grade and curve resistance and in accelerating the trip. As the speed increases the tractive effort decreases, until a point is reached where the developed draw-bar pull equals the train, grade and curve resistance only. This is known as the balancing, or free-running, speed.

Control equipment, including mainly the controller and grid resistor, is designed to afford easy and accurate manipulation during acceleration and to permit governing the speed of the trip at all times. The number of notches is an important detail to consider, as this, within the limits attainable by the locomotive manufacturer, determines the smoothness of acceleration and the extent to which peak currents may be kept down.

Height limitations early brought about the use of the series-and-parallel type of drum controller. With this device the locomotive can either be started with motors in series or in parallel. Locomotive operators seldom use the series combination although when starting with parallel connections the peak currents from the line are greater than when starting with the motors in series. Series-parallel control (which differs from series-and-parallel control) provides that the motors shall be started in series, making the transition from the combination to motors in parallel without entire loss of torque.

This gives a more satisfactory type of control as careful design in the resistor and proper determination of the number of control points will give smoother and more economical operation both from the power-consumption standpoint and that of ease in operation of the locomotive. The series-parallel control can be incorporated in the larger haulage locomotives (ten tons and above) by some manufacturers without any necessity of increasing the height. This is accomplished by the use of a master controller with magnetically or electropneumatically operated contactors.

This system has proved advantageous because of low maintenance, fewer inspections and less frequent renewal of contacts, this latter being brought about by obtaining a better magnetic blowout and relative movement of the contacts making and breaking the circuits. Keeping the contactor compartment away from the operator gives him more space and obviates dangerous arcing near him. Overload protection is provided by relay opening of the auxiliary circuit to the contactors when a dangerously large current is flowing. This overload relay also is set well away from the operator, where it is not likely to be tampered with or its setting changed. The master controller is operated more easily than a main-circuit drum controller, and greater attention can therefore be given by the operator to the track, train movement and signals.

Going further into detail, such items as side-frame springs, journal boxes, bumper blocks, brake rigging, sand boxes, trolleys, headlights, wiring, etc., all need to be given careful consideration. In all these, detail developments are continually being made in order to meet particular operating conditions that vary from mine to mine.

The first electric mine locomotive constructed and put in service bore small resemblance to present-day units. At that time all equipment, including the industrial type of motors, controllers, resistor units, switches, etc., was much exposed. It soon became apparent that in order to meet the rough and tumble of mine operation and afford protection against falling slate and material from above, vast improvements were necessary. It also developed that the side-frame type of locomotive with its cover plates formed essentially an inverted box over the equipment.

Many Materials Used for Side Frames

Seven types of side-frame construction have been developed up to the present time. These include (1) solid cast-iron slab frames, (2) combined cast-iron and structural plates, (3) frames composed entirely of structural steel, (4) solid cast-steel, (5) cast-bar steel, (6) solid rolled-steel and (7) rolled steel plates with openings cut or burned out, giving the appearance of open-bar steel side frames. All of these types appeared to possess certain points of excellence at the time of their development and most of them had advantages when applied to some particular size and weight of locomotive. For example, structural side frames appeared advantageous to operators repairing or rebuilding frames damaged in wrecks or otherwise. On the more powerful locomotives, in order that the desired work might be performed, ballast blocks were necessary, as the side frames of structural material alone did not give sufficient weight.

In the design of side frames accessibility and ventilation are often overlooked. Ready access to the equipment when making repairs insures not only that such repairs will be made but frequent inspections also. Money may here be saved through greater production. A piece of apparatus that is difficult to inspect is likely to be totally neglected until it fails.

Locomotive bumper blocks vary widely in design.

This is brought about primarily because of an equal variation in coal-car bumpers and couplers. Solid cast-steel bumpers with safety lugs cast integral are the type generally employed on haulage locomotives, wood and wood-filled bumpers with plate-steel surfacing and separate safety lugs being common on the smaller gathering machines. Care must be taken in the design of locomotives to provide for transmitting the load to the side frames, simultaneously maintaining a permanent and rigid fit between these members and the bumpers.

The average locomotive operator believes that the springs under a locomotive are for the sole purpose of bettering the riding qualities of the machine itself and lessening the destructive action upon its equipment. This, to be sure, is their purpose in large measure. They exert a powerful influence, however, in the effect the locomotive has on the rails and roadbed. Its ease on the rails and its riding qualities to a large extent determine a locomotive's immunity from derailment under normal operating conditions. Maintaining the rails and roadbed in good shape will reduce in turn the wear and tear on the locomotive and its equipment, thereby decreasing operating expense.

Much trouble formerly was experienced with accelerator resistors—with those of the ribbon and ventilated-cell type as well as with those of the grid variety. Burnouts and breakages were overcome in large measure by careful investigation of the capacities required. Breakage also decreased as experience was gained in designing and manufacturing resistor units of alloy metal instead of cast iron. Larger cross-sections and different methods of supporting the grids also were employed.

Any type of accelerating resistor element practical for use with mine locomotives of present-day dimensions can be burned out. Although high temperatures, ranging up to red heat, of the grids are common practice and for short periods are not injurious, much of this could

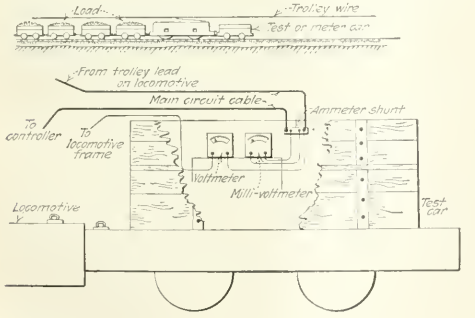


FIG. 3. A TEST CAR AND ITS CONNECTIONS

Either an ordinary coal car or one normally used for hauling sand or men may be used in testing current consumption. The ammeter is connected between trolley and controller and the voltmeter is between trolley and ground.

be avoided by more careful manipulation of the controller.

Reserve capacity both electrically and mechanically is a potent factor in the success of almost any class of machinery. Probably no other service depends upon this oftener than does that of mine haulage and gathering. This reserve capacity may be called into action for many reasons and its use be required for short or long periods regardless of the cause from which it may arise. One important need for reserve capacity under average present operating conditions comes about through frequent inadequate power supply as well as inefficient distribution and transmission. In many cases low voltage causes more abuse of equipment than all other factors, and reserve capacity is more often needed immediately for this than for other causes. This should not be the case with efficient mine operation.

Better and cheaper power is now being obtained by the use of automatic substations. These not only do away with attendants but by saving time increase the output. Safe and more constant power conditions prevail as a result of automatic control, as it does away with the variable human factor and effects automatic

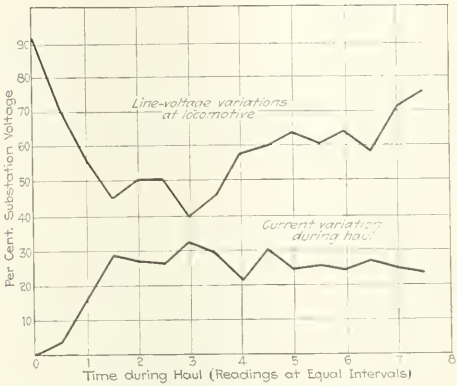

Per Cent Substation Voltage
Line-voltage variations at locomotive
Current variation during haul
Time during Haul (Readings at Equal Intervals)

FIG. 4. THE RESULTS OF A TEST RUN

The upper graph shows the variation in voltage at the locomotive during a test run, and the lower shows the current consumed. It should be noted that at one point the voltage at the motor dropped to only 40 per cent of that existing at the substation.

regulation in accordance with the load requirements and operating conditions, whether these be normal or abnormal.

It is simple and easy to make a test on the power conditions as they exist at the locomotive. This may be done by means of an ammeter and voltmeter, the ammeter being connected in the circuit between the trolley base and the controller while the voltmeter is connected from trolley to ground. A full set of readings for a complete run should be taken. By plotting these against time a fairly accurate graph of the conditions existing is obtained. Approximate locations along the haulageway may be noted at the time of making readings and by having at hand a profile of the haulageway the relation of grades, loads, track and line conditions can be compared with the graphs made from the readings taken.

It probably will be found convenient to have the above-mentioned meters set up in a separate car with provisions for temporarily illuminating them. This permits all possible freedom and attention to taking readings while the locomotive and trip are in motion. Test runs taken under various load conditions will prove both interesting and valuable at any mine. If a practice is made of taking such records at frequent intervals, in many instances any poor conditions existing in bonding, trolley or feeders can be detected and corrected before any great losses are incurred in time or output. Fig. 3 indicates the connections to and arrangement of meters and Fig. 4 is a graph representing power conditions at the locomotive as they have been found in some mines.

Electric Welder Which One Man Can Carry Affords Wide Current and Voltage Range

AUTOGENOUS welding is well and favorably known throughout the coal field, having been used extensively there. Three means of producing welds of this kind—thermit, oxyacetylene and the electric arc—are employed. Each of these has some field to which it is best adapted.

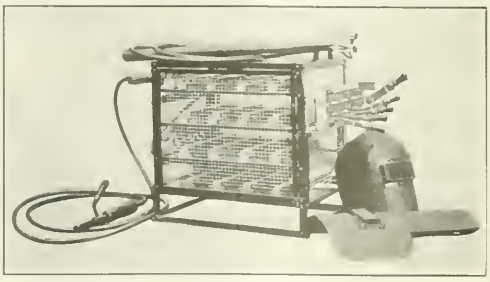
For use within the mine itself in rail bonding and similar work the electric machine possesses many advantages. The requisite power always is available wherever access can be had to a trolley wire or other electrical conductor, and energy is consumed only while the arc is flowing.

Of course, work underground, particularly rail bonding, is of a highly nomadic nature and the apparatus used for this purpose is successful about in proportion to its portability. Heretofore machines designed primarily for railroad work have been largely employed in the mines. Here they were to a degree handicapped by their weight, as they usually required two men for their transportation.

Non-Corrodible Bars of High Resistance

To meet the demand for a comparatively light and readily portable machine especially applicable to use underground, one that is efficient in operation yet can be easily carried about by one man, the Railway Trackwork Co., of Philadelphia, Pa., has developed and placed on the market its Ajax electric arc welder, type I. N. D. This is a rheostat consisting of high-resistance non-corroding wire, supported on insulator bars, fastened within a light, rigid angle-iron frame. At either end of this frame at the top is placed a D-handle for convenience in carrying, while at one end is located a series of control switches giving a satisfactory range of current flow for welding purposes. Of course the outfit embraces an electrode holder, a helmet and a trolley or cable hook. As trolley wires usually are brighter and consequently offer better electrical surface contact on the bottom than on the top this hook is fitted with an under clamp making contact with the wire upon its lower side.

This machine weighs 55 lb. and consequently can be readily carried about by one man. Its dimensions are 15 x 20 x 20 in. As is well known, the voltage in mines is subject to frequent and comparatively wide variations, in some instances falling to as low as 50 per cent of its normal value. This welder is of such capacity as to be capable of satisfactory operation under any and all conditions likely to be encountered.



WELDER WITH PORTABILITY AND VOLTAGE RANGE

A uniform job like welding a rail would seem to want little adaptability on the part of the welder. Unfortunately the current and its voltage vary, and the welder must be able to meet all the many variations.

The regulating switches already referred to provide a range of current from 18 to 277 amp. with normal line voltage, while should the potential drop to 150 volts, 174 amp. can be obtained. Ventilation is excellent and as no portion of the coils is inclosed, air has free access to all parts of the apparatus. Furthermore the internal wiring is so arranged that should a break develop in any coil it can be repaired quickly in the field and no serious delay be caused.

At the end of the machine where the current enters, a line switch is provided. The switchboard regulating the current delivered to the electrode is placed at the opposite end and the switches there located are not only of heavy and substantial construction but are so arranged as to give a perfectly flexible control. A shunt switching device also is provided which facilitates the use of large currents when the voltage is far below normal. In all, thirty different values of current, within the range above mentioned, can be obtained.

Portability, high amperage, a wide range of current control, complete ventilation and ready accessibility of parts are the outstanding characteristics of this machine. Its small size, easy transportableness, simplicity and reliability are the considerations that adapt it particularly to work underground.

Suggestions as to the Maintenance of Alternating-Current Hoist Motors

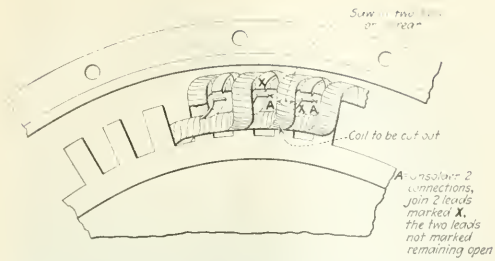
By J. E. Housley
St. Louis, Mo.

ALTERNATING-CURRENT hoist motors require maintenance methods which differ somewhat from those employed upon steam hoisting engines. With the electric hoist it is especially important that the men responsible for repairs acquaint themselves with the principles upon which alternating-current machines are built. These are set forth in a number of excellent handbooks on electricity. From the same source the repairman may obtain a valuable knowledge of the function of the various kinds of installation used, linen tape, varnished cloth tape, fish paper, fiber and treated or empire cloth.

A common ailment of the slip-ring hoist motor is the breaking of resistance grids. As the function of these parts is to limit the initial power inrush taken by the machine, when a grid is broken it cuts out a portion of the starting resistance, thereby giving a jerky and sometimes diminished starting effort. As this condition affects only the starting circuits the running characteristics of the machine are not changed.

In motors having partly closed slot rotors with a round-wire winding, trouble may develop from the coils grounding where they leave the slot. This usually is caused by a gap on the coil, where its taping does not reach quite into the slot of the rotor. This gap becomes covered with carbon and with the bronze particles from the wearing of the brushes and the slip rings.

It is well not to use slip-ring brushes which contain a high percentage of copper, for as the brushes wear, this metal is deposited on the windings of the rotor. After a time these particles will work between the bars or coils and cause breakdowns between the phases and shorted windings. If a failure of this nature occurs



SHOWING HOW TO CUT OUT A COIL

The cut-out coil may be left in place if it is cut in two so as not to generate a local circulating current when the motor is in operation.

and only one or two coils are damaged beyond temporary repair, such coils may be cut out of the circuit and the motor kept in service indefinitely or until such time as permanent repairs can be made.

"Cutting out" a coil appeals to many electricians as something of a mystery, whereas it really is extremely simple, especially as compared to the analogous operation on a direct-current armature. In cutting out the coil on an alternating-current stator or rotor it is necessary to unsolder the two leads of the damaged coil; this leaves an open lead on each coil adjacent to the damaged one. Now join these two open leads by either a clip or a wire of the same size as the one in the coils. The coil which is cut out of the circuit may be left in place if it is cut in two at some point so as to prevent a local circulating current being generated in it. Such a current would cause the coil to become overheated and might damage the adjacent windings. This operation is shown in the accompanying illustration.

In the Small Clearance Lies a Danger

The air gap between the rotor and stator on alternating-current motors is small. For this reason the clearance should be checked frequently. When danger of the rotor striking the stator becomes evident the bearing linings should be renewed. It is important to examine periodically the bearing housing. The vibration set up by gearing often loosens the bearing shell within this housing, sometimes sufficiently to allow the rotor to strike the stator. This condition can in many cases be remedied by planing the joint between the bearing cap and the housing.

The motor should be watched for signs of overheating. Where it is operating on a feeder circuit together with other induction motors it is possible for it to run with one of the fuses of the feeder circuit blown. This, however, is accompanied by excessive heating of the motor if it is working at or near its rated capacity.

Dragging brake bands on the hoist mechanism are another source of over heating. In one instance the running load on a 110-hp. hoist motor was increased from 85 to 110 hp. with proportionately higher starting values, because a brake of the band type did not clear the drum sufficiently when the brake was released. This increased load, amounting to 25 hp., was not sufficient to cause the brake to smoke, and the engineer did not check the brake clearance with sufficient accuracy until the motor began to show serious overheating accompanied by the throwing of solder from the rotor connections. This would indicate that electrical maintenance should involve also an appreciation of the mechanical defects.

Emergency Power Derrick Aids in Quickly Removing Heavy Debris After Mine Fire

NECESSITY recently caused the invention of an inexpensive derrick, simultaneously showing a new use for small portable mine hoists. Fire had gutted a mining plant in the West and it was necessary to provide means for quickly clearing away the débris so that construction of the new building might begin promptly. The derrick in question was used to lift the heavy material. The hoists employed (in this case Little Tuggers) had been originally installed underground. They are small, comparatively light, yet powerful machines driven by either compressed air or steam.

The derrick was built and operated as follows, both mast and boom being made from telegraph poles: The mast was provided with a suitable foot and swiveled at the top on a pin passing through a plate to which guy ropes were attached. The boom was hinged to the mast at its lower end in the ordinary manner by means of side plates. One rope extended from the upper hoist, bolted to the mast near its foot, to a sheave near its top, thence to a block at the peak of the boom. From here it was reeved back and forth between this block and the one at the masthead forming the topping lift. The other rope passed from the drum of the lower hoist under a sheave attached to the mast near its foot, thence over a sheave near the boom peak, whence it was reeved through the hook block and a second block at the peak of the boom. This formed the fall or hoisting line—the real "business" portion of the derrick.

Swinging of this derrick was done by hand, although a third hoist might readily have been used for this purpose. In such a case a bull wheel or its equivalent would have been necessary. For work of the nature that this

MINE HOIST MEETS HOISTING NEEDS OUTSIDE WORKINGS

The superintendent who regards the room hoist as a solution of underground difficulties only misses many advantages which such a convenience will afford.

device was intended to perform power swinging is hardly essential.

This derrick is shown in action in the accompanying illustration. With the pulley arrangement shown it was capable of lifting a load of approximately three tons. The lifting capacity may, however, be varied to suit local conditions through changes in the number and arrangement of the hoisting sheaves.

Convertible Crane Profitably Used at All Stages from Construction Onward

MANY coal companies have more or less work that might well be performed by a locomotive crane with an increase in the effectiveness of labor. They also have more or less use for a steam shovel, a dragline excavator and various other power-driven machines. In many cases, however, they do insufficient of any one kind of such work to warrant the purchase of a machine intended solely for that particular operation.

To meet this condition as well as to fill the needs of contractors and others requiring various kinds of material-handling equipment the machine shown in the accompaning illustrations has been placed on the market. This device known as Excavator Crane No. 206, is primarily a locomotive crane and as such may be used with either a clamshell or an orange-peel bucket. Numerous attachments, however, render it available for many other operations.

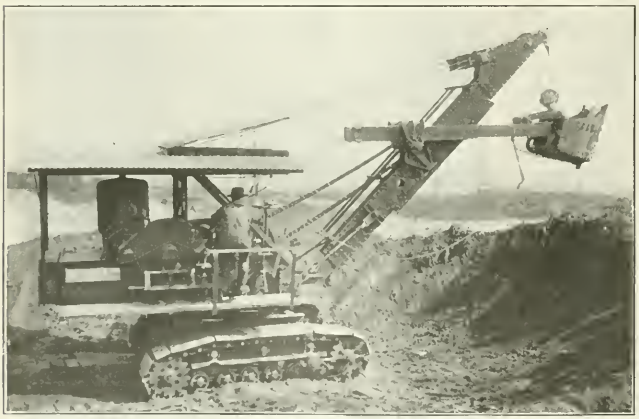
Thus, equipped with a crane hook, it may be used for lifting heavy machinery, laying pipe, handling large sewer tile and the like, and with suitable slings it may be employed to advantage for moving ties, props or lumber in the timber or storage yard.

With a clamshell bucket the machine can, of course, be used for moving coal from car to storage or vice versa, as well as for handling sand, gravel, crushed rock and the like. Such a bucket may also be used in excavation work, making roads, railroads, sidings, diversions and flood channels for streams, terraces for buildings sites and cellars for stores, offices and dwellings. With the orange-peel bucket this machine may be used for dredging or deep excavation such as the early stages of shaft sinking. Fitted with a Page bucket it may be used for digging or cleaning ditches, digging sewers, making foundation or cellar excavations or for stripping.

Equipped with a backfilling bucket this machine may be used to do shallow scraping or backfilling and similar work. With a skimmer scoop it becomes available for grading, leveling and like operations. Still another

WORKING AS A DRAGLINE EXCAVATOR

Almost all the marvelous capacity of the army tank becomes available when the crane is mounted on a caterpillar tractor. Neither good roads nor expensive road-making excavations are necessary.



As a Stripping Shovel

Attaching a dipper stick and a shovel makes the crane available for stripping and heavy foundation work. It will make roads, railroads, side tracks and reservoirs and will dig out waterways to straighten crooked streams or protect mines from flooding. So many are its uses and so easily does it perform them that it will not fail to find profitable uses at a mining plant.

As a Locomotive Crane

Thus rigged the crane will store coal, reclaim it or move it when it shows a tendency to fire spontaneously. It also will move ties and props or such other lumber as can be treated by dipping into treating tanks.

attachment converts the machine into a power shovel, making it available for stripping, digging large foundation excavations and, in fact, performing all the work ordinarily done by any other small, full-revolving shovel.

This machine is driven by a heavy four-cylinder vertical gasoline engine. This is of 50 hp. and is fitted with a heavy flywheel. It readily assumes heavy overloads. The crane proper is mounted on a caterpillar or corduroy truck of heavy construction.

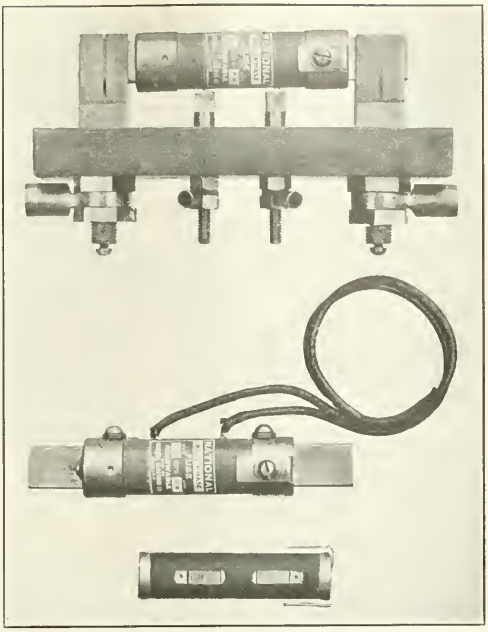
This excavator crane, manufactured by the Pawling & Harnischfeger Co., of Milwaukee, Wis., seems to be a veritable jack-of-all-trades.

Fuse to Prevent Motor from Running Single-Phase and Thus Burning Up

LARGE industrial plants have been seeking, and electrical manufacturers for years have been striving to produce, some means to prevent accidents to polyphase motors arising from their running single phase. Motor builders have devoted most of their experiments to the utilization of a relay in connection with the controlling apparatus. Inasmuch, however, as the blowing of one fuse does not operate a multiphase circuit breaker or overload release, the motor invariably continues to run single phase. More machines burn out from this cause than from any other.

To achieve the desired results the Federal Electric Co., of Chicago, has developed and patented a low-voltage auxiliary coil embodied within the cartridge case of a National renewable fuse. As this device can be placed in the container in only one position, it easily makes the necessary auxiliary connection with the fuse case itself. Leads are then brought out for connecting the inter-phase circuit in either delta or "Y." This is done either with wires attached to the case for front connection, or with auxiliary knife-blade connections placed on the back for connection on panels, switchboards, etc.

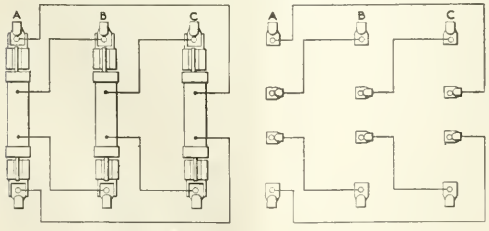
The National multiphase renewable fuse, as the new device is termed, serves two purposes. First, as a fuse it is so constructed as to withstand the high starting current of motors, yet hold the running load within the limits prescribed by the Underwriters' Laboratories, Inc. It is powder packed and provided with a metallic "tell-tale" indicator which shows upon the outside of the case the rated amperage of the fuse element contained. As the fuse is made for operation on multiphase circuits, it acts as a circuit breaker—that is, when one fuse blows, the auxiliary device causes one of the elements in one of the other cases to blow also, thereby breaking the circuit entirely and eliminating the possibility of the motor running single phase. It is thus really a fool-proof time-limit fuse.



MULTIPHASE RENEWABLE FUSE AND CONNECTING CLAMPS

A powder-packed fuse which will withstand high starting current but will blow if the current is maintained for an excessive period.

The two most frequent causes of motor failure are: (a) the overloading of fuses by placing two or more elements or one element of too great capacity in the case and (b) the operation of the motor on single phase. It is impossible to place more than one fuse element in the National fuse case and as this device assures the breaking of the circuit when one fuse blows, it means the highest protection possible to multiphase motors and circuits at only a slight additional cost over fuse of the ordinary renewable type. It is believed that no other device on the market will perform the same service. The chief advantage possessed by these fuses over circuit breakers is the fact that many of these latter devices function prematurely and in some instances fail to operate at all when they are most needed.



FUSE CONNECTIONS TO PROTECT THREE-PHASE MOTORS

When one fuse blows by reason of excessive load the current ceases to flow in all the phase circuits of the motor. Thus the fuse acts as a circuit breaker.

A LIFE OF GEORGE WESTINGHOUSE has been written by Colonel Henry G. Prout and will be published by subscription by the American Society of Mechanical Engineers. Mr. Prout succeeded Mr. Westinghouse as president of the Union Switch & Signal Co., having been his vice-president and general manager for eleven years, and therefore closely in touch with him. The first opportunity to buy the book will be offered to the members of the four principal engineering societies, of which the American Institute of Mining and Metallurgical Engineers is one. The book will be bound in half morocco and cloth, the price being respectively $6 and $3.50 postpaid. Subscriptions should be sent in not later than Oct. 31, 1921, to be ready early in December. A popular edition for about $2.50, on cheaper paper and in a less expensive binding, will be published about February, 1922, by Charles Scribner's Sons. The book contains 330 pages and measures 6 x 9 in.

Problems of Operating Men

Edited by James T. Beard

Dangerous Practices in Blasting

Mixing of Different Grades of Blasting Powder Liable to Cause Windy Shots—Charging a Hole with a Small Stick of Dynamite When Shooting with Black Powder Also Dangerous

ALLOW me to say a few words regarding some dangerous practices common among miners when blasting coal. I am reminded of these, after reading the letter on "Shooting Coal Off the Solid," *Coal Age*, Aug. 25, p. 302.

A number of mines in this district permit solid shooting. What makes the matter worse is the fact that they are permitted to use single- or double-F blasting powder and dynamite, as they choose. These different grades of explosives are given to the miner on his own order.

The majority of the miners, perhaps, are not skilled in the use of explosives. They do not realize the danger arising from their habit of mixing the different grades of powder when making up their cartridges. It is quite common for a miner to run short of single-F powder and finish charging the hole with a FF grade.

Of course, the FF powder being finer burns quicker and, in exploding, may blow the F powder from the hole in a partially burned condition. This causes a windy shot, since much of the force of the explosion is expended on the air.

Serious Results Follow Mixing of Different Grades of Powder

There may even result a blownout shot as the result of mixing two grades of powder. The finer powder exploding first may crack the coal, blow off the heel of the shot or, perhaps, blow the tamping. In any case, there results a tremendous burst of flame, which is projected into the air often with disastrous results.

Where coal dust is present at the working face, this is liable to be blown into the air by the force of the blast and ignited by the flame of the burning powder projected from the hole. The result is a local explosion of dust or gas or both, which may or may not extend throughout the mine, according to the condition in the airways with respect to dust and gas.

Many mine disasters are caused by miners exercising poor judgment in placing shots and charging their holes. Failure to mine the shot or to locate the charge so that it will be free to perform its work; or the excessive use of black powder; or the mixing of different grades of powder in the same charge has caused the death of many a miner and the injury of scores of others.

Attention has often been drawn, in *Coal Age*, to the danger of firing deadholes, in blasting. A deadhole is one drilled straight into the face of the coal, or one in which the charge is so located that the line of least resistance corresponds more or less closely with the axis of the hole. The firing of such a hole will cause a blownout shot.

"Cracker Shots" Dangerous

When driving an entry, miners often make the mistake of using what they call a "cracker" shot, which is a hole drilled at or near the center of the heading and seldom mined or sidecut. Too often this so-called "cracker" is tamped with fine coal dust or slack, which adds greatly to the danger of firing the shot.

As a means of avoiding many of these dangers in blasting, allow me to suggest that coal operators should refuse to deliver more than one grade of powder to any miner. That should be a grade of permissible powder best adapted to the conditions in the coal. Owing to its flaming qualities, the use of black powder in blasting should be prohibited. Dynamite should only be given to a miner on the written order of the mine foreman, when it is required for the blasting of rock or similar purpose.

Keep Record of All Powder Delivered

In my opinion, there should be kept at every powder magazine a strict record of the powder delivered to each miner. The record should state the date, kind and amount of powder given. On the sheet there should be space for the signature of the man receiving the powder. This record should be examined by the district mine inspector on each visit he makes to the mine.

Before closing, I will mention but one other dangerous practice, which is common at some mines. It is the habit of many miners to open a keg of powder by punching a hole in the end of the keg with a pick. The stroke of the pick often causes a spark that ignites the powder and the man is either killed or severely burned.

These and other unsafe practices show clearly that a large class of miners are not awake to their own safety; and the fault does not rest with the miners alone as a great number of mine officials fail to look into these matters and caution their miners against them. Perhaps, 10 per cent of our mine foremen perform their duties, by instructing the miners in regard to safe methods of doing their work, while the remaining 90 per cent are too busy to give it a thought.

Crawford, Tenn. OSCAR H. JONES.

Accident Bulletins

Appoint special committee to investigate and report on all serious accidents—Make bulletins specific and personal—Give copy to each man.

MY experience in impressing the average mine worker with a thought of his own safety has been very much the same as that described by a Johnstown superintendent, in a letter on this subject, *Coal Age*, Aug. 18, p. 262. The plan he suggests would have a decided advantage over the ordinary custom of posting a general bulletin in a conspicuous place.

Where a general bulletin fails of its object is in not being specific. In order to impress the mind of the reader a bulletin should picture an actual accident, naming the victim and giving the details as to how it occurred and in what way it might have been avoided. In other words, the bulletin must talk.

Accident Bulletins Must Make Personal Appeal

A mere notice drawing attention, in a general way, to a particular kind of accident is vague and imaginary and commonly fails to arrest the attention of the careless reader. On the other hand, when a bulletin names the particular person who was hurt or killed, it becomes real and enlists the interest of every one of us.

To accomplish results, the first essential is to arrest the attention and gain the sympathy and interest of a reader or listener. That is half the battle. The appeal must be personal. A copy of a bulletin reporting an accident in this manner and given to each man will be read and the story will go home in a way that the man will not soon forget.

One company I have in mind has a special committee render a report on every serious accident, after making a thorough investigation. Copies of the report, including a print showing how the accident happened, are sent to both the mine officials and the safety committee. Other copies are posted at

prominent points in and around the mine.

The suggestion of giving a copy to every mine worker impresses me as a good one. I have felt for some time that there is not enough serious thought given to carrying home to the mind of every worker the story of the accident and making it impressive.

Work of Special Committee Must Be Thorough

The appointment of a special committee and the care with which they make their investigation will have such a tendency. The committee should take all the time that is needed to call and examine witnesses, and become thoroughly familiar with every detail of the surroundings. The more thorough the investigation the more impressive will be the lesson taught by the accident.

There comes to my mind, just now, a certain coal field that is famous for many cold-blooded murders, every one of which has been given prominent space in the daily newspapers throughout the country. Is it not a strange fact that, for every murder committed in that field, there has been a fatal accident in the mine; and yet these have received but scant notice in the news of the day.

The subject is well worthy of serious thought and should call for action on the part of all mine officials who are anxious to safeguard human life. Only in this way can the number of fatal accidents be reduced and our mines made more safe for work.

Pikeville, Ky. George Edwards.

Make Mining Laws Complete

Safety in mining coal dependent on complete and clear mining laws—No need then to ask officials to go beyond what the law requires.

KINDLY permit me to correct the understanding of Ex-Mine Inspector, John Rose, as conveyed in his letter, *Coal Age*, Aug. 11, p. 218, where he quotes me as saying, "No mine officials should be asked to go beyond what is required in the law in making the mine safe." Mr. Rose should have completed my statement by adding the words "which is thought to be complete and clear."

I heartily agree with all that my friend has said and indorse his references to the sentiments expressed by Oscar H. Jones and R. W. Lightburn, regarding the importance of making our mines safe. We appear to differ, however, in respect to the means employed to that end.

The statement made in my previous letter, July 21, p. 101, was to the effect that no mine official should be asked to go beyond what is required in a law that is thought to be complete and clear. I want to emphasize the fact, which is uppermost in my mind, that it is of chief importance to make our mining laws clear and complete and then see that they are enforced strictly and all violations punished.

For 28 years previous to the passage, in 1913, of the new mining code, in Colorado, we had experience with a law that left much for the mine inspector and mine officials to do in making the mines safe.

Complete Laws Reduce Death Rate

Previous to the enactmet of the new law, the record for fatal accidents in our mines was 7.14 deaths per thousand men employed. Under the new law, this rate was reduced to 3.35 fatal accidents per thousand men employed, except for that one year (1917) when occurred the terrible mine explosion at Hastings, due to the opening of a locked safety lamp by a miner.

Let me say, here that every mine official has his own standard of what is required to make the mine safe. On the other hand, he is employed by his company, primarily, to get, out the coal. In general, under these conditions, the question of safety is restricted to what the law requires. Let me ask, What degree of safety does this portend if our laws regarding safety are not clear and complete.

No Violation Where Law Is Not Complete and Clear

In commenting on the uncertain reading of the Bituminous Mine Law (Pa.), Mr. Jones agrees with other writers in saying (May 26, p. 956) that the meaning being indefinite "warrants the conclusion that no law was violated," when the fireboss permitted open lights on a return current from a place generating gas. It is certain that where there is no violation of the law, there is no way to punish a miner who performs an unsafe act.

A mine inspector, finding conditions unsafe in a mine, can make a recommendation and report the matter to the chief inspector; but, unless there is a violation of the law, compliance with the recommendation is optional with the company. In nine cases out of ten, the inspector will find the condition unimproved on his second visit. The silence of the law on the matter makes the inspector helpless, since the law is his only weapon.

Advantage Taken of No Penalty

As is well known, mining companies expect their officials to get out the coal with due regard to safety; but get it they must and every advantage is taken of a defective or incomplete or unclear mining law. Mine officials are too prone to take chances where there is no expressed prohibition or where no penalty is attached for a violation of the law.

How many foremen would make a ruling requiring that all coal must be mined to a certain depth, or sidecut, where the practice of the miners had long been to shoot the coal off the solid, although it was well known that so doing had caused many local explosions and men had been burned. It is here that the law must step in and prohibit this and other unsafe practices and provide a penalty for violation.

The president of the Mine Inspectors Institute of America, in his annual address, at St. Louis, July, 1915, stated that, in his opinion, one-half of the mine accidents could be prevented by living up to the requirements of the state mining laws and obeying the rules and regulations in force in the mines.

If this is true, how much more could be effected by making these laws clear and complete. Any one who claims it is impossible to frame a law that will suit the manifold unsafe conditions that continually arise in the mining of coal, is assisting to block the progress of legislation tending to insure a maximum degree of safety.

Attention to Legislation Needed

The late James E. Roderick, then chief of the department of mines in Pennsylvania, once remarked: "We should give our full attention to this matter of suitable efficient legislation and, putting our shoulders to the wheel, see that such laws are enacted and enforced as will reduce the number of mine accidents to a minimum."

It has frequently been stated by the editor of this department of *Coal Age*, that there is a great lack of clearness in the mining laws of some states. He has drawn attention more than once to the need of specifying what is meant by a gaseous mine. I have in mind one operation, in Colorado, where gas has been generated, at intervals, in dangerous quantities. Again, the same mine would produce so little gas that open lights were allowed and used until the trouble returned.

Many Strong Points in the Mining Law of Colorado

There are many strong points in the Colorado Mining Law, but I want to refer to one that specifies in a broad clear manner the distances apart that crosscuts may be driven. The law reads: "Crosscuts shall be driven as often as the inspector may order, but, under no circumstances, shall the working face be more than 60 ft. in advance of the air current."

In this respect the Colorado law differs from that in many states where the inspector is authorized to permit the driving of crosscuts at greater distances than that mentioned in the law if, in his judgment, it is safe to do so. This reminds me of an old story that runs somewhat as follows:

A little boy was swearing at his sister when a man approached and told him the devil would get him. The boy replied, as he had often been told, that "the devil was tied with a chain." "But," said the man, "that chain is long enough to reach around the earth." The boy quickly retorted, "Then he might as well be loose."

The answer of the boy points the application of my story to many of our mining laws, which are made so broad that there is no restriction and the law might as well not have been written on the statute books.

Farr, Colo. Robert A. Marshall.

Certification Upheld

Questions asked in the examination for certificates not simple—Uncertified men fail in many respects—Judgment of operators not without prejudice—Certified men preferred.

SELDOM have my feelings been aroused as when reading the letter signed W. A. G., *Coal Age*, Aug. 4, p. 181. The writer speaks of having an "experience of over 20 years, covering every coal field on the continent."

Though he claims to have come into close contact with both certified and uncertified mine officials, I am led to believe that he would do well to go over the ground again and revise many of his conclusions regarding the certification of mine officials.

Analyzing the Question of Harm in Granting Certificates

Judging this writer by his statements, I am forced to conclude that his acquaintance with the work of examining boards is limited to a few instances where the simple nature of the questions asked have made those examinations inadequate for determining the qualifications of the candidates.

In the first place, he gives it as his conviction that the granting of certificates to many men is doing "more harm than good." His remarks would seem to imply that certifying a man gives him a swelled head.

Were it not that the remarks of this brother cast reflections on the ability and integrity of many examining boards, who meet each year to formulate the questions to be asked candidates in the examination, the letter might be passed by as expressing the opinion of an individual having but a limited knowledge of the situation.

Having myself attended many examinations of mine foremen, in the bituminous district of Pennsylvania, I can state without hesitancy that the questions asked in these examinations are not simple or such that any one could answer, as stated by this writer.

Examining Boards vs. Judgment of Coal Operators

In condemning the examination for certificates by styling the questions asked as simple and requiring but little study, the writer seems to contradict himself when he states, in the next breath, that he has known many men who would make splendid mine officials but who lack the necessary education that would enable them to pass the examination for a certificate.

Speaking of the selection of men for responsible positions, by operators, it seems to be the opinion of this writer that they are better able to judge of men's qualifications than a duly appointed examining board. He argues that the success of an operation depends on the ability of the men chosen to make good in the positions to which they are appointed.

It is my belief that 90 per cent of coal operators know less of the actual details of mining than an ordinary mine worker who has had years of experience underground. This opinion is supported by the fact that many uncertified men occupying the highest official positions in mining would be unable to pass a mine foreman's examination.

Operators Base Their Judgment on Acquaintance with Men

The judgment of an operator, in selecting a mine foreman, is necessarily limited to men who have been in his employ and whom he has known for several years. If a stranger applies to him for a job, the first question the operator will ask the man is: "Have you a certificate?"

All the men I have ever heard condemning the examination for mine-foreman's certificate are men who have never attended such an examination. They are mostly men who have not the ability or the ambition to study and fit themselves for higher work. Another class is composed of men who depend on their influence or pull to gain a position.

Good and Bad Men in Each Class

While agreeing with the writer when he admits that there are good and bad men, both certified and uncertified, my belief is that uncertified men fail, as a class, in many important respects such as the following: Not knowing the state laws; being unacquainted with first-aid work; having no technical knowledge of the principles of mining, the properties of mine gases, the coal formations, etc.

Many uncertified men are unable to make out their own timebooks and estimates of supplies; a few even being unable to sign their own names to reports that must be made out for them by subordinates.

Certified Men Preferred

My observation during the past several years has proved to me that the truly certified man is the one who is sought and preferred by the large majority of coal operators. In 99 cases out of 100, the successful coal operation is found to be in charge of a man who holds a certificate.

In my opinion, the difference between these two types of men is best described by saying the certified man is one who makes a study of his profession, while the uncertified man is one who makes a study of how to hold his job without any undue effort on his part being necessary. It is my hope that the next examination will see many uncertified men prepared to answer some of the so-called simple questions asked by the examining boards in all the states.

Mayport, Pa. JAMES THOMPSON.

Inquiries Of General Interest

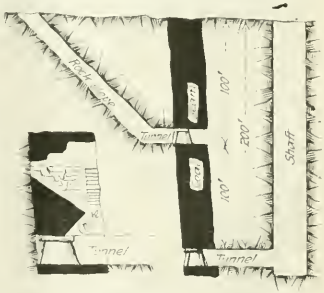
Working a Vertical Seam of Coal

Coal Seam 10 to 15 Ft. Thick, Lignite, Nearly Vertical, Opened by Rock Slope and Cross-Tunnel, at 100-Ft. Level—Shaft Sunk 200 Ft., Cross-Tunnel and Levels Driven in Seam—How Best Worked

WE HAVE in contemplation the operation of a mine under the following conditions and would be pleased to have the benefit of the experience of *Coal Age* and its practical readers, in reference to the best method of working out the coal:

The seam is a very friable lignite coal, varying from 10 to 15 ft. in thickness, and stands practically vertical. It was originally opened by a slope sunk in the rock, on a pitch of 45 deg. When the slope had reached a vertical depth of about 100 ft., a cross-tunnel was driven to the seam. Headings or levels were then driven, in the seam, to the right and left of the cross-tunnel and an attempt was made to work out the coal by stoping, but with indifferent success.

A shaft has now been sunk to a depth of 200 ft., on one side of the vein, and a cross-tunnel driven to the seam. At this depth headings are driven, in the seam, to the right and left of the tunnel. The problem now is to determine the best method of working out the 100-ft. pillar of coal between the two levels. The hanging wall of the vein is very good and there is but little difficulty in holding it; but the footwall is poor and spalls off badly, making the coal dirty as it is practically impossible to clean the coal in the mine. The friable nature of the coal makes it



CROSS-SECTION OF VERTICAL SEAM AND DETAIL OF CHUTES

difficult to produce a maximum percentage of lump, which is most desirable. The mine generates no gas. Compressed air is used for driving the puncher and radilax machines and operating the drills.

Many readers of *Coal Age* have had experience in the working of vertical seams and I feel sure can give good advice in reference to the present case. The chief difficulty that we have found is in mining the coal so as to keep it as free as possible from the rock coming from the footwall.

Denver, Colo. MINING ENGINEER.

In response to this request we are glad to present this proposition to readers of *Coal Age*, for their suggestions and advice. In order to make the situation more clear we have prepared the accompanying sketch, which shows an almost vertical seam reached by a 45-deg. rock slope on the left and a vertical shaft on the right, cross-tunnels being driven, from the foot of each, to the seam. On the left is shown a detail section through one of the rooms or chambers, which are driven to the rise of the headings. A loading chute is first driven up from the heading, on an angle of about 30 deg. The chamber is then widened out in the manner shown in the figure, a manway being maintained along the hanging wall. This manway divides at the head of the loading chute, to permit the men to reach the heading below. The coal is stoped out at the face of chamber, the miner standing on the broken coal filling the chute.

Examination Questions Answered

Illinois Mine Examiners' Examination Springfield, May 2, 3, 1921

(Selected Questions)

QUESTION—*(a) What is the rubbing surface of a road* 8 *ft.* 6 *in. wide,* 6 *ft.* 9 *in. high and* 3,000 *ft. long? (b) What quantity of air would pass per minute in this roadway if the velocity of the air was* 600 *ft. per minute?*

ANSWER—(a) The perimeter of this airway is $2(8\frac{1}{2} + 6\frac{3}{4}) = 30\frac{1}{2}$ ft. The rubbing surface is then $3{,}000 \times 30\frac{1}{2} = 91{,}500$ sq.ft.

(b) The sectional area of the airway is $8\frac{1}{2} \times 6\frac{3}{4} = 57\frac{3}{8}$ sq.ft. The quantity of air in circulation is then $600 \times 57\frac{3}{8} = 34{,}425$ cu.ft. per min.

QUESTION—*If* 55,000 *cu.ft. of air per minute is passing through a circular shaft* 10 *ft. in diameter, what is the velocity per second? Also per minute?*

ANSWER—The sectional area of this shaft is $0.7854 \times 10^2 = 78.54$ sq.ft. The velocity of the air current is, then, $55{,}000 \div 78.54 = 700+$ ft. per min.; or $700 \div 60 = 11\frac{2}{3}$ ft. per sec.

QUESTION — *If the weight of a cubic foot of air is* 0.0766 *lb. and the water gage is* 1.5 *in., what is the height of the motor column?*

ANSWER—A water gage of 1.5 in. corresponds to a pressure of $1.5 \times 5.2 = 7.8$ lb. per sq.ft. Taking the weight of a cubic foot of air as 0.0766 lb., this pressure corresponds to an air column of $7.8 \div 0.0766 = 101.8$ ft. The term "motive column" is improperly used in this question, as it always refers to the difference between two air columns, a downcast and an upcast column, expressed in terms of either the downcast or the upcast air.

QUESTION—*If the anemometer records a velocity of* 500 *ft. per min., in an intake airway having a sectional area of* 60 *sq.ft., and the thermometer shows a temperature of* 32 *deg. F., what will be the volume of air passing in the same airway, per minute, when the temperature has risen to* 60 *deg. F.?*

ANSWER—The original volume of air at a temperature of 32 deg. F. is $500 \times 60 = 30{,}000$ cu.ft. per min. The increase in volume, due to a rise of temperature from 32 deg. to 60 deg. F., is in the ratio of the corresponding absolute temperatures, which gives for the volume at 60 deg.

$$30{,}000\left(\frac{460+60}{460+32}\right) = \frac{30{,}000 \times 520}{492}$$

$$= 31{,}707 \text{ cu.ft. per min.}$$

QUESTION—*The velocity of the current in a return airway is* 150*-ft. per min.; the airway is* $4\frac{1}{2}$ *ft. in height and* 6 *ft. in width. The number of men employed in the section ventilated by this current is* 80*, together with* 8 *mules and their drivers. Is the ventilation sufficient?*

ANSWER—The Illinois State Mining Law requires a circulation of 100 cu.ft. per min., for each man, and 500 cu.ft. per min., for each mule employed, in a mine where no gas is generated. Assuming this is a non-gaseous mine and that the eight drivers may be all in this section at one time, making 88 men and 8 mules, the volume of air required, to comply with the law must not be less than $(88 \times 100) + (8 \times 500) = 12{,}800$ cu.ft. per min. The sectional area of this airway being $4\frac{1}{2} \times 6 = 27$ sq.ft., the volume of air in circulation is $27 \times 150 = 4{,}050$ cu.ft. per min., which is less than one-third of the quantity required by law.

QUESTION—*Explain the symbols* CH_4 *and* CO_2 *and state what are their comparative weights.*

ANSWER — The atomic weights of these elements are carbon (C), 12; hydrogen (H), 1; oxygen (O), 16. Then, the molecular weight of methane (CH_4) is $12 + 4 \times 1 = 16$. Again, the molecular weight of carbon dioxide (CO_2) is $12 + 2 \times 16 = 44$. But, the law of gases assumes that all gaseous molecules, at the same temperature and pressure, have the same volume. Therefore, the relative weights of equal volumes of these gases are in the ratio 16:44. In other words, carbon dioxide is $2\frac{3}{4}$ times the weight of methane, volume for volume.

QUESTION—*What noxious gases are produced by fires and explosions of firedamp in mines?*

ANSWER — The principal noxious gases produced by fires and gas explosions, in mines, are carbon monoxide (CO) and carbon dioxide (CO_2). The former is a product of the incomplete combustion of carbon, which occurs in a limited supply of air. The latter gas is produced when the combustion is complete in a plentiful supply of air.

QUESTION — *Name six essential features of a good safety lamp for general work.*

ANSWER—1. The lamp should give a good light equally diffused on the roof and floor. 2. The lamp should be simple in construction, of few parts and strong and durable. 3. It must be capable of withstanding strong air currents. 4. A working lamp should be provided with a good lock fastening that will show any attempt to tamper with the same. 5. The lamp must not be too sensitive to gas and should contain an igniter for relighting the wick, in case it is extinguished. 6. The lamp should be light and portable, so as to be readily handled by the miner in his work.

QUESTION—*How many cubic feet of marsh gas will be required to be generated in a mine, per minute, to render dangerous a current of* 30,000 *cu.ft. of air per minute?*

ANSWER—The percentage of gas that will render mine air dangerous, in any given case, will depend much on the nature of the coal and the manner of mining with respect to the production of dust. In the mining of a highly inflammable coal, particularly in machine mining, the mine air may become dangerous when the proportion of gas in the air exceeds 1 per cent. On that basis, the generation of $30{,}000 \times 0.01 = 300$ cu.ft. of gas per minute would reach the limit of safety.

Again, if the coal is less flammable and the mine free from dust, 2 or even $2\frac{1}{2}$ per cent of gas may not prove dangerous. This condition would correspond to the generation of 600 or, perhaps, 750 cu.ft. of gas per minute.

British Coal Industry Faces New Crisis: May Consider Wage Readjustment

By C. H. S. Tupholme

HOPES expressed by some owners and miners a short while ago of a speedy recovery in the British coal trade have not materialized; in fact a new crisis seems likely to arise soon. That section of the settlement of the coal dispute made in June, covering a temporary period, came to an end Oct. 1. As a result of the failure of the industry to re-establish itself, especially in the matter of exports, the new National Wage Board must soon consider a readjustment of wages on the basis of the figures for the past three months.

The State subsidy was withdrawn on Sept. 30 and it must now be ascertained whether there is any surplus from this £10,000,000. Many districts have not drawn on this fund at all. It is significant that the chief exporting areas, Northumberland and South Wales, have drawn on the fund to the largest extent. This subsidy was intended to obviate any reductions greater than 2s. per day in July, 2s. 6d. per day in August, and 3s. per day in September.

In some districts it was not found necessary to apply the maximum wage cuts. In the Derbyshire, Yorkshire, Leicestershire, Warwickshire and Notts areas a reduction of only 1s. 5d. per day was enforced, and during September (the figures for which are based on the July audit) this wage cut was reduced to 1s. 1.5d. Scotland, too, is in a fairly favorable position. These districts, which employ roughly half the total engaged in the industry, were independent of the subsidy.

The other half of the British coal industry was not so well off from either the State's, the owner's or the workers' viewpoint. The full reductions were put into operation in South Wales and Monmouth, employing 271,000 men; Durham, employing 171,000 men; Lancashire, Cheshire and North Staffordshire, employing 140,000 men, and Northumberland, employing 62,000 men.

As far as the South Wales district is concerned, the export trade has not been so badly hit as in Northumberland and Durham, where the entire Baltic trade has been lost. In Northumberland alone 3,000 men are idle, this in spite of exports reaching 3,100,000 tons in August, compared with 1,850,000 tons in August, 1920.

As the majority of observers had foreseen, the seven-hour day is a mistake, the consequent drop in output reaching as high as 20 per cent. Except in the "hot-head" districts the miners are beginning to realize what is happening, and Frank Hodges recently urged the miners to "put their backs into it," at the same time expressing the hope "that the doctrine once preached in South Wales of getting maximum wages for a minimum of work would cease."

It is not expected that any labor trouble in the form of a direct rupture will occur, in view of the prevailing agreement, which can be repudiated only on three months' notice, not to be given before Sept. 30, 1922. The worst that can happen is a gradual closing of the British pits, with a corresponding increase in miners' unemployment.

A further step in the break-up of the Miners' Federation of Great Britain is indicated in the secession from this body of the National Federation of Colliery Enginemen and Boilermen, usually known as the "safety men." The recent ballot taken by this union resulted in an overwhelming vote in favor of severance from the large federation, and accordingly the safety men will now manage their own affairs instead of being a "district" of the Miners' Federation. The Durham County colliery enginemen also have severed their connection with National Federation of Enginemen.

In order to reduce unemployment and short time many Lanarkshire miners have offered to accept 10s. per shift instead of 14s. 6d., so as to keep the pits going. It is hoped by this means to reduce prices and recapture part of the lost European trade.

The owners have posted bulletins at all the collieries in North Wales to the effect that the pits will be closed immediately and will not be reopened until further notice. The reasons for this action are stated by the owners to be high wage and production costs.

Appoints Trustees to Board of Directors To Facilitate Reading Dissolution

A CHANGE in the handling of the transfer of the stock of the Philadelphia & Reading Coal & Iron Co. under the terms of the dissolution prescribed by the U. S. District Court for the Eastern District of Pennsylvania has been ordered by the Attorney General. In a formal statement the Attorney General says:

"The decree of dissolution entered in the anti-trust suit against the Reading Company and others provided that the stock of the Philadelphia & Reading Coal & Iron Co. now owned by the Reading Company should be placed in the hands of trustees, pending the final disposition thereof to persons not connected with the Reading Company. At the time the decree was entered Newton H. Fairbanks, of Springfield, Ohio, and Joseph B. McCall, of Philadelphia, were appointed trustees under the decree.

"Since that time a committee representing certain of the common stockholders of the Reading Company has taken an appeal from the final decree to the Supreme Court, and while such a decree does not constitute a stay of all proceedings under the decree, the uncertainty attending such an appeal renders it inadvisable that any step be taken in carrying out the plan of dissolution which might later cause embarrassment or delay in case the plan should be modified materially by the Supreme Court.

"In lieu of the transfer of stock of the Philadelphia & Reading Coal & Iron Co. to the trustees, Messrs. Fairbanks and McCall have been elected members of the Board of Directors of that company. These gentlemen have consented to serve and their election results from the desire of the government and the Reading Company to carry out in spirit, if not in form, the terms of the plan of dissolution approved by the U. S. District Court for the Eastern District of Pennsylvania."

Attorney General Daugherty has given his assent to postponement of the Reading dissolution plan, pending Supreme Court action on an appeal made by stockholders from the findings of the District Court in Philadelphia.

Out Eighteen Years, Ash-Bank Fire Revives; Explosion Occurs That May Ignite Mine

A FIRE that may have fallen into a mine and set the coal burning is causing some apprehension in the Heidelberg No. 2 Colliery of the Lehigh Valley Coal Co., near Pittston. About eighteen years ago a fire occurred in an old ash bank south and east of the Heidelberg shaft. This bank was from 20 to 30 ft. thick. It was thought to have been entirely extinguished at that time, no sign revealing any activity whatever. Quite recently fire was discovered at a point within 80 ft. of the shaft.

To extinguish the fire a ditch was dug to the ashpit and water was run through the ditch onto the fire. Unfortunately when the water fell on the heated mass below an explosion took place, breaking down the surface measures above the Pittston bed. The cover here is about 20 to 30 ft. thick. It is believed that the burning ashes fell into old workings of that measure, where the thickness of the seam is about 10 ft. Streams of water were poured into the crater formed by the explosion. The fire, however, gained headway and spread toward the top of the shaft, where about 20 ft. of rock had been dumped. If this rock should prove to be sandstone taken from the shaft, there will be no danger of the fire spreading in that direction. If the fill is of slate or bone there is real danger. The Lehigh Valley Co., in order to be safe, will dig a ditch of sufficient depth between the fire and the shaft to cut off the fire and confine it.

Different Classes of Items Not to Be Grouped Under One Head in Keeping Coal-Operation Costs*

Charges to Capital, Maintenance and Depreciation Sometimes So Closely Interwoven That Confusion Results—Charging Insurance and Taxes When Paid Unsound Practice—Maintenance Reserve Should Be Formed with Opening of Mine

By R. W. Gardiner†

In coal-production cost keeping it is well to consider carefully the question of charges to capital, because these are generally so interwoven with the charge to maintenance and the question of depreciation as frequently to lead to some confusion.[1] All development work after the mine is a mine is a proper charge against the cost of operations. This statement is based on the theory that no charges should be made to capital account unless the expenditure either results in an increased production or decreased cost. This same statement holds true in regard to the laying of additional track, to the extension of the ventilating system, to the purchase of new mine cars, or even additional mine locomotives.

The mere fact that the operation of the mine has resulted in the face being further removed from the mouth of the mine or the bottom of the shaft does not increase the value of the mine one cent. It is plain that if a mine with one mile of main entries can transport all the coal produced with a certain number of mine cars and mine locomotives, when the mine entries have reached two miles it will take more mine cars and more mine locomotives to get out the same quantity of coal, and yet the value of the mine is not increased. The cost of production has gone up instead of coming down, due to the increased haul, while the production is practically the same.

When to Charge Insurance and Taxes

Insurance and taxes need no explanation, but the practice of charging these items when paid is not sound practice, as it will cause the cost figures to show large fluctuations which really do not exist.

The coal-mining business unquestionably is a hazardous one. The risk of some unforeseen happening which will cause a loss, and against which it is impossible to insure, always is present. In the past operators have attempted to take care of this risk by having the sales department consider it in making prices, with the result that it often was ignored. The present recommendation is that a certain fixed amount per ton be charged into cost to cover this risk and be credited to a contingent reserve account. The credit balance in this account would represent the amount of premium paid for insurance if it were possible to get insurance.

As conditions force the operator to carry his own insurance, he is perfectly justified in setting up such a reserve. No sane business man would attempt to carry his own fire insurance or his own compensation insurance without setting up some reserve, and the mining risk would seem to come within the same class. The cost of contingencies which should be charged against this account would cover any extraordinary happening which causes a loss, such as an extra heavy fall, a squeeze, an unexpected fault, or any loss which the insurance is not sufficient to cover.[2]

The other general expenses of the business, such as salaries of officers, salesmen and clerks, rent, etc., should be divided between general expense and selling expense. The salaries of any person, whether officer, salesman or clerk, who devotes his time to that branch of the work is charged to selling expense, and the balance to general expense. This, of course, does not apply to the general operating department, the salaries and expenses of which should be charged to operating, although this figure should not be given to the mine superintendent.

Establish Maintenance Reserve From First

The establishment of a maintenance reserve is something which has not as yet been considered by a majority of the operators. Maintenance starts as soon as the mine begins operation, although there may be no expenditures for this purpose until some time later. If a maintenance reserve is built up at a predetermined rate in cents per ton, and charges made to this reserve as expenditures occur, it will have a tendency to avoid artificial fluctuations in cost. For example, a tipple must be painted from time to time. One painting will last for two or three years. If the cost of painting the tipple is charged in one month, the cost for that month will be out of proportion, while if the maintenance reserve method is followed there will be a reserve against which this cost can be charged. The same holds true in regard to replacements.

The best method in general use at the present time is to handle such items through a deferred charge account and spread it over the ensuing period of two, three, four, six or any number of months which may seem advisable. Unless the charge is very large in amount this method will not result in heavy fluctuations, and as a certain number of expenses of this kind are sure to be necessary sooner or later, conservative accounting would seem to demand that provision be made for them in advance rather than to wait until the expenditure has been made. Another point in this connection is that when equipment is new, expenditures for maintenance are bound to be light and the cost figures will necessarily be low. This condition would enable a new mine to undersell an older mine, whereas this would not be the case if proper provision had been made from the time the mine began operations to take care of the inevitable charges to maintenance. The coal coming from the new mine would pay the same share of maintenance as the coal coming from the same mine when the mine was several years old.

The Treasury Department will not allow any reserves except depletion and depreciation to be deducted from income. This ruling, however, need not prevent the operator from carrying these items on his books for his own protection. On the other hand, the Treasury Department allows interest on borrowed money as a charge against income, while in determining costs this item cannot be taken into consideration.

Divide Expenses Into Three Classes

In the analysis of all the items of expense which comprise the cost of production, those items which are fixed on a per-ton basis and which are not affected by production, including labor as well as other expenses, should be kept in one class. A second class would consist of those items which are only slightly affected by production, and the third class of those items which are practically fixed on a monthly or annual basis and are affected in direct ratio to increases or decreases in production. This subdivision of expenses will be found to be of incalculable value to

*Third and final installment of an article on coal-production costs based on a paper read before the Pittsburgh Chapter, National Association of Cost Accountants. Preceding installments appeared in *Coal Age*, Oct. 13 and 20. Copyrighted by National Association of Cost Accountants.

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[1]The system of the National Coal Association (page 8) contains the following statement on this point: "The drawing of distinctions between capital and operating expenditures, in the accounting involved in permanent enterprises, is a favorite field for discussion among accountants, but in the case of coal-mining or other wasting enterprises, experience teaches that the field for discussion, if indeed there be any, is extremely limited." Some additional comments in regard to capital and operating charges appear in the system.

[2]The necessity of carrying a contingent reserve account on the books is emphasized on page 14 of the system of the National Coal Association.

the sales department in the determination of a fair selling price.

In conclusion, one word of advice might be offered to any accountant who is called upon to operate or install a system for a mining company or to make any changes in a system already established. In the first place, he must thoroughly familiarize himself with the practical side of the business, particularly from an operating standpoint. He must make up his mind which of the departments is going to make the greatest practical use of the cost system and plan his work so as to give that department the information it needs as promptly as possible and in the most serviceable form.

He should not provide for obtaining any information unless he has a very well defined idea in his own mind as to the purpose for which that information is to be used and its value to the company. Finally, in making up statements showing the operation of the business and its condition, he should be careful to avoid the mistake that so many have made, and are still making, of grouping different classes of items under the same general heading. Statements have been used which have included under one head items properly chargeable against cost, items chargeable against income before net income is determined for taxation purposes, and items such as income and excess profits taxes, which must necessarily be deducted from net income.

Kentucky Institute to Hold Exposition and Issue First-Aid Certificates

By E. C. Rogers*

A BIG constructive program for future work marked the annual meeting of the Kentucky Mining Institute, which was held at the Phoenix Hotel, Lexington, Ky., Friday and Saturday, Oct. 7 and 8, the president, Prof. Charles J. Norwood, presiding. There were about one hundred members and visitors present. The address of welcome was delivered by Barney J. Treacy, president of the Lexington Board of Commerce, who spoke of the proximity of the vast coal fields of eastern Kentucky to Lexington and the growing interest of the citizens of Lexington in their development. He emphasized the cordial feeling existing between the mining towns and the capital of the Blue Grass State and of the number of operators who have established their headquarters and their homes in Lexington in the past few years.

President Norwood, in his report, reviewed the work and aims of the institute, and while he did not minimize or disparage the value and importance of the first-aid contests, which has been the principal feature of the institute meetings in the past, expressed the opinion that these contests should not be allowed to overshadow other matters of equal or more importance, and that more time should be given to the discussion of practical matters pertaining to mining. He recommended that the constitution of the institute be amended at the next meeting, that the state be redivided so as to increase the number of districts, thus adding to the number of vice-presidents, expressing the belief that with more districts and a strong committee, headed by a vice-president, in each district, more interest could be aroused and a larger membership assured.

W. P. Bovard, of the Ohio Brass Co., Mansfield, Ohio, started the discussion on rail bonding in coal mines by a paper on "Electric-Arc Welding." Howard N. Eavenson, formerly chief engineer of the United States Coal & Coke Co., at Lynch, read a paper on "Some Peculiar Values of Eastern Kentucky Coals and the Proper Methods to Realize on Them." L. Haigh, of the Hadfield-Penfield Steel Co., of Bucyrus, Ohio, presented a paper on "Handling of Coal Shales from Mines," exhibiting in connection with it samples of brick, building and paving and hollow tile, made from the waste of the mines of the Kentucky Block Cannel Coal Co., at Cannel City, Ky. A. H. Wood, of the Harlan Co-operative Coal Co., started the discussion on modern coal mining in Kentucky by a paper, entitled "Opening an Up-to-Date Coal Mine."

The entire night session or smoker was taken up by the discussion as to the policy of the institute toward first-aid training and contests and as to the means which should be taken to revive interest in such training, especially in the western Kentucky field. It was decided to appoint a committee of safety, having on it the chief inspector of mines as chairman, a representative of the Associated Companies, the president and vice-presidents being ex-officio members, thus procuring a member in each district, to promote, encourage and assist district contests. It also was provided that teams making 75 per cent in these events should receive certificates, under the seal of the institute and signed by the president, that the winning teams be sent to the annual state meet in Lexington, and that the winner at that contest be sent to International First-Aid and Mine-Rescue Meet, wherever it might be held.

It was decided that the institute, in conjunction with the Lexington Board of Commerce, hold at the time of its next annual meeting an industrial and mining exposition such as was held recently in Huntington. Conrad J. Neekamp, secretary of the Northeast Kentucky Coal Association, was made chairman of a committee on arrangements for such an exposition, and immediately appointed the following to assist him: R. A. Hord, Lexington, secretary of the Hazard Coal Operators' Association; T. J. Barr, professor of mining and metallurgy, University of Kentucky; E. R. Clayton, secretary of the Harlan Coal Operators' Association; J. E. MacCoy, secretary of the Southern Appalachian Association, Knoxville; W. G. Duncan, Jr., president of the W. G. Duncan Coal Co., Greenville, Ky., and F. Paul Anderson, dean of the College of Engineering, University of Kentucky.

The following officers were elected: President, A. G. Spillman, St. Bernard Mining Co., Earlington; secretary-treasurer, Mrs. Elizabeth C. Rogers, Lexington. The vice-presidents will be T. E. Jenkins, Sturgis; W. G. Duncan, Jr., Greenville; C. S. Nunn, Marion; Lawson Blenkinsopp, Lexington; C. W. Connor, Esco; D. A. MacWhirter, Pineville; Joseph Cain, Stearns; William S. Leckie, Aflex; H. S. Carpenter, Jenkins; R. A. Hamilton, Mansfield, Ohio; H. A. Bullock, Lexington; J. E. Jones, Beattyville.

The safety committee will include Lawson Blenkinsopp, chief inspector of mines, and D. A. MacWhirter, of the Associated Companies. C. Frank Dunn will be chairman of the committee on exhibits, publicity and displays. The committee on the mechanical loading of coal will consist of A. H. Wood, Lexington; J. E. Butler, Stearns; N. G. Alford, Pittsburgh, and the committee to investigate the rescreening of Kentucky coals will comprise: Howard N. Eavenson and A. H. Wood.

*Secretary-treasurer, Kentucky Mining Institute.

September Coal Receipts at Duluth-Superior Less Than Year Ago; Season Total Higher

COMPARATIVE figures of receipts of coal at Duluth-Superior for September and for the year to Sept. 30 and for the corresponding period last year were:

	1920		1921	
	Anthracite	Bituminous	Anthracite	Bituminous
Northwestern	46,000	193,500	54,700	59,300
Berwind	.....	79,600	.....	71,900
Pittsburgh	14,600	122,100	28,800	30,000
Carnegie	.....	63,300	7,650	10,340
Hanna	10,500	31,000	22,070	32,790
Reeves	13,500	12,200	8,810	12,180
Boston	.....	19,100	.....	.....
Inland	.....	62,000	.....	78,150
Clarkson	.....	85,200	8,000	.....
Northern	.....	21,200	.....	23,060
Zenith Furnace	.....	87,000	.....	6,500
Philadelphia & Reading	17,700	7,000	7,290	.....
U. S. Steel Corporation	.....	173,200	.....	104,500
Reiss	8,000	48,800	21,210	42,200
Pursglove	.....	12,700	.....	20,240
Lehigh	24,000	.....	17,270	.....
Great Lakes	.....	41,000	6,460	166,000
September receipts	134,300	1,058,900	182,260	657,170
Total to Sept. 1	857,470	3,050,900	1,198,205	529,256
Total to Oct. 1	991,770	4,109,800	1,380,465	7,186,426

Anthracite receipts in excess of last year, 388,695 tons.
Bituminous receipts in excess of last year, 3,076,626 tons.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

THE last thirty days have been characterized by slowly improving sentiment and by some expansion of production, according to a bulletin on business conditions issued by the National Bank of Commerce in New York. "The most marked gains," the bulletin continues, "have naturally been in those lines where recovery has been the longest delayed. Bituminous coal production is increasing, capacity, and activity in the build running at about 40 per cent of the iron and steel industry is nowing trades is well maintained.

"Autumn buying is reflected in an improved retail dry-goods trade. It is noteworthy that this betterment is more marked in rural districts than in industrial centers. This is clearly the result of the marketing of cotton and grain crops at fairly satisfactory prices.

"Wholesale prices of a number of raw materials have advanced since Sept. 15. There is no doubt that the improvement which has thus far taken place is more or less seasonal in character, but it is nevertheless true that the progress made toward normal business is sound. "The United States is not sufficiently dependent on foreign markets to justify the belief that business recovery in this country must await recovery abroad. At prices determined in the international markets American raw materials for export will find an outlet. By far the greater part of the entire manufactured product of the country has always been sold at home and as price adjustments are completed, the domestic market will again absorb the major portion of our production.

"It is true that the buying power of the domestic consumer has been much curtailed. High taxes, declines in the prices of agricultural products and widespread unemployment have reduced the buying ability of a large part of the population, and high rents, high fuel costs and high transportation charges have operated in the same direction.

"The American consumer, however, has suffered no material permanent curtailment of purchasing power. Goods of all kinds in large volume can be sold in every part of the United States today, if they are staple in character and if prices are such as to represent real values to conservative purchasers. As the volume of goods thus sold expands, employment will automatically increase and, in turn, new purchasing power will develop. The domestic market assures the American producer of an outlet."

Freight-Car Loadings on Upturn

Reports received by the American Railway Association from railroads of the country show that 906,034 cars were loaded with revenue freight during the week ended Oct. 15, an increase of 10,294 cars over the week before. This was the largest number loaded during any one week since Nov. 13, 1920, but was 112,505 less than for the same week last year and 66,044 cars below same week in 1919. The biggest gain was in loading of coal, which totaled 19,506 cars during the week, or an increase of 11,167 cars over the week before. This was 35,165 cars less than loaded for the same week in 1920 and 25,910 less than during the same week in 1919.

Idle freight cars on American railroads totaled 316,377 on Oct. 15, or 29,543 less than on Oct. 8. Of this number 121,944 were serviceable cars which could be put into immediate use if transportation demands warranted, compared with 142,970 the week before, or a reduction of 21,026 cars. The remaining 194,433 were cars in need of repairs. The latter figure, however, was a reduction of 8,517 from Oct. 8.

Eleven Industries Increase Workers

Comparative data issued by the U. S. Department of Labor Statistics for September and August, 1921, show that in eleven industries there were increases in the number of persons on the payroll in September compared with August, and in three a decrease. The largest increases are 4.8 per cent in hosiery and underwear and in cigar manufacturing, and 4 per cent in car building and repairing. Men's ready-made clothing shows a decrease of 0.9 per cent in the number of employees; automobiles, a decrease of 0.7 per cent, and boots and shoes a decrease of 0.3 per cent.

Laconia Car Shops on Full Time

The Maine Central Railroad Co. recently placed a $500,000 equipment order with the Laconia Car Co., Laconia, N. H. The plants at Laconia have reopened and will be run on full time for several months.

Nebraska Has Few Idle

Unemployment in Nebraska at this time is not a serious subject. There appears to be work for everyone who cares to work at a living wage, Governor S. R. McKelvie has reported to Secretary of Commerce Hoover in reply to the latter's questionnaire on unemployment. Governor McKelvie pledged the agencies of the state to bring about readjustment of unfavorable conditions.

Predicts 75 P.C. Auto Activity

John N. Willys, president of the Willys-Overland Co., addressing the Eastern sales organization of the company, stated that he did not look for more than 75 per cent of normal business in the automobile line for 1922, but that the Willys-Overland Co. was in shape to get 100 per cent of its share. This, he stated, would be helped by the fact that the Willys-Overland product was in the price class that would total 60 per cent of the entire sales in the industry. The export business, he said, was improving.

Textile Mill Goes on Full Time

The Henderson (Ky.) mill of the Consolidated Textile Corporation expected to resume operations on full time Monday, Oct. 31, the wage differences with striking employees having been adjusted. Of the 50,000 spindles approximately one-quarter have been in operation for several weeks and sufficient employees to enable 50 per cent operation have applied for work at the mill. The Pilot Cotton Mills at Raleigh, N. C., which have been operating two days a week, owing to power shortage, have resumed operations on full time.

Central Pa. Non-Union Mines Gain Heavily In Output from Union Operations

LOADINGS of coal in cars by union and non-union mines in the central Pennsylvania bituminous coal field from December, 1920, to September, 1921, both inclusive, are shown in the subjoined table. Using December (1920) production as a basis for calculation, the table discloses the loss of business from the mines operating under the present union wage scale to those which have adjusted their wages to the 1917 basis. The loss for the month of September shows that if the mines operating under the union scale had maintained their ratio in the district they would have produced 45,571 carloads instead of 38,216 and the non-union mines would have produced 18,320 carloads instead of 25,725. In other words, the mines that have made the wage adjustments have taken about 7,335 carloads of business from the mines that have not made the adjustment.

During the last five years this district has been the source of 10.5 per cent of the total production of the United States. If this had been maintained during September the district would have produced 10,377 carloads. The union mines have suffered another loss from the district of 10,377 carloads—a total of 17,732 carloads, or 886,600 tons—as compared with a loss of 657,400 tons in the month of August. Therefore the Central Pennsylvania field during the first nine months of 1921 should have produced 33,297,562 tons, while the actual production was 28,997,361 tons.

CARS LOADED BY 870 UNION AND 231 NON-UNION MINES, CENTRAL PENNSYLVANIA BITUMINOUS FIELD

	Number of Cars Loaded			Excess by	Per Cent of Total Loaded by		Per Cent of December Cars	
Month 1920	Union	Non-Union	Total	Union	Union	Non-Union	Union	Non-Union
December 1921	70,152	28,277	98,429	41,875	71.27	28.73	.....	.....
January	47,831	23,395	71,226	24,436	67.15	32.85	68.18	82.74
February	40,353	19,608	59,961	20,745	67.30	32.70	57.52	69.34
March	40,241	20,255	60,496	19,986	66.52	33.48	57.36	71.63
April	33,264	17,166	50,430	16,098	65.96	34.04	47.43	60.71
May	38,163	21,368	59,531	16,795	64.11	35.89	54.40	75.57
June	38,355	25,445	63,800	12,910	60.12	39.88	54.67	89.98
July	34,153	22,363	56,516	11,790	60.43	39.57	48.68	79.09
August	38,772	24,020	62,792	14,752	61.75	38.25	55.27	84.95
September	38,216	25,725	63,941	12,491	59.77	40.23	54.48	90.97
Totals	419,500	227,622	647,122	191,878	64.83	35.17	...	...

Open-Shop Movement Gains Some Headway In Northern West Virginia

IN MONONGALIA COUNTY the movement to operate the mines open shop has gained more headway than in the other fields of northern West Virginia, although even in that county only a small proportion of the companies have made any attempt to operate their mines on that basis. It will be recalled that the Bethlehem Mines Corporation, which purchased the holdings of the Elkins estate, was the first to declare that its mines would be operated open shop. Other companies, taking their cue from the Bethlehem Mines Corporation, also announced that they would eliminate the check-off, and proceeded to do so. A strike followed in the Decker's Creek valley, but it did not materially affect production and was a failure.

Technically, however, it has been in effect since July, 1920. Until recently there were still miners, formerly employed by the Rock Forge and Connellsville Basin mines, who were drawing benefits but it is now generally understood that the United Mine Workers have ceased making these payments. The men on strike belonged to what is known as the Dellslow local, but the number of men out of employment has steadily dwindled until it reached 11, who have been receiving strike benefits ever since the strike began more than a year ago.

The Dellslow local was organized by Pat Blevins, who became its president and, becoming implicated in much trouble, was shot and killed last winter.

Although the Rock Forge and Connellsville Basin mines have been allowed to work unmolested for some time, there has been trouble recently at the Almina mine of the Sturm Coal Co., which has been operating on an open-shop basis. According to officials of the company, the non-union miners at this mine have been visited by delegations of United Mine Workers, and after being threatened have departed for points unknown. That has occurred not once but several times. Nevertheless the company states that it will continue to operate on an open-shop basis and other operators have announced that they soon will resume operation on this system and will pay the 1914 scale of wages.

Two United Mine Workers Convicted of Shooting Up Mohawk, W. Va.

THE State of West Virginia obtained its first convictions in the trial of twelve men of a mob of United Mine Workers who were charged with shooting up the mining town of Mohawk, McDowell County, W. Va., on the morning of Aug. 21, 1920. The men were indicted first before the Grand Jury of McDowell County, where the alleged offenses were committed, but the cases were transferred to the Greenbrier County Court to avoid the effect of local sentiment and possible intimidation.

Eighteen men were originally apprehended, but six turned state's evidence. The remainder elected to be tried separately, and John Collins faced the ordeal first. The state's case was based on the testimony of the six men mentioned. The defense tried to prove an alibi with nine witnesses, three brothers of the defendant and one a brother-in-law. All but three had lived in the tent colony maintained by the United Mine Workers of America at Matewan. John Collins flatly contradicted the testimony of some of his own witnesses.

John Collins being convicted, a lawyer named Cline was next for trial, but he had skipped his $2,000 bail. A capias was issued for him and he was arrested and is now in jail. John Caudill also was convicted. He acknowledged his participation but said he was forced to do what he did by members of the organization. Both Collins and Caudill were sentenced to the penitentiary for two years. The cases against the rest of the defendants were set for trial Monday, Nov. 21, 1921.

Alien Miner, Member of Union, Driven from Home in Indiana. Asks Big Damages

CHARGES of intimidation and other unfair and illegal acts growing out of the mob action in June against foreign-born miners employed by the Ayrshire District Collieries Co., of Francisco, Gibson County, Indiana, are contained in a suit for $50,000 damages filed recently in the Federal court by Pete Krechak, of Francisco, against H. R. Barnes and eighteen others. The plaintiff says he was driven from his home and family by a mob June 10, and that he has been without employment and separated from his family and possessions since that time. The bill of complaint was filed by Curtis G. Shake and Joseph W. Kimmell, lawyers, of Vincennes, Ind.

The complaint says Mr. Barnes is a Baptist minister who recently moved to Corydon, Ky. Other defendants are W. F. Chappell and W. Samuel McConnell, merchants of Francisco; George A. Nollon, Postmaster of Francisco; A. J. Schuh, proprietor of a brickyard; Ora T. Downey, a merchant; Corlis R. Maxim, a school teacher; Joshua Stapelton, town marshal; Jerry Schaffer, chairman of the Town Board; Floyd Caniff, Delle Steele, Drysdale P. Stapleton, Earl Hinkle, Frank Bolin, Hubert S. Kelley, James Harbinson, Charles L. Kelley, Joseph Messersmith and Raymond McConnell. The last ten in this list are charged with having been members of a mob that drove Krechak from his home.

Krechak asserts that he is a member of the United Mine Workers of America and that he is a subject of the Kingdom of the Serbs, Croats and Slovenes, and that he lived in Chicago until June 1, when he obtained employment as a miner with the Ayrshire District Collieries Co. at $7.50 a day. He asserts that the defendants and other persons held a mass meeting at the public school building in Francisco June 9 for the purpose of deciding on ways and means of forcing him and his family to leave the community.

Labor's Interpretation of Rail-Strike Settlement May Be Decisive Factor in Possible Coal Strike

By Paul Wooton
Washington Correspondent

OFFICIAL Washington literally heaved a sigh of relief last Friday morning when the railroad strike order was countermanded. It was a case of the night being blackest just before the dawn, as it is known to have been the opinion within the administration on Thursday that the odds in favor of the strike had increased. While the administration had gone further in its preparations to meet this threatened strike than ever before had been the case, it was admitted generally that Federal officials are so surrounded by limitations as to be in a poor position to handle any such emergency.

In spite of everything that could have been done it is admitted on all sides that the strike would have entailed losses and would have interfered with all activities to such an extent as to bring it within the category of a national disaster. The fact that the strike has been avoided without the surrender of any principle means that the country and its business have been saved a serious blow.

There is a feeling in railroad executive circles that there never will be a better time for a "showdown." Some railroad officials are not entirely satisfied that the settlement is the blessing most people regard it. This is predicated on the assumption that the strike simply has been delayed and that no lasting impression has been made upon the labor unions. There are many, however, who believe that organized labor as a whole has been taught a lesson. Public opinion never before weighed as heavily in a labor dispute.

The action of the administration in taking such prompt and effective steps to counteract the consequences of a strike came as a surprise to many labor leaders. In fact it establishes a new policy of Federal procedure—one that has proven popular and which is likely to be followed in the future. The steps that were taken to accumulate stocks of necessities at strategic points probably will not be abandoned. No one will be surprised if through cooperation with state and municipal authorities a plan is worked out looking to the emergency assembly of necessities at central points, so as to insure the maximum of protection to the public when a situation of this kind arises in the future.

Uncertainty Regarding Effect of Settlement

Opinions differ as to the effect which the calling off of the railroad strike will have on the mine workers. Some believe that they will be impressed by the sentiment manifested against a railroad strike and by the attitude of national and state officials. Others are firm in the belief that a coal strike cannot be avoided. It is admitted by all, however, that much will depend on the conclusions that will be formed as to who is the winner of the railroad controversy. If the developments of the next few weeks are such as to make it appear as anything less than a defeat for labor the effect on the coal strike will be correspondingly less.

Advices to the Department of Commerce indicate that during the week ended Oct. 29 as much coal was moved as the railroads could handle. Some are of the opinion that there will be a decided slump in the movement of coal because the strike is not to be called. Others think that the strike had the effect of reminding consumers that they had better lay in their supplies and wait no longer on possible reductions in freight rates and in prices. Such analysis as it has been possible to make of this coal movement indicates that large consumers were not heavy buyers. To start with, the public utilities and certain other large consumers already had laid in considerable reserves of fuel. Even those consumers who had small reserves made little effort to get coal, on the assumption that a strike that would prevent their getting coal also would prevent receiving of raw material and the shipment of output. As they faced conditions which would necessitate a shutdown for other reasons, they did not worry much about the coal supply.

While the returns are not complete from the survey of coal stocks made by the Department of Commerce, enough figures were collected to indicate that stocks taken as a whole are not far from normal. Domestic stocks at this time of year always are at the low point, but even in their case there are indications that the experience of the war has had the effect of influencing some to buy coal early. Retail stocks seem to be normal, with reserves sufficient for domestic consumers' normal needs for periods varying from three to six weeks. Some crumb of comfort was occasioned by the fact that considerable stocks of anthracite were available at points near Tidewater and by the fact that considerable stocks of byproduct coke had been built up in cities where it could be utilized to the best effect.

A thorough survey of coal stocks is to be made by the U. S. Geological Survey as of Nov. 1. It also is the intention to make another survey sixty days later. This survey was decided upon before the strike situation developed. In view of the possibilities of a coal strike in the spring, it is regarded as being unusually important to obtain exact data as to stocks as of Nov. 1 and Jan. 1.

Jersey Central Receives Bids for Stock of Lehigh & Wilkes-Barre Coal Co.

IN conformity with the ruling of the court in the Reading dissolution case bids were received Oct. 27 for the purchase of Jersey Central's holdings of $8,849,400 par value of Lehigh & Wilkes-Barre Coal Co. stock at the offices of the railroad, it was learned from the committee appointed to handle the matter. This committee, composed of Robert W. de Forest, Edward T. Stoesbury and Daniel Willard, was appointed Sept. 29 by the Jersey Central directors. The bids received, the committee reported, would be taken up at a special meeting of the Jersey Central directors, Tuesday afternoon, Nov. 1.

Under the court order in connection with the Reading dissolution case, the Jersey Central was ordered to dispose of its Wilkes-Barre stock before Dec. 11. In case the stock is not sold by this date, it is to be transferred to the Central Union Trust Co. as custodian, subject to further court orders.

Trial of Baltimore Coal Exchange Members Set for Early November

TRIAL of the members of the Baltimore Coal Exchange charged with maintaining a monopoly has been set by State's Attorney Leach for the early part of November, probably Nov. 10, according to a communication sent by the prosecuting officer to Edwin T. Dickerson and Harry W. Nice, counsel for the exchange. It is expected that within a short time the lawyers for the defense will file a demurrer to the indictment in anticipation of any possible fight before the Court of Appeals.

The trial is likely to be prolonged, and the attitude of the State's Attorney is that he will be compelled to ask for a third criminal court for the proceedings, as the criminal dockets are already crowded. For this reason the prosecutor hopes to have the Supreme Bench allow a third court.

A long list of dealers is included in the indictment and they are said to be represented by an array of counsel outside the lawyers for the Coal Exchange.

Coal Mining Institute of America Will Propound Questions and Hear Papers

AFTER a business session and an article by Dr. George H. Ashley on "Mineral Resources of Pennsylvania" the Coal Mining Institute of America, which will assemble Dec. 7 in the Chamber of Commerce Auditorium, Pittsburgh, Pa., will settle itself down to answer questions. The question box is one of the distinguishing features of this organization. Papers may please the American Institute of Mining and Metallurgical Engineers and committee reports the Standardization Committee of the American Mining Congress and the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers, but the Coal Mining Institute of America persists in its question box. Question No. 1, propounded from Denver, Col., is "What has been the effect on the upper of two beds of coal due to the lower being mined first?" The second question is "How can bad roof conditions due to the use of undercutting machines and shooting near to the roof be eliminated? Roof conditions under pick-mining systems are excellent." This strange question comes from Republic, Pa.

Jesse K. Johnston, president of the Ridgeview Coal Co., Bolivar, Pa., will then present a paper, entitled "Some Data on the Thick Freeport Coal." In the afternoon session, with R. Z. Virgin presiding, a question from Columbus, Ohio, will be introduced: "What are the important elements to consider when selecting a combination battery and trolley locomotive for gathering cars?" St. Louis, Mo., furnishes the following question, or rather item for discussion: "Give some data on the proper installation of electrical equipment underground, direct current, alternating-current transformer stations, motor-generator and rotary-converter sets." Johnstown, Pa., with a strong roof, heavy bottom and low coal naturally questions, "Why not some way to work low coal on the longwall face system?" Why not, indeed. Johnstown should show the way.

Notables to Make Addresses at Annual Dinner

"Safety Gates and Safety Appliances for Cages and Hoisting Shafts" is the name of a paper to be delivered by W. G. Duncan, director of mining extension, State College, Pa. This paper was in process of preparation a year ago, but Mr. Duncan was incapacitated by sickness at that time and could not deliver it.

In the evening of Dec. 7 the annual dinner will be held at McCreery's store, with President A. R. Pollock as toastmaster and E. E. Bach, director of the Americanization Bureau of Harrisburg, Pa.; Carl Scholz, of the Raleigh-Wyoming Coal Co., Charleston, Pa.; A. R. Hamilton, coal operator, of Pittsburgh, and H. Foster Bain, director of the U. S. Bureau of Mines, Washington, D. C., as speakers.

At the morning session of Dec. 8 Captain G. H. Burrell will read an article on "Carbon Monoxide Masks for Coal Mines," and the question box session being resumed, with Alexander McCanch in the chair, the following questions will be asked: From Pittsburgh, Pa., "What is the relation of moisture content of the air to dust and gas explosions?" from Clarksville, Pa., "When a section of a mine is entirely worked out and abandoned, wouldn't it be proper to seal off the section or should it be ventilated?" from New Zealand, "In a mine in which firedamp has never been detected, and which is worked entirely by open lights, but in which only permissible explosives are used on account of the dryness of the dust, should the ventilating fan be run continuously or should it be stopped on Sundays, holidays or idle days?"

The morning session will also consider two papers, one by N. S. Greensfield, explosives engineer for the Hercules Powder Co., on "The Scientific Selection of Explosives for Coal Mining," and one by Robert Z. Virgin, instructor, Carnegie Institute of Technology, Pittsburgh, Pa., entitled "Recovery of All Values from Refuse Coal."

In the afternoon Daniel R. Blower, of the Vesta Coal Co., will preside and two questions will be discussed. St. Louis, Mo., presents "What are the main factors which constitute a successful mine official other than knowledge of the mining law?" and Johnstown, Pa., "Why should not all coal mines, regardless of whether they employ one man or ten men, come under the Pennsylvania State Mining Law?"

Following will be two papers, "Explosion-Proof Mine Locomotives," by L. C. Illsley, electrical engineer, U. S. Bureau of Mines, and "Comparative Haulage Costs—Animal and Mechanical," by A. F. Strouse, consulting engineer, of Pittsburgh, Pa.

On Friday there are to be two inspection trips—one to the New Liberty Tunnels and another to Carnegie Tech., where the coal-mine and coal-mining models will be examined under the direction of A. C. Fieldner, of the U. S. Bureau of Mines.

New Wage Scale Proposed in Nova Scotia

FIVE to fifteen per cent reductions in wages have been suggested as likely to result from the deliberations at Halifax, N. S., Nov. 10, between the delegates of the mine workers and operators of district No. 26 of the United Mine Workers of America, that district covering the coal mines of Nova Scotia. The present agreement expires on Nov. 1.

Roy M. Wolvin, president of the British Empire Steel Corporation, of which the Dominion Coal Co. is a subsidiary, stated in an interview that there was a chance of the Nova Scotia coal mines being closed down during the coming winter, owing to trade conditions and the determination of the miners to oppose any reduction in wages. The employment of the steel workers also was dependent upon the situation in the coal trade, and the keeping open of the mills would be rendered possible only by the reduction of wages in the mines.

Mr. Wolvin pointed out that the coal miners were receiving the same wages as were paid during the war, plus two heavy increases given since the armistice. Although the price of coal along with other commodities had declined and the wages of coal miners in Britain and of non-union mine workers in the United States had been considerably reduced, the Nova Scotia miners were getting from 130 to 200 per cent higher wages than in 1914, whereas the cost of living was only from 50 to 60 per cent higher than in that year, and present wages were for an 8-hour day while in 1914 they were for a 9-hour day. The Dominion Coal Co. had no fund from which it could pay wages unless the cost of production was at least equalled by the selling price of the product. The cost of coal mined under present rates of miners' wages would not allow steel to be manufactured at today's market prices.

Penna Says Next Mine Wage Will Be Lower

PHIL H. PENNA, secretary of the Indiana Bituminous Coal Operators' Association, made the first authoritative statement recently to the effect that mine operators will ask for a reduction in pay for mining coal with the negotiating of a new scale in 1922. In making his statement Mr. Penna said the present scale is the highest ever paid, but that it would be maintained by the operators until expiration of the contract because they felt in honor bound to respect it.

"In making a new scale," said Mr. Penna, "we shall expect to adjust it to correspond to other industries and with the reduced cost of living. I think that the mine workers and the coal operators should be permitted to adjust their own trade affairs without interference from any source, provided, of course, that they are able to do so.

"I submit that it is not unreasonable at this time to anticipate such interruption of production as is anticipated, and especially in view of the statements of the union leaders that there will be an attempt to resist any reduction in wages. If those gentlemen are voicing the sentiment of the United Mine Workers, it is more than ever apparent that we shall fail to settle our differences and shall require the assistance of outsiders to settle for us. I do not advocate the appointment of government arbitrators, but would prefer that we appoint our own arbitrators, if it becomes necessary, and that the public appoint them for us if we are unable to agree."

Plots and Counter Plots Charged in Mingo Hearing; Senate Committee Prepares Recommendations

FINAL investigation of the West Virginia coal strike was held by the Senate Committee on Education and Labor last week and the committee is preparing its report, to be submitted to the Senate before the present session closes, in which it will recommend measures to end this and prevent other industrial disputes. Ugly charges were developed against the labor unions, among them that 700 rifles were in the hands of striking miners and that a former union organizer was unlawfully jailed for 113 days on an unsigned commitment for alleged forgery of funds which he used in buying arms for the miners. A. E. Hester was the man who was unlawfully jailed by the labor union, and his release was brought about through intervention with the judge of the jurisdiction by attorneys for the coal operators. Attorney Houston for the mine union, who as notary certified to the commitment, admitted that in the press of business he forgot Hester was in jail.

Hester was perhaps the star witness for the coal operators and his statement of his unlawful incarceration, unchallenged by the union, was astonishing to the committee and dropped into the union camp like a bombshell. Hester said he was paid $300 a month as union organizer and by direction of union leaders purchased, or made available through scrip issue, high-power rifles for the miners. He broke with the union leaders because he could not countenance the ruthless use of rifles by the miners in shooting scrapes, and the union leaders trumped up the charge of embezzling the funds he had disbursed for the rifles.

Public Sympathy Leans Toward Mine Unions

Mr. Wiley, a union coal-mine operator, explained to the committee that the mine unions were able to obtain more public sympathy than the coal operators. He declared that while the union leaders were inclined to conservatism, the radicals in their ranks carried them off their feet in the attempt to establish union control of mines.

H. C. Ogden, an editor, of Wheeling, said the mine guard system was an abuse of power. He complained that Governor Morgan had done nothing to remedy the situation, charging that he remained inactive on a party platform pledging abolition of the mine-guard system. He feared a renewal of warfare next spring, when the wage scales would again come up, and recommended a labor court or board of arbitration to settle the troubles.

William McKell, a Fayette County mine operator, said that seven union leaders were in jail for shooting up his mine. He described lawlessness on the part of union workers.

Counsel for the miners asked the attorneys for the operators to negotiate a settlement of the differences on the basis of the Murray plan submitted last week but the operators' attorneys declined to treat with the union.

Sheriff Don Chafin of Logan County defended the practice of the unions in paying the salaries of deputy sheriffs, as it was the only way to maintain order, the citizens being agreeable to the arrangement rather than to have added taxes to maintain order.

Ernest M. Merrill, of Charleston, mining engineer and operator, said the cost of equipment and expense of a union mine was 20 to 25 per cent more than a non-union mine, it being the difference "between running your own property and having somebody run it for you." He also said that efficiency of operation and maximum production could not be obtained under union contracts.

Thomas L. Felts, of Virginia, head of the detective agency of that name, said union charges against his organization were false and intended to injure his reputation, he being a candidate for Congress. His organization had tracked and aided in convicting some union miners in West Virginia, which caused the union's charges against him. Attorneys for the operators sought to develop that the union had circulated fake telegrams from President Harding promising aid in abolishing mine guards and private detectives if the unions would stop their march on non-union camps.

Samuel Untermyer said the Steel Corporation was responsible for conditions in the coal fields through its control of coal fields and its opposition to organized labor. This was again denied by attorneys for the operators, and Mr. Untermyer qualified his statement by saying that the Steel control probably was indirect. He thought industrial peace could be brought about by requiring corporations in interstate commerce to be licensed under the Federal Trade Commission with the stipulation that they should practice collective bargaining with their employees. While he thought the open shop would be ideal, he admitted it could not be realized with the closed shop advocated by labor.

William H. Coolidge, attorney for the operators and also chairman of the Board of Directors and counsel for the Island Creek Coal Co., the largest producer in Logan County, condemned the union for insistence on its alleged rights without giving recognition to the rights of the operators. He declared it to be the purpose of the unions to obtain possession of the mines, and asserted that the non-union operators would not deal with the organization. He charged that the union staged the insurrection last summer to force operators to submit to union demands, which resulted in calling out of Federal troops. He declared that unionism was "industrial autocracy" and an attempt to get control of this necessity of life and to establish a soviet government.

Mr. Coolidge made a striking contrast of union demands and its failure to recognize the rights of operators by saying that while the union claimed free speech and assembly it denied such rights to the non-union worker. The union asserted collective bargaining but denied the right of individual contract; it claimed the right to organize workers but refused to concede the right of men not to organize into a union.

Strikes, Murder and Arson Follow Organizers

"It cries out against mine guards, knowing that the laws of the state deny Mingo and Logan counties the right by taxation to protect life and property," continued Mr. Coolidge. "To remedy this lack of protection the mine owners, who pay 85 per cent of the taxes, contribute enough to county officers to employ policemen to protect life and property. They complain that union organizers are denied entrance into property and mines. So are those whose pictures are in the rogues' gallery denied entrance to the banking districts and are arrested on sight."

Mr. Coolidge charged that strikes, murder and arson followed union organizers and agitators. He said there had been no strikes or differences between operators and non-union men, the men receiving higher wages, living in better homes and having steadier employment than in union mines. He said no new laws or government bureaus were required to stop the outbreaks. He suggested that the committee notify the mine workers that under the Constitution the owners of mines in West Virginia had as much right to run their mines on a non-union as on a union basis; that their employees have as much right to individual contracts as to collective bargaining; that in the absence of protection by the state the operators had a right to protect property the same as hotels, bankers and others protect their property by private guards and that they had a right to keep out undesirable persons just as office buildings keep out peddlers and book agents.

He asked the committee to recommend to Congress that discrimination between classes should not be recognized and that criminal laws be not applied to one class and applied to another, and to permit the Department of Justice to use anti-trust enforcement funds in stopping and punishing conspiracies by labor leaders, and also that the committee report against nationalization of mines.

Judge Anderson Enjoins Unionization of Coal Miners in Williamson Field and Forbids Check-Off

DISTRIBUTION of money in West Virginia by the United Mine Workers of American for any purpose except to relieve actual suffering among bituminous coal miners now on strike and the continuance of the "check-off" system, whereby union dues are collected from miners by the coal operators, are prohibited in a temporary injunction issued Oct. 31 by Judge A. B. Anderson, in Federal District Court of Indiana. The order was issued on the petition of the Borderland Coal Corporation, of West Virginia, in a suit charging that the miners' union and the operators of the Central Competitive Field are conspiring to throttle through unlawful methods the competition of the West Virginia non-union coal mines.

Counsel for the miners pleaded with the court not to make the temporary order so broad, holding that it went to the merits of the case and left practically nothing for the defense to do but accept the order as a final decree. Judge Anderson spoke of the fact that last Saturday he gave John L. Lewis, president of the United Mine Workers of America, an opportunity to say he would preserve the status quo of the West Virginia situation until the case could come up for final hearing and that Mr. Lewis had said he declined to surrender. "I asked the simple privilege of time and was denied time," he explained. "Mr. Lewis forced me to decide. I am compelled to go further than I wanted to go."

Miners' Counsel Pleads for Less Stringent Ruling

W. A. Glasgow, Jr., of Philadelphia, chief counsel for the miners, argued at length in an effort to prevail on the court to make the order less stringent. He said that he would not undertake to change the views of the court as expressed in the court's statement, but he hoped on final hearing to submit proof that the "check-off" system within itself is lawful and used for a lawful purpose. Speaking for Mr. Lewis, in reference to the latter's refusal voluntarily to preserve the status quo of the efforts to unionize the West Virginia field, Mr. Glasgow said that, considering Mr. Lewis's official capacity he did not see how he could have answered differently. He suggested that Mr. Lewis's reply might have been different if Judge Anderson had requested that the union prevent unlawful methods in the strike activities.

The court did not deny the right of workers to organize, but held that the miners' efforts in West Virginia were in furtherance of a conspiracy with operators in organized union fields to shut off the competition of non-union mined coal. In discussing with counsel the text of the order Judge Anderson said he would not enjoin "peaceful efforts" of the union to organize West Virginia. Mr. Glasgow urged that inasmuch as the court had decided that the money obtained through the "check-off" system was used for an unlawful purpose, the order should enjoin the use of the money for such purpose and not enjoin the use of the system in collecting the money.

"I am forced to do as I am doing," Judge Anderson replied. "I am holding that the effort to unionize the mines in West Virginia is unlawful and I must restrain everything directed to that effort. I want it directed to that effort. I want it distinctly understood that I am not holding the miners' organization is unlawful, but I am holding that the effort being made to unionize the non-union mines in West Virginia is unlawful in itself because it is an effort to suppress competition."

Judge Anderson said that in his opinion it was no defense to say that money obtained by means of the "check-off" was used only for the relief of suffering in West Virginia. He could not differentiate, he said, between the use of the money to buy supplies in support of the insurrection and the use of it in purchasing arms and ammunition. He insisted that in view of the refusal of Mr. Lewis to preserve the status quo in the strike territory it was necessary for the court to enjoin the use of any method being used in furtherance of the unlawful strike.

Operators generally are "restrained from collecting over and through their payrolls or in any other manner, any and all moneys as dues and assessments levied or charged by the United Mine Workers of America, its officials or members, upon or against its members, employees of said individuals and of defendant corporations, or who may hereafter be employed by them under the check-off provisions of the contracts in evidence herein and heretofore executed by or in behalf of said named defendants and the officials or members of the United Mine Workers of America, or under any and all contracts that may hereafter be executed between the said defendants and the officials or members of the said United Mine Workers of America, and from paying the same to the officials, members or representatives of the United Mine Workers of America."

Statement Gives Reasons for Stopping Check-Off

Before considering the form of the order, which was not signed until afternoon, Judge Anderson made the following statement setting forth his reasons for ordering a discontinuance of the payment of money into West Virginia by the union and the collection of money through the "check-off" system:

"The bill avers and the proof shows a combination and working arrangement—a conspiracy between the United Mine Workers of America and the coal operators in the so-called Central Competitive Field, to destroy what some of the conspirators call the 'vicious competition' of the West Virginia mines.

"Almost all of the coal produced in West Virginia is shipped out of the state in interstate commerce and the business of the plaintiff is shown to be interstate. It lifts its coal out of its mines in one state and places it upon cars for shipment in another. The evidence shows that the competition complained of and sought to be destroyed is competition in the sale of bituminous coal throughout the several states. A conspiracy to destroy such competition is in direct contravention of the Sherman Anti-Trust act. Section 1 of that act provides:

"'Every contract, combination in the form of trust or otherwise, or conspiracy in restraint of trade or commerce among the several states, or with foreign nations, is hereby declared to be illegal.'

"The bituminous coal fields of the United States are already unionized except a portion of West Virginia and a small section of the Southwestern part of the country, and an effort to unionize the West Virginia mines is part of an effort to monopolize all the coal industry in the United States until, as one of the conspirators says, the United Mine Workers' organization 'shall cover every coal-producing state in the Republic.'

"The method agreed upon and adopted by the conspirators to thus destroy competition was to organize or unionize the West Virginia field. These West Virginia operators desire to run their mines on a non-union basis. The effort on the part of the defendants to unionize these mines and thus compel the operators to unwillingly run upon the union basis would result either in the suppression of this non-union mining altogether or would put such restrictions on it as to accomplish the objects of the conspiracy—namely, raise the price of the West Virginia product so that it could not compete with the so-called Central Competitive Field.

"The attempt to do this was continued for some time by the usual incidents of violence and exhibitions of force, and matters progressed until a state of war existed in West Virginia which the state government was unable to put down, and upon the call of the state authorities, the President of the United States declared martial law, sent Federal troops into West Virginia and restored order.

"The evidence shows that members of the mine workers' union purchased firearms and ammunition and otherwise financed the violent activities in behalf of the unionizing forces in West Virginia, and this state of war continued until the President sent troops into the state, and it is only held in abeyance because of that fact.

"The evidence shows that the revenues of the mine workers' union are produced from dues and assessments laid upon the members; that these dues and assessments are by an arrangement between the miners' organization and the operators taken from the wages of the workers in the mines by the operators and paid by them to the organization of the mine workers. This is the 'check-off' system. The membership is large and the dues and assessments yield an enormous sum.

"Statements made by officers of the United Mine Workers show that the miners' organization has sent into West Virginia to carry on this struggle more than $2,500,000, and the secretary-treasurer of that organization in his report to the convention recently held in this city stated that during the year ended Aug. 1, 1921, the organization had sent into West Virginia more than $1,000,000. This money was derived from the 'check-off' system and was sent to West Virginia to assist in the effort to organize the West Virginia field.

"The evidence without contradiction shows that ammunition and arms were purchased by members of the mine workers' union and used for the purpose of carrying on this struggle. It is claimed on the part of the defendants that the money used to purchase these arms and this ammunition and to mobilize and direct these armies came from the locals, and that no part of the money sent from here was used for that purpose, but that such money was and is used only in such peaceable ways as caring for and feeding and furnishing supplies to those union miners who have been evicted from their homes or deprived of a living or otherwise put to a disadvantage in carrying on this struggle.

HOLDS "CHECK-OFF" MONEY ILLEGALLY USED

"If this be true it is quite apparent that there is no difference in the activities of those who furnish the food and supplies for the army and those who furnish it its arms and ammunition. The money sent by the miners' organization derived from the the 'check-off' system as above stated is sent there to aid, abet and assist those on the ground, actively engaged in the unlawful attempt to unionize the non-union mines in West Virginia and destroy competition, as above stated.

"The evidence clearly shows that the mine operators know (at least they know now) that this money, thus contributed by them through the 'check-off' system, is used in this unlawful manner. It, therefore, follows that the use of such money should be enjoined, and the carrying on of the 'check-off' system as a means for raising it should likewise be enjoined.

"At the conclusion of the evidence counsel for the miners requested time to introduce some evidence explanatory of the large sums of money shown to have been sent by the organization into the West Virginia fields, and also asked for an extension of time for thirty days in which to file their answer to the bill. The court at once conceded that these requests were reasonable and indicated its willingness to grant such extensions, and stated that owing to the great importance of the questions involved, and considering that if the relief prayed for in the bill were granted, it would have such far-reaching consequences, suggested that it would like all the light upon the subject that could be furnished by evidence and time for investigation and argument as to the principles of law involved, and stated that the time requested by the mine workers' counsel would be granted upon condition that the status quo be preserved in the meantime.

"Mr. John L. Lewis, the president of the United Mine Workers of America, being in the courtroom at the time, was asked by the court if he would agree to preserve the status quo, that is, cease efforts to unionize these mines in West Virginia until the court would have time to more thoroughly investigate the matter, the court stating that it would be entirely satisfied with Mr. Lewis's assurance to that effect. Mr. Lewis promptly declined to agree to desist, thus creating the emergency for the issuing of a temporary injunction and compelling the court to act without further opportunity to investigate the important questions involved.

"This court cannot police West Virginia, nor does it hold that the United Mine Workers' Union is itself an unlawful organization, nor will it in any way attempt to curtail its lawful activities, but it can enjoin the unlawful activities of the parties here in Indiana who are here now under the jurisdiction of this court, and a temporary injunction to that effect will be issued."

Strikes Threatened in Colorado Mines

A 30-PER CENT wage cut has been suggested by the Keystone Mining Co. and the Pike's Peak Consolidated Fuel Co., and the Colorado Industrial Commission has been asked to pass on its justification. The operators assert that the cost of living has been lowered enough to meet the reduction. The new wage scale would restore that in effect Nov. 1, 1919.

The commission even now is considering the 30-per cent wage reduction proposed for the mine workers of the Colorado Fuel & Iron Co. in southern Colorado. This suggested wage reduction nearly precipitated a strike on Sept. 1, and the strike may occur if the commission concurs with the company that the reduction is logical.

The unrest of the Colorado mine workers is exhibited by the controversy at the mines of the Oakdale Coal Co., at Oakview, where the miners recently went on strike because of a quarrel between the foreman and a discharged miner.

The Industrial Commission has issued a peremptory order calling upon the miners to return to work until after a hearing can be held. Union officials have been ordered to rescind and cancel their strike order and to refrain from encouraging miners to remain away from work.

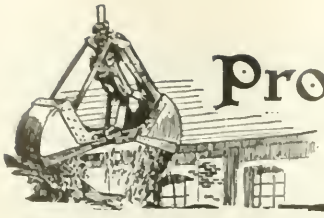
I. C. C. Resumes Hearing in Freight-Rate Tangle in Inner and Outer Crescent

WHETHER the Ohio State Utilities Board has the power to forbid railroads to increase rates and the general adjustment of freight rates on coal in the southern Ohio, eastern Kentucky and West Virginia districts are questions on which testimony is to be taken for the Interstate Commerce Commission at the hearing which opened in the Marlborough-Blenheim Hotel at Atlantic City, Monday, Oct. 31. The hearing, which is expected to last all week, is being presided over by Chief Examiner Quirk for the Interstate Commerce Commission and prominent coal and railroad men are in attendance. The present hearing is a continuation of a hearing in Columbus, Ohio, that was adjourned in September.

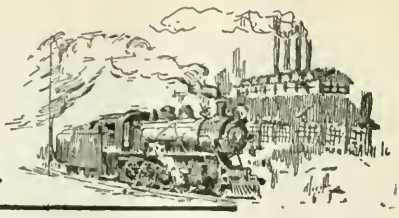
The Southern Ohio Coal Operators' Association is one of the chief complainants in the case before the commission. The association named in its complaint specifically the Chesapeake & Ohio. R.R., but other railroads that carry coal in Ohio, Pennsylvania, Kentucky, Tennessee and West Virginia are involved. The coal operators desire lower charges.

When there was a general increase in freight and passenger rates some months ago the Ohio State Utilites Commission forbade the increases to be put in force in that state. The issue is now before the commission and testimony will be offered by both sides this week.

ANTHRACITE MINE WORKERS TO MEET IN SHAMOKIN.—The tri-district convention of the United Mine Workers of America to frame the wage demands to be submitted to the international convention in Indianapolis, Feb. 14, 1922, will be held in Shamokin, beginning Jan. 17, 1922. This was decided at a meeting of the tri-district executive boards in Hazleton last week. The boards also took the rather unusual step of getting into politics by indorsing the candidacy of Judge Eugene Bonniwell, of Philadelphia, for Justice of the Pennsylvania Supreme Court.



Production and the Market



Weekly Review

SETTLEMENT of the railroad strike threat has removed the main sales talk of industrial coal shippers and the steam markets have again relapsed into a lethargic condition. While buyers had discounted the probability of a serious transportation tie-up, there was enough cautious buying for safeguarding reserves to cause a temporary bolster to the market. This demand has subsided and the coal factors will now mark time until the slowly increasing industrial consumption uses up the fuel reserves provided for the emergency.

Check-Off Injunction May Cause Trouble

Judge Anderson's order on the union coal operators to cease collection of the check-off is certain to raise a large measure of opposition among the miners (the anthracite region is not affected) and in some quarters strikes are freely predicted. It is too early to forecast the effect on soft coal production of this legal move to prevent the mine workers from forcibly organizing West Virginia.

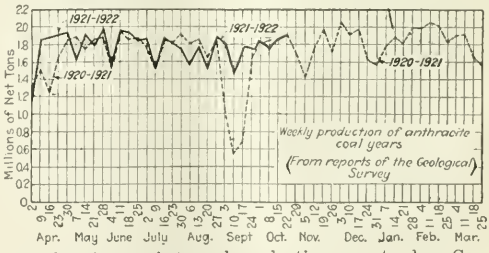
Domestic bituminous coal is moving well, as would be expected during this time of the year. Prices on these grades, of course, are not affected by the recent strike flurry. It is necessary, however, to push the resultant coals, and last week's steam prices are a thing of the past. This is especially true in the Midwest, where domestic production is heavy. That section of the country is being actively canvassed by Eastern coal shippers, who are cutting prices to the detriment of the Indiana and Illinois fuels. New England continues to be the mainstay of the Hampton Roads factors and spot prices are as low as ever. There is a distinct tendency, however, to hold and even increase prices on business over the period to the new coal year and concessions on this business are rare.

Buyers are making no move which would indicate any anxiety over prospects for the future. In fact, stocks everywhere are satisfactory from the consumer's viewpoint. Recent active buying of railroad fuel has placed the roads in an extremely good position. Almost uniformly, public utilities have on hand, as a minimum, a thirty days' supply. The small steam user was the best customer during the strike talk and his reserves are ample for the immediate future. With so much agitation for lowered freight rates going the rounds the seller of coal is placed strictly on the defensive in the matter of obtaining current business.

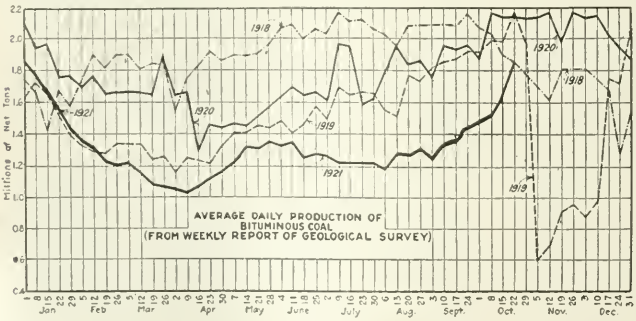
With such a condition, price concessions are inevitable and while quotations have not yet receded to the levels ruling before the strike talk they have closely paralleled the drop in demand. *Coal Age* Index of spot bituminous prices stands at 91 on Oct. 31, as compared with 92 on Oct. 24.

Baltimore, New York and Philadelphia markets have reacted with the strike settlement and the trade has adopted a policy of watchful waiting, moving coal whenever possible, but refusing to quote "distress" prices.

The old bugaboo of car shortage again is apparent, especially in the Middle West. During the week ended Oct. 15 the number of surplus coal cars decreased over 14,000 in comparison with the preceding week.


1921-1922
1921-1922
1920-1921
1920-1921
Millions of Net Tons
Weekly production of anthracite coal years
(From reports of the Geological Survey)
Apr. May June July Aug. Sept Oct. Nov. Dec. Jan. Feb. Mar.

Anthracite markets and production are steady. Consumers are buying domestic sizes in smaller quantities



Estimates of Production

(Net Tons)

Week Ended	1921	1920
BITUMINOUS COAL		
Oct. 8 (*b*)	9,134,000	12,103,000
Oct. 15 (*b*)	9,691,000	12,110,000
Oct. 22 (*a*)	10,993,000	12,232,000
Daily average	1,832,000	2,039,000
Calendar year	327,177,000	436,381,000
Daily average, calendar year	1,312,000	1,746,000
ANTHRACITE		
Oct. 8	1,793,000	1,898,000
Oct. 15	1,843,000	1,906,000
Oct. 22 (*a*)	1,912,000	1,969,000
Calendar year	72,653,000	71,666,000
COKE		
Oct. 15	94,000	400,000
Oct. 22 (*a*)	102,000	391,000
Calendar year	4,395,000	17,265,000

(a) Subject to revision. (b) Revised from last report.

than normal, but the demand from retailers continues to provide operators with orders well in advance of the immediate capacity.

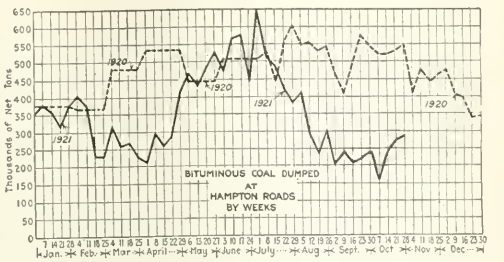
Beehive coke production has been in advance of the demand and will outdistance it with the resumption of a total of 1,250 ovens in the Connellsville region by the Frick company.

BITUMINOUS

The effect of the rail strike threat is clearly indicated by the jump in production during the week ended Oct. 22. According to the Geological Survey, 10,993,000 net tons were mined, a new record since last January and 1,302,000 tons in excess of the preceding week. The rate of production under the strike stimulus was not far below normal for this season of the year—in the corresponding week of 1917 it was 10,844,000 tons, in 1918 about 11,170,000 and in 1920 over 12,230,000. A further sharp increase is indicated by car loading for Oct. 24-25 and the momentum of ten days business may have carried last week to a new high for this year.

New England markets remain quiet. Shipments all-rail in the week ended Oct. 22 were 2,857 cars, compared with 2,923 in the week preceding. In the corresponding week of 1920 there were 5,512 cars forwarded over the Hudson. September receipts declined slightly, as compared with preceding years, being 12,455,000 net tons; in 1920 the September figures were 16,598,000; in 1919, 13,849,000.

Little comment is necessary on the export situation. Only in the West Indies and Southern markets is there



an outlet for American coal in the face of strong British competition. With the exception of a few clearings to these ports, the Hampton Roads agencies are continuing to center their attention on the New England market and the

An error occurred in the table of current bituminous quotations for the week of Oct. 24. (*Coal Age*, p. 697, Oct. 27, 1921.) Prices quoted for Franklin, Illinois, covered the Northern Illinois field and should have read: Lump, $3.50@$4.30; mine run, $2.40@$3.50; screenings, $1.75@$2.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

	Market Quoted	Sept. 27, 1921	Oct. 17, 1921	Oct. 24, 1921	Oct. 31, 1921†
Low-Volatile, Eastern					
Pocahontas lump	Columbus	$4.90	$4 50	$4 70	$4 65@$4 90
Pocahontas mine run	Columbus	2 65	2 65	2 65	2 55@ 2 75
Pocahontas screenings	Columbus	2 10	1 95	1 60	1 50@ 2 00
Pocahontas lump	Chicago	4 75	4 75	4 75	4 50@ 5 00
Pocahontas mine run	Chicago	2.85	2 90	3 15	2.75@ 3.50
*Smokeless mine run	Boston	4.90	4 85	4 90	4 75@ 4 90
Clearfield mine run	Boston	1 90	1 95	1 95	1 75@ 2 15
Cambria mine run	Boston	2.35	2 45	2 45	2 10@ 2.75
Somerset mine run	Boston	1.75	1 90	1 90	1 60@ 2 15
Pool 1 (Navy Standard)	New York	3.25	3.20	3 40	3.00@ 3.50
Pool 1 (Navy Standard)	Philadelphia	3.10	3.15	3 15	3 00@ 3.30
Pool 1 (Navy Standard)	Baltimore	2 80	2.90	2 90	2 60@ 2 75
Pool 9 (Super. Low Vol.)	New York	2.55	2 50	2 60	2 50@ 2 75
Pool 9 (Super. Low Vol.)	Philadelphia	2 40	2 45	2 45	2 25@ 2 60
Pool 9 (Super. Low Vol.)	Baltimore	2 60	2 45	2 45	2 35@ 2 60
Pool 10 (H. Gr. Low Vol.)	New York	2 30	2 20	2 30	2 15@ 2 40
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2.05	2 15	2 15	2 00@ 2.25
Pool 10 (H. Gr. Low Vol.)	Baltimore	2.30	2.20	2 20	2 10@ 2.25
Pool 11 (Low Vol.)	New York	1.90	1.85	1 85	1 75@ 2 00
Pool 11 (Low Vol.)	Philadelphia	1.80	1 85	1 85	1 75@ 2.00
Pool 11 (Low Vol.)	Baltimore	2.10	2.00	2 00	1 95@ 2.05
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.90	1 75	1 80	1 75@ 1 95
Pool 54-64 (Gas and St.)	Philadelphia	1.75	1 75	1 75	1 65@ 1 85
Pool 54-64 (Gas and St.)	Baltimore	1.70	1 75	1 70	1 70@ 1 80
Pittsburgh sc'd gas	Pittsburgh	2.65	2 65	2 65	2 60@ 2 70
Pittsburgh mine run (St.)	Pittsburgh	2.20	2 20	2 15	2 10@ 2 40
Pittsburgh slack (Gas)	Pittsburgh	2.15	1.95	1 65	1 60@ 1.70
Kanawha lump	Columbus	3.35	3.20	3 50	3.00@ 3.65
Kanawha mine run	Columbus	2.00	2 05	2.15	2 00@ 2 25
Kanawha screenings	Columbus	1.25	1 10	1.15	1 15@ 1.30
Hocking lump	Columbus	3 25	3 20	3 30	3 00@ 3.50
Hocking mine run	Columbus	2 15	2.00	2 10	2 00@ 2.15
Hocking screenings	Columbus	1.15	1.00	1.10	1 00@ 1.20
Pitts. No. 8 lump	Cleveland	3.25	..	3 25	3.00@ 3.50
Pitts. No. 8 mine run	Cleveland	$2.10	$2 15	$2 20	$2.10@$2.15
Pitts. No. 8 screenings	Cleveland	1.50	1.55	1.70	1.55@ 1.65
Midwest					
Franklin, Ill. lump	Chicago	3.80	3 90	3.95	3.25@ 4.30
Franklin, Ill. mine run	Chicago	2.95	2 85	3.00	2.00@ 3 50
Franklin, Ill. screenings	Chicago	1.75	.95	1 90	1.00@ 2.35
Central, Ill. lump	Chicago	2.70	2 50	2 50	2 00@ 3 00
Central, Ill. mine run	Chicago	2 40	2 25	2.25	2 00@ 2 50
Central, Ill. screenings	Chicago	1 60	1 20	1.75	1 00@ 2.35
Ind. 4th Vein lump	Chicago	2.95	2.95	2 95	2 35@ 3 50
Ind. 4th Vein mine run	Chicago	2.40	2.50	2.55	2.00@ 2 75
Ind. 4th Vein screenings	Chicago	1.60	1 60	1.85	1.00@ 2.15
Ind. 5th Vein lump	Chicago	2.90	2.70	2 70	2.15@ 3.25
Ind. 5th Vein mine run	Chicago	2.40	2.50	2.50	2.00@ 2 75
Ind. 5th Vein screenings	Chicago	1.55	1.45	1.70	1 00@ 2.15
Standard lump	St. Louis	3.15	3.40	3.65	3.25@ 3.50
Standard mine run	St. Louis	1.95	1.75	2 00	1.90@ 2.00
Standard screenings	St. Louis	.50	.60	.90	50@ 1 25
West. Ky. lump	Louisville	2.90	3 15	2.90	2 75@ 3 00
West Ky. mine run	Louisville	2.25	2.30	2 40	1 85@ 3 00
West Ky. screenings	Louisville	1 15	1.40	1.25	50@ 1.75
South and Southwest					
Big Seam lump	Birmingham	3.75	3.75	3 75	3 25@ 4 25
Big Seam mine run	Birmingham	2.15	2.15	2.15	2 00@ 2.30
Big Seam (washed)	Birmingham	2.40	2 30	2.30	2 15@ 2 40
S. E. Ky. lump	Louisville	3.65	3.75	3 90	3 75@ 4 25
S. E. Ky. mine run	Louisville	2.20	2 30	2.20	2 00@ 2.40
S. E. Ky. screenings	Louisville	1.50	1.25	1.35	1.25@ 1.35
Kanasa lump	Kansas City	5.75	. .	. .	5.75
Kansas mine run	Kansas City	4 00	. .	. .	4.00
Kansas screenings	Kansas City	2.40	. .	. .	2.40

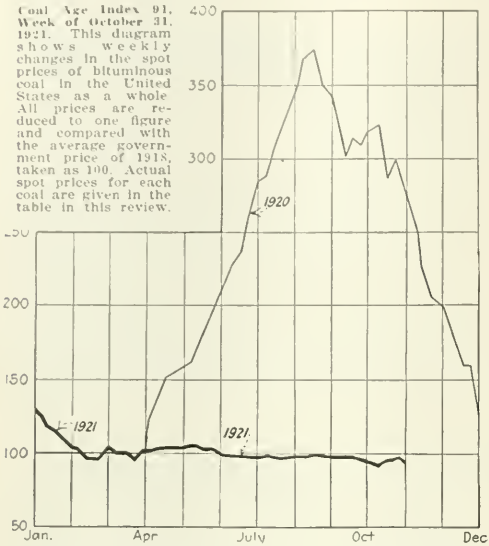
*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

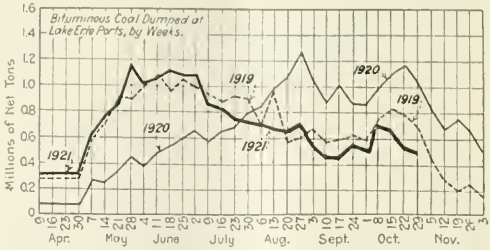
	Market Quoted	Freight Rates	Oct. 17, 1921 — Independent	Oct. 17, 1921 — Company	Oct. 24, 1921 — Independent	Oct. 24, 1921 — Company	Oct. 31, 1921† — Independent	Oct. 31, 1921† — Company
Broken	New York	$2 61	.....	$7.60@$7.75	.....	$7.60@ $7.75	.....	$7.60@$7.75
Broken	Philadelphia	2 66	$7.60@ $8.20	7.75@ 7.85	$7.60@ $8.20	7.75@ 7.85	$7.60@ $8.20	7.75@ 7.85
*Broken	Chicago	5 63	13.40	12.80	13 40	12.80	13.40	12.80
Egg	New York	2 61	7.75@ 8.25	7.60@ 7.75	8.00@ 8.25	7.60@ 7.75	8.00@ 8.25	7.60@ 7.75
Egg	Philadelphia	2 66	8.10@ 8.35	7.75@ 7.85	8.10@ 8.35	7.75@ 7.85	8.10@ 8.35	7.75@ 7.85
*Egg	Chicago	5 63	13.40	12.80	13.40	12.80	13.40	12.80
Stove	New York	2 61	8.50@ 8.75	7.90@ 8.10	8.50@ 9.00	7.90@ 8.10	8.50@ 9.00	7.90@ 8.10
Stove	Philadelphia	2 66	8.25@ 8.75	8.00@ 8.35	8.50@ 8.75	8.00@ 8.35	8.50@ 8.75	8.00@ 8.35
*Stove	Chicago	5 63	13.40	12 90	13 40	12.90	13.40	12.90
Chestnut	New York	2 61	8.25@ 8.50	7.90@ 8.10	8.50@ 9.00	7.90@ 8.10	8.50@ 9.00	7.90@ 8.10
Chestnut	Philadelphia	2 66	8.00@ 8.50	8.05@ 8.25	8.25@ 8.75	8.05@ 8.25	8.25@ 8.75	8.05@ 8.25
*Chestnut	Chicago	5 63	13.40	12.80	13 40	12.80	13 40	12.80
Pea	New York	2 47	5.00@ 5.75	6.05@ 6.45	5.50@ 6.00	6.05@ 6.45	**5.75@ 6.00**	6.05@ 6.45
Pea	Philadelphia	2 38	4.75@ 5.50	6.15@ 6.25	5.00@ 5.50	6.15@ 6.25	5.00@ 5.50	6.15@ 6.25
*Pea	Chicago	5 63	12.40	11.15	12.40	11.15	12.40	11.15
Buckwheat No. 1	New York	2 47	3.00@ 3.25	3.50	3.25@ 3.50	3.50	3 25@ 3.50	3.50
Buckwheat No. 1	Philadelphia	2 38	2.75@ 3.00	3.50	2.75@ 3.25	3.50	**2.75@ 3 50**	3.50
Rice	New York	2 47	2.00@ 2.40	2.50	2.25@ 2 50	2.50	2.15@ 2.50	2.50
Rice	Philadelphia	2.38	1.75@ 2.00	2.50	1.75@ 2.00	2.50	**1.75@ 2.25**	2.50
Barley	New York	2 47	1.25@ 1.50	1.50	1.25@ 1.50	1.50	1.25@ 1.50	1.50
Barley	Philadelphia	2 38	1.00@ 1.25	1.50	1.00@ 1.25	1.50	**1.10@ 1.25**	1.50
Birdseye	New York	2.47	.....	2.50	.....	2.50	.....	2.50

*Prices and freight rates, net tons; quotations f.o.b. cars, Chicago.
†Advances over previous week shown in **heavy type**, declines in *italics*

bunker trade. During the week ended Oct. 27, 252,694 gross tons were dumped at Hampton Roads, the majority of which was for coastwise business. This is an increase of about 10,000 tons over the preceding week's dumpings.


Coal Age Index 91, Week of October 31, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.
400
350
300
250
200
150
100
50
1920
1921
1921
Jan.
Apr
July
Oct
Dec

Lake tonnage is holding well into the close of the navigable season. Dumpings during the week ended Oct. 31 were 508,111 net tons—490,530 cargo and 17,581 vessel fuel as compared with 1,081,275 tons in the corresponding week of 1920. Total movement for the season to date now stands at 21,384,418 net tons; in 1920 it was 20,693,569.



September production of bituminous coal was 35,127,000 net tons, as compared with 34,538,000 tons in August and 30,385,000 tons in July. The total output for first nine months of 1921 was 296,309,000 tons.

ANTHRACITE

Production of hard coal is steady, and the output for the week ended Oct. 22 was not much affected by reports of a possible transportation tie-up. The total output was 1,912,000 net tons, according to the Geological Survey, as compared with 1,843,000 in the week preceding.

COKE

Beehive coke production increased to 102,000 net tons during the week ended Oct. 22, as compared with 94,000 tons in the week preceding. Cumulative production during the calendar year now stands at 4,395,000 net tons, a decrease of 74 per cent from the 1920 figure.

Foreign Market And Export News

United States September Exports of Coal and Coke, by Customs Districts*

Customs Districts	Coal: Anthracite	Coal: Bituminous	Coke
	(Gross Tons)		
Maine and N. H.	22		53
Vermont	1,417	558	24
Massachusetts	26		
St. Lawrence	77,107	138,293	973
Rochester	23,317	43,927	
Buffalo	161,006	180,664	5,323
New York	14,072	2,924	56
Philadelphia	2,250	11,119	3,711
Maryland		36,943	
Virginia		108,511	
South Carolina		14,757	
Florida			27
Mobile		268	
New Orleans		1,813	3
Sabine		21	25
San Antonio		253	184
El Paso		7,298	3
San Diego	3	11	
Arizona	2,531	1,228	24
San Francisco	1	22	2
Washington	552	1,823	
Alaska		10	
Dakota	3,626	3,638	675
Duluth & Superior	1,318	4,727	146
Michigan	20	66,923	5,987
Ohio		585,879	418
Total	287,268	1,211,610	17,634

BUNKER COAL SUPPLIED TO STEAMERS

(In the Foreign Trade)

Customs Districts	Tons
New York	241,959
Philadelphia	16,763
Maryland	17,483
Virginia	125,609

*From Bureau of Foreign and Domestic Commerce.

Coal Paragraphs from Foreign Lands

GERMANY — Ruhr production is proceeding evenly. The output during the week ended Oct. 15 was 1,787,000 metric tons, according to a cable to *Coal Age*. This is an increase of 20,000 tons over the last preceding week and 9,000 tons in excess of that for the week ended Oct. 1.

ITALY — Cardiff steam firsts are quoted on the Genoa market at 42s. 9d., according to a cable to *Coal Age*. This is a drop, as compared with last week's figures of 43s. 6d.

DENMARK — Imports of coal during the first eight months of 1921 were 1,057,962 tons, against 1,188,210 during the corresponding period last year. This year 162,000 tons came from the United States, 20,000 tons from Germany and the rest from Great Britain.

BELGIUM—The situation shows little change. Industrial coals are weak and stocks are large. In the Borinage Basin the question of ceasing work one day a week is being considered.

An association of Belgian coal dealers and importers has recently been formed at Ghent for the purpose of importing English and American coal. The main object of its establishment is to diminish the risks of importation and to facilitate the necessary financial operations. For the present principally English coal will be imported, but wherever prices permit this association will be interested in importing American coal. The names and addresses of this association and its members may be secured from the Bureau of Foreign and Domestic Commerce, Washington, D. C., File No. EUR-1011.

CHINA—Cable advices to the Department of Commerce indicate that the industrial situation in China has reached the point where considerable purchases of equipment for iron and coal mines may be expected.

SPAIN—The Ministro de Fomento has decided in principle that 20 per cent of the national coal production shall be used by vessels of the mercantile marine and the railways. The price of Asturian coal tends to weaken but not enough to compete with British coal.

Export Clearances, Week Ended Oct. 27

FROM HAMPTON ROADS

	Tons
For Africa:	
Br. SS. Heathfield, for Dakar	6,854
For Atlantic Islands:	
Nor. SS. Joseph J. Cuneo, for Cayo Mambi	754
Nor. SS. Bowden, for Kingston	1,035
For Canal Zone:	
Am. SS. Cristobal, for Cristobal	9,616
For Cuba:	
Am. SS. Lewis K. Thurlow, for Havana	4,591
Br. SS. Berwindale, for Havana	7,934
Nor. SS. Korsfjord, for Santiago	1,532
Am. Schr. Frank A. Morey, for Hamilton	833
Br. Schr. Waegwaltie for Santo Domingo	336
Am. Schr. Edward R. Smith for Manzanillo	788

FROM PHILADELPHIA

For Brazil:	
SS. Robin Gray for Rio de Janeiro	
Br. SS. Chertsey for Alexandria	

Settlement of British Miners' Wage Under July Agreement Proving Difficult

Export Business Sole Mainstay of Trade—Prices Continue to Drop—Welsh Anthracite in Good Demand—Freight Market Weakens

The output of coal in the United Kingdom during the week ended Oct. 15 was 4,238,000 gross tons as compared with 4,287,000 in the week preceding. The export market is still being actively worked as the best outlet during the period when home demand is so low. The Cumberland field for the first time in its history has shipped coal to the Continent. Italy has just purchased 10,000 tons of best Durham gas at 27s. f.o.b. The Tyne Commissioners report that 1,242,516 tons were shipped from the Tyne in September, compared with 874,264 in September, 1920.

Prices went down somewhat last week, cable reports to *Coal Age* showing Best Admiralty large coal at 28s. to 29s., a drop of a shilling in one week, with some rumors of business this week as low as 25s. Best Newcastle steam coal dropped from 1s. to 2s. 6d. to 24s. @25s. and bunkers declined one shilling to 24s.@25s.

Coal freights from Tyne to Gothenburg were quoted last week at 8s. 6d. and Tyne to Malmo at 10s. The freight market generally is weak.

In some of the districts the terms of the agreement drawn up at the end of the stoppage are proving impracticable, notably in Gloucestershire where the owners say they cannot sell at present prices as other districts are underselling them by 10s. and 12s. per ton, and it is, consequently, impossible to carry out the terms of the agreement.

The dispute in the South Wales area on the question of October wages has spread to include all those districts which drew support from the subsidy. The accounts have recommended a wage of 51.68 per cent of the 1915 standard, while the men claim 112.81 per cent, the difference amounts to about 3s. per day.

Other points in dispute between the South Wales owners, miners and the government have been decided by the arbitrator, Sir William Plender, as follows:

(1) That the South Wales coal owners are responsible for 72.6 per cent of the miners' wages and not 97.57 per cent as argued by the government.

(2) That October wages will be those of September, less a maximum reduction of 3s. per shift for adults and 1s. 6d. for juniors.

The Welsh coal owners have, for the last few weeks, lowered their prices beyond what is really the economic limit so as to secure as large a portion as possible of the foreign market and also to maintain employment.

Recently the Welsh export trade has declined because foreign buyers cannot cope with the heavy expense caused by the exchanges which so appreciably raise the Welsh f.o.b. price and freights. As a general rule the Welsh owners have preferred to close their pits rather than to continue to face heavy losses.

The only demand which is sustained is for anthracite, and to meet this one concern is developing an extensive new anthracite area in the Neath Valley. Anthracite represents about one-twelfth of the total output of the Welsh coal fields.

The Government has received a proposal to the effect that it would be more economical for the State to provide work in coal-raising for the unemployed miners than to relieve them by means of the Poor Law for doing no work at all. The figures for outdoor relief show that the cost is at the rate of 8s. per ton of coal which would be raised if they were at work, and that their employment on the lines suggested would involve a loss of 6s. per ton; so that by utilizing this scheme 2s. per ton would be saved and coal stocks would be replenished against foreign demands. The proposal will come before the Prime Minister.

Hampton Roads Concentrating Coastwise and Southern Markets

Marked increase in New England business, caused by the prospects of a railroad strike, was the chief development in the Hampton Roads market last week. Freight rates by barge and schooner to the New England States increased slightly. The price of coal, however, dropped somewhat.

Accumulations at Tide are on the decrease, shippers being unwilling to speculate on the conditions surrounding the strike, fearing a rail tie-up might leave large volumes of coal on demurrage. A slight increase in export business was seen, cargoes moving to the West Indies, South America, and other Southern ports.

Less than 150,000 tons of coal were in cars at the three piers this week, while vessel tonnage awaiting cargo is approximately 40,000. Freight rates to foreign ports remain unchanged, with the exception of a slight decrease to West Italy.

Bunker business is growing, with prospects of still more activity along this line, due to an increase in general shipping, which promises to continue through the winter.

PIER SITUATION

	Week Ended Oct. 20	Oct. 27
N. & W. Piers, Lamberts Point:		
Cars on hand	1,286	1,663
Tons on hand	68,517	87,268
Tons dumped for week	123,301	125,119
Tonnage waiting	8,100	13,000
Virginian Ry. Piers, Sewall's Point:		
Cars on hand	1,461	925
Tons on hand	73,050	46,250
Tons dumped for week	75,203	93,888
Tonnage waiting	700	24,436
C. & O. Piers, Newport News:		
Cars on hand	776	838
Tons on hand	38,650	41,900
Tons dumped for week	45,444	33,687
Tonnage waiting	1,575	3,600

Pier and Bunker Prices, Gross Tons

(Foreign Bunker Quotations by Cable to Coal Age)

	Oct. 22	Oct. 29†
PIERS		
Pool 9, New York	$5.90@ $6.10	$5.90@ $6.10
Pool 10, New York	5.65@ 5.80	*5.60@ 5.80*
Pool 9, Philadelphia	5.80@ 6.00	*5.75@ 5.95*
Pool 10, Philadelphia	5.50@ 5.75	5.50@ 5.75
Pool 71, Philadelphia	6.00@ 6.25	*6.00@ 6.20*
Pool 1, Hamp. Rds.	5.15@ 5.25	*5.10@ 5.20*
Pools 5-6-7 Hamp.Rds.	4.25@ 4.50	*4.25@ 4.40*
BUNKERS		
Pool 9, New York	6.25@ 6.35	6.25@ 6.35
Pool 10, New York	6.00@ 6.15	6.00@ 6.15
Pool 9, Philadelphia	6.00@ 6.25	6.00@ 6.25
Pool 10, Philadelphia	5.75@ 6.00	5.75@ 6.00
Pool 71, Baltimore	5.50@ 6.00	*5.60@ 5.80*
Pool 1, Hamp Rds.	5.25@ 5.40	*5.25@ 5.35*
Pool 2, Hamp. Rds.	5.00@ 5.10	5.00@ 5.15
Welsh, Gibraltar	47s. 6d. f.o.b.	47s. 6d. f.o.b.
Welsh, Rio de Janeiro	65s. f.o.b.	65s. f.o.b.
Welsh, Lisbon	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, La Plata	60s. f.o.b.	60s. f.o.b.
Welsh, Madeira	52s. 6d. f.a.s.	52s. 6d. f.a.s.
Welsh, Teneriffe	52s. 6d. f.a.s.	52s. 6d. f.a.s.
Welsh, Genoa	55s. t.i.b.	55s. t.i.b.
Durham, Newcastle	35s.@ 37s.	35s.@ 37s.
Belgian, Antwerp	110 fr.	110 fr.

C.I.F. Prices, American Coal

(In Gross Tons)

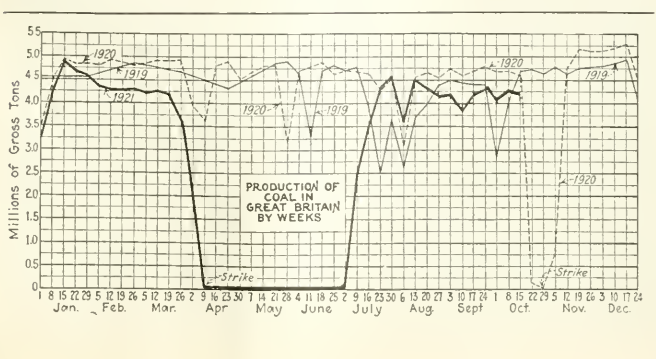
	Oct. 22 Low Vol.	Oct. 22 High Vol.	Oct. 29† Low Vol.	Oct. 29† High Vol.
French Atlantic	$9 10	$8.95	*$9.00*	*$8.85*
West Italy	9 40	9 25	*8.95*	*8.70*
West Indies	7.00	6.80		
The Plate	9 90	9 75	*9.75*	*9.60*
Rio Janeiro	9.40	9 25	*9.30*	*9.20*

These quotations are purely nominal and as far as can be learned no business is being done in these markets.

Current Quotations British Coals f.o.b. Port, Gross Tons

Cardiff	Oct. 22	Oct. 29†
Admiralty Large	29s. 6d.	*28s.@ 29s*
Steam, Smalls	19s. 6d.	19s.@ 20s
Newcastle:		
Best Steams	26s. 3d.	*24s.@25s.*
Best Gas	25s. 6d.	25s.@ 26s.
Best Bunkers	25s. 6d.	*24s@25s.*

†Advance over previous week shown in **heavy type**, declines in *italics*.



Reports From the Market Centers

New England

BOSTON

No Significant Developments—Hampton Roads Coals Continue Active—All-Rail Movement Slightly Increased — Healthy Demand for Domestic Anthracite.

Bituminous—A careful canvass this week fails to disclose any significant change in the general situation. The same shippers are offering the same coals to the same buyers as a week ago, and there is practically no difference in the prices quoted. While coal factors utilized the rail strike possibilities as talking points there was practically no reaction among buyers. Reserves are ample, and even though it would probably take more or less comprehensive buying to advance present prices, yet the larger buyers in particular are coy about making any move that would in the least show anxiety over prospects.

Pocahontas and New River are maintaining their supremacy over all but the relatively small area that may now be considered "safe" for all-rail coal. There is much talk of an impending reduction in rail freights, but most of this is based on mere guessing. Railroad men themselves do not look for any scaling down during the remainder of 1921, but the revised schedules on hay, grain, and certain other commodities have set people talking. Meanwhile, Navy standard coals are being offered at $4.75 f.o.b. vessel at Norfolk and Newport News, with a liberal concession from that basis for slack. For Inland delivery, $6.25 is still being freely quoted on cars Boston, although there are spasmodic efforts to advance this figure.

On coastwise freights there is also no apparent change. Large sailing vessels and barges are still to be had at 85c., Hampton Roads to Boston, with smaller tonnage in proportion. From New York rates to Boston are still easy on a basis of $1 flat, while in railway-owned transportation the rate on bituminous from Philadelphia is $1.10.

Movement all-rail through the Hudson River gateways has been showing a fairly consistent increase in the daily average, taking it week by week, but the bulk of this is due to the railroads themselves who wish to protect their storage at all possible points.

Anthracite—The brisk retail demand is reflected in a more active wholesale market. Most of the companies are well supplied with orders for November; even egg and pea are in mild request.

A few days of colder weather have made a material difference in the outlook. In several cities in New England receipts are considerably less than during 1920, and the question whether retailers will be able to keep up with the demand will depend upon temperatures during November and December.

Tidewater—East

NEW YORK

Demand for Anthracite Active—Railroads Buy Steam Coals Heavily—Bituminous Market Quiet—Demand Reacts as Strike Threat Passes.

Anthracite—Domestic demand has been steady. Operators and shippers have no difficulty in moving stove and chestnut but notwithstanding the cooler weather and the temporary rush caused by the threat of the railroad workers there is an over-supply of egg and pea.

New York again showed its adaptability as a weather market. Demand changed as often as the weather, cool winds causing a rush on the retail dealers while warmer temperatures resulted in ordinary business. Coal peddlers are complained of by those consumers who, on account of living in flat houses are compelled to buy their fuel in bushel or 100-lb. lots for which they pay at the rate of $20 per ton.

Rice is the hardest of the steam coals to move. Buckwheat is fairly active and there is comparatively little surplus around. Barley is a good second.

Bituminous—Conditions are quiet. There is little activity and unless demand gains local shippers expect the piers here will be overstocked. Buying rose and fell in accord with reports and rumors of the threatened railroad strike. It was a case of watchful waiting in many instances.

Large industrial plants and public utilities have stocks sufficient to have carried them over any ordinary emergency. Demand fluctuated during the week, due in great part to weather conditions. There was a big variation in quotations but hardly any change in the final result.

There is a good demand among the line trade and considerable coal is being laid aside. Industries are gradually increasing their working hours, with a consequent increase in fuel consumption.

With the dangers of the rail tie-up over dealers who had a surplus of coal at Tidewater or on the way began making preparations to get rid of it. There is considerable coal here, some of it without any definite orders.

Some mines producing the higher grades are said to be well sold up and are refusing orders on which delivery is stretched out, while others producing fair or inferior grades are not so well situated. While the general range of mine quotations show comparatively no changes from last week occasional sales have been reported at prices 10@15c. lower.

A few lots of Pool 15 were quoted around $5.50 f.o.b. piers, with some Pool 11 at the same figure. Quotations for Pittsburgh screened gas ranged $2.65@$2.80 and for Pittsburgh slack $2.15@$2.40.

There are many idle boats in this harbor. Notwithstanding this the boat rate remains firm, averaging 30@40c., according to the size of the bottom.

PHILADELPHIA

Anthracite Demand Eases—Dealers' Prices Not so Firm—Freight Reduction Talk Creates Uncertainty—Bituminous Loses All Show of Activity.

Anthracite—A moderate reaction has set in from the standpoint of the retailer, with the calling off of the rail strike. Some dealers actually report that a few customers canceled orders.

Retailers are convinced that a freight reduction will come shortly and it is curious to note how quickly they have assumed a conservative position as to buying. Many of them say they are anxious to see their stocks reduced. Even if a freight cut does come within a few months the bulk of the coal now in the yards will have been moved out and then some.

The greatest demand is for nut, and the request for stove has toned down until many dealers have about as much as they can carry of this size.

There does not seem to be the strength in retail prices that was evident recently. Some of the larger dealers have been asking $14.50 for stove and nut, $14.25 for egg, and $11.25 for pea. However, competition has grown stronger of late and there are many who are quoting $14 for egg, stove and nut, and $10.75 for pea.

The steam coals are not so strong. Buckwheat shows some signs of weakness and spot sales have been made close to $3 recently. Rice is weak and $2 has been the price of the light spot sales. Barley is in a good position, although some ordinary coals have been offered at $1.10@$1.25.

Bituminous—Naturally the calling off of the strike has hurt the market and there has been a calming down of the activity which was shown in the past ten days. In many instances dullness was even more pronounced than just before the spurt.

Inquiries have dropped off with a suddenness that is marked and despite redoubled efforts of sales departments little new tonnage is being closed. The general feeling is that the temporary lull will pass quickly and buyers will once more see the necessity of getting more stock ahead to offset rail delays in the winter. The possibility of a freight reduction continues to be a factor and until this situation is definitely cleared will be an impediment to any heavy buying.

For a while during the strike discus-

sion there was a tendency for spot prices to move upward but this has all been lost by this time and quotations are once more back to the level formerly prevailing. In a few instances there is just the slightest movement to even lower figures.

BUFFALO

Bituminous Market Reacts with End of Strike Talk—Prices Slacker—Anthracite Becoming Active—Lake Business Holding.

Bituminous—As a rule shippers report the demand less active than formerly, which means that a generally heavy stock was provided during the strike talk. A local paper publishes a picture of a huge pile of coal held here by a trunk-line road and the inference is that all are similarly supplied.

There was no advance in prices during the time of the threat of a rail tie-up. Certain jobbers now report very low offers, both slack and sizes, which they cannot sell readily at any price.

Prices are weak at $2.75@$3 for Youghiogheny gas lump, $2.35@$2.50 for Pittsburgh and No. 8 steam lump, $2.25 for Allegheny Valley and all mine run, and $1.60@$1.75 for slack.

Anthracite — Demand is increasing fast. Consumers who hung off with the idea of breaking the prices down have given that up and feel that they must buy or run short. The supply is not good. Complaint is heard from all branches of the trade. As the mining does not drop off it is supposed that the Eastern demand is taking all the surplus. Independent mines are starting up everywhere, but their prices are far from uniform.

Lake—Shipments are no lighter than they were last fall, when a much smaller amount had been shipped to date than now. Loadings for the week ended Oct. 26 were 92,100 net tons, of which 62,100 tons cleared for Duluth and Superior, 21,800 for Chicago and 8,200 for Milwaukee.

Coke — Local byproduct plants are still mostly idle, in spite of the big demand there is for the gas. There is a little more pig iron moving eastward, especially since the barge canal has made such a low seaboard rate on it.

BALTIMORE

End of Strike Threat Finds Trading But Little Stimulated — Prices Still Soft—Hard Coal Situation Improves Slightly.

Bituminous—A public expectation that there would be no railroad strike, reflected in the failure of a rush to buy for storage against future needs, and in the lack of response as to increased price, was apparently entirely warranted. The reaction now that the strike is ended should be rather healthy, as few of the industries have laid in any material supplies and must therefore continue to buy in the open market.

There was of course some increased demand. Added to contracts already on the books and the fact that many mines are still closed down, this emergency buying, even of limited extent, had the effect of nearly selling up the best coals. This caused a bit more stiffening to such coals as were assigned to Pools 1 and 71 than was the case with the lower grade fuels. Poorer grades still run down all the way to $1.50.

The export situation is not brisk, although the movement for October now promises to exceed that of September, which was a low water mark for some months previous.

Anthracite—The ordinary conditions of winter approach have undoubtedly been the principal causes of the stiffening of the market, although there is no doubt that the talk of railroad strike did to some extent stimulate retail orders. The run of coal to this city for October is exceeding by about one-third the delivery during September and August when a decided deficiency was piled up.

Baltimore still remains about 120,000 tons short of its normal supply of hard coal at this season, and while the tendency to buy in one- and two-ton lots has been largely increased by general financial stress and has thus prevented an absolute depreciation of yard supplies within the last thirty days, a serious situation will undoubtedly arise should the months of November and December prove very cold.

Northwest

MINNEAPOLIS

Active Buying Wanes as Strike Danger Passes—Prices Steadier—Approach of Cold Weather Will Bolster Market.

Last week saw considerable increased buying, as a step of prudence. But as developments in the rail situation revealed that various crafts would not support the strike, the interest in stocking up for any length of time subsided. Buying has continued to be a little more active, but the nearer approach to cold weather would account for that.

The coal trade has faced an uncertain state of affairs. It has hardly been a wise step to urge buying on account of the possible strike, since so many received statements of the kind as wholly self-serving. Many in the trade have contented themselves with answering questions upon the threatened strike, and letting the buyers draw their own conclusions.

With the passing of the emergency situation the coal business relapses to a weather proposition entirely. There has been a reasonable amount of coal distributed through the interior to serve generally without much trouble until some really cold weather ensues. When that occurs, there will doubtless be the usual rush for more supplies, and complaint from some sections that they must have more coal immediately or there will be suffering.

The stocks of coal on the docks at Duluth and Superior are sufficient to run the Northwest. Because of the greater support to the market, through the threat of a strike, prices on steam coal have been somewhat steadier, and some of the concessions which have been available have been discontinued. The market is none too strong yet, and now that the strike is seen to be off, the lack of support will doubtless be resumed.

Retail movement is proceeding along narrow lines, a little stimulated by the advance of the season and the prospects for early cold weather. At no time has there been any real congestion of orders.

MILWAUKEE

Market Is Dull — Uncertain Freight Rates Retard Movement—Fires Continue to Force Sales of Screenings.

The coal market continues unsatisfactory to dealers. Demand from both city and country is slow and spasmodic, in response to weather conditions, and because of an expectation, more especially on the part of country consumers, that reduced freight rates will bring lower prices. This holding back for something beneficial to materialize has been the bane of the coal trade here throughout the entire season.

There is bound to be a rush of orders when the present mildness gives way to real winter weather, as consumers as a rule have thus far only provided for immediate needs. Prices are steadily maintained on anthracite and Eastern soft coal, with the exception of screenings, which are being forced on the market on private terms, to save them from being converted into ashes.

Receipts by Lake to the latter part of October are in excess of September's complete record. Hard coal cargoes aggregate 107,323 tons and soft coal 231,158 tons. The season's receipts to date foot up 855,045 tons of anthracite, and 2,271,230 tons of bituminous coal against 679,163 tons of the former, and 1,866,819 tons of the latter in 1920.

DULUTH

Interior Buying Heavier — Docks Nearly Filled — Prices Firm—Surplus Causing Uneasiness.

Shipments from the docks at Duluth-Superior harbor continue to increase. The country dealers are not boosting their orders materially. Public service corporations, however, throughout the state and the Dakotas are filling their bins.

Incoming cargoes continue to hold up and it is freely predicted that October receipts will exceed those of September and August. Coal is not needed to any great extent at the Head-of-the-Lakes now as it is estimated that a surplus of 2,000,000 tons is on the docks of bituminous. In fact, several docks have reached the stage where it is necessary to hold boats to unload.

Twenty-nine cargoes came into port last week of which five were anthracite and thirteen cargoes are reported on the way of which the same number are hard coal. Shipments will soon begin to drop off as the ore boats will virtually stop running at an early date and the only bottoms remaining to handle coal will be those which carry grain on the downward journey.

Prices are remarkably firm. No cut-

ting was done last week and one buyer is reported to have made the round of the market without obtaining a reduction on a large order. Screenings are held at $4, with only a few damaged lots remaining at a lower figure.

Dock men fear that they may be caught with high priced coal on hand at the beginning of next season as the increased shipments this year and the lack of demand will leave at least 2,000,000 tons on the docks in the spring. It is felt that a reduction in miners' wages or in freight may cut prices to such an extent that dock men will have to take a considerable loss.

Inland West

DETROIT

Market on Even Keel as Strike Talk Dies—Buyers Await Lower Freights—Anthracite Stocks Heavy.

Consumers of steam or domestic bituminous appear to have received the railway workers' strike ultimatum with reservations and a considerable degree of incredulity. Their attitude is seemingly justified by the later developments.

Up to the time of the withdrawal of the strike order by the union leaders, the Detroit buyers had declined to become worried over the prospect of a nation-wide tie-up. It was argued that should the strike become a reality, it would almost certainly develop conditions that would practically assure a lower freight rate on coal shipments. Everyone was quite willing to become a beneficiary of the lower rate, so there was no increase in volume of buying.

Some jobbers and wholesalers even go so far as to assert that the week preceding cancellation of the strike order developed even less business than the dullest week of midsummer. The apathy of buyers was reflected in the continuance of prices practically unchanged from the level on which they stood preceding announcement of the strike program.

While there is rather a more active demand for domestic sizes from household consumers, their increasing interest is to be ascribed to the fact that temperature conditions encourage buying by those who made no previous provision of winter fuel.

Because of the slowness with which distribution has proceeded, most retail yards are comfortably supplied with anthracite.

COLUMBUS

Market Relapses after Strike Flurry—Domestic Stocking Was Heavy—Steam Coals Weak as Ever—Lake Trade Holding.

Little effect of the threatened railroad strike was noted in the Ohio coal trade during the last week in October. The buying movement of the previous week had subsided to a certain extent and dealers appeared to be in good shape.

Weather conditions were unfavorable to a better domestic demand as the mercury ranged rather high. Retail stocks are slightly larger than usual for the time of the year, due to accumulations made to guard against a suspension of coal movement. Financial conditions are a deterrent to a more active demand. Many householders are unable to pay cash, but dealers are demanding this because of heavy credits they are carrying. Retail prices are generally firm at former levels. Hocking lump retails $6@$6.50 and West Virginia splints $7.25@$7.75. Pocahontas lump is $9@$9.50. Anthracite is firm around $15.

The steam trade showed little effects of the rail troubles which had been impending. Some buying on the part of public utilities and municipalities was reported. Many manufacturers have reserves which will be adequate for some time. Some railroad buying was reported but this was not sufficient to strengthen the market to any extent.

Production in Ohio fields shows a good gain. The Hocking Valley is producing from 30 to 35 per cent of normal and Pomeroy Bend is doing fully as well. Cambridge and Crooksville are credited with 30 per cent.

Lake trade is still showing some activity and a fair tonnage is moving from lower ports. West Virginia is supplying a large part of this tonnage. Congestion on the upper Lake docks has curtailed a more active movement.

ST. LOUIS

Warm Weather Offset Strike Talk—Domestic Business Easy—Prices Firm.

The warm weather has put a quietus on the growing domestic market.

Business locally is light. Very little steam buying was done in anticipation of a railroad tie-up. A fairly good tonnage is moving through to Western and Northern points, but the country demand is easy on everything.

Mt. Olive and Standard seem to have the lead on such business as is moving. Carterville is slow and there is very little demand for anthracite or smokeless. Coke has slowed up in the last few days.

Cold weather, it is expected, will stimulate the market, but with the calling off of the strike no serious conditions will develop within the next three or four weeks. Prices are unchanged.

CINCINNATI

Market Quiet After Strike Flurry—Slack Sells Off, Other Prices Firm—Wage Cuts Make for Lower Quotations.

Beyond a heavier movement through the Cincinnati gateway there has been little to indicate the strike which was threatened by railway men. The 25c. advance that was made last week on some grades still remains, though slack has dropped back to the old low price under the pressure of domestic production. Some sellers have announced the intention of withdrawing their men from the road until the freight rate reductions can be anticipated.

Considerable interest is manifested in the action of certain Appalachia mines that have arbitrarily reduced wages in spite of agreements held with the unions. This is seen as one of the first movements toward lower levels in prices from that and the southeastern Kentucky fields.

Though there has been a sagging of inquiries for domestic smokeless this failed to bring concessions and last week's prices are holding. Mine run is $2.25@$2.75 and slack is $1.10 and up. West Virginia slack is fairly firm in spite of the reduction on the part of Kentucky operators, $1.25@$1.50 being the range. Mine run is quoted at $1.75@$1.85; lump at $3@$3.50. Southeastern Kentucky slack is quoted $1.10@$1.25. Mine run ranged $1.65@$1.85 and lump $3.25@$3.50 with choice block still bringing $3.75.

CHICAGO

Market Flurry Brings Car Shortage—Steam Demand Causes Price Increase—Eastern Domestic Coals Active.

On account of the conditions brought about by the threatened railroad strike, the demand has increased very materially. This has brought about the fact that the car supply question is going to come to the fore in a serious way, perhaps as soon as the cold weather comes. This light flurry experienced during the past ten days, has resulted in a car shortage of no mean proportion, more especially in Indiana. If a ten-day market, based on a probable strike, can bring about a car shortage, what is going to happen when the country really begins to demand coal?

The retail trade has been dissatisfied all summer over the ruling prices on the higher grade domestic coals from southern Illinois. The circular price has been strictly $4.05 on lump, furnace and small egg. Quotations from other fields have been reduced, but these have been kept steady. This has led to a great many orders being placed for Eastern coal, especially Pocahontas and New River. In short, the retail trade is dissatisfied with the operators in southern Illinois, but this is not based on good grounds.

It was the southern Illinois operators who kept retailers supplied all during the hard times—not only kept them supplied but gave them the coal at a very reasonable price. In fact, the same operators could have sold their product without any difficulty at a price in excess of $2 to what they asked Now that the export game is over Eastern operators have come back in the Chicago market and have succeeded in reinstating themselves by price-cutting methods.

The steam market has been active during the last few days. The packers bought enough to make the market firmer than it has been in a long time. Very little mine run has been sold lately, but the price is strengthened 25c.@50c. a ton on account of the strong demand for domestic coals as well as finer steam sizes.

Industries which have been burning

screenings have been able to pick up prepared coals, such as stove, chestnut, pea, etc., at such low prices that they have been burning these sizes, as they, of course, can get much higher efficiency out of the prepared product. Irrespective of this, the prices of the small prepared sizes have been fairly weak.

Eastern coals continue to come in in large volume. Anthracite is moving along very nicely and much smokeless coal is arriving daily. Eastern Kentucky block is beginning to find a market in Chicago and is being sold in greater volume today than ever before.

CLEVELAND

Recall of Strike Order Causes Slump in Demand—Lake Movement Good—Shortage of Cars Appears—Market Outlook Improves.

The recall of the railroad strike order has resulted in an appreciable letting down in the demand for industrial coal in this district. During the last few days before the withdrawal of the threat to tie up transportation and when it began to look as though the unions were determined to go through with their plans, many plants took steps to insure themselves of a few weeks' supply of coal. This increased their stocks above pressing current needs and consequently there will be a lull of buying for a time. Fundamentally the industrial situation continues to improve and the very fact that companies were anxious to have enough coal to keep them going in the event of a strike indicates the existence of orders.

Because of the importance of the steel industry in this district the coal trade is anxiously watching developments there for an indication of the probable coal demand this winter. At the present time the steel industry is averaging more than 50 per cent of capacity operations. Mills producing lighter products are running at a rate which ranges up to 80 per cent. The rail price cut and the prospects of more rail orders will bring up the operations for heavier products. On the whole the outlook in the steel industry is encouraging and this means a substantial consumption of steam coal. Automobile plants are beginning to curtail for the winter, but truck plants are operating well.

Shipments of Lake coal for the season to Oct. 24 aggregated 20,197,103 net tons, compared with 18,549,344 for the same period in 1920; 20,528,813 in 1919; and 25,108,114 in 1918. The retail demand continues fair, although the mild weather has not permitted it to reach its stride as yet. Prices remain unchanged. The return of a symptom familiar to the trade a year ago is seen in a car shortage at the mines.

Bituminous coal receipts at Cleveland for the week ended Oct. 22 were largest since the latter part of January, amounting to 1,655 cars divided: industrial 1,154, retail 501, and representing an increase over the preceding week of 436 cars, divided: industrial 364, retail 72.

South

LOUISVILLE

Eastern Kentucky Grades Firm Up—Industrial Demand Improving—South in Better Shape.

The late season, coupled with some fear of a rail strike, resulted in much better demand last week, and many mines are sold up for the time being on block, which is moving freely to the South. With the cotton ginning and textile plants busy there is also a somewhat better steam movement to the South. Public utilities have been consuming a little more heavily, and industrial demand is showing slow but steady improvement.

The fire brick industry which has been working two days a week for months, has gotten up to four and even six days in some of the Kentucky plants, and the brick and clay industry is more active generally than is normal for this season. Cement mills also report activity.

Some of the Harlan operators report that they have about sold up on block for immediate delivery at around $4 a ton, most of the movement going to the South.

Southwest

KANSAS CITY

Work Being Resumed Despite Intimidation from Radicals—Prices Unchanged—Conditions Improving.

The threatened railroad strike did not materially affect the demand on the part of the dealer trade. Railroads are and have been taking more liberal supplies, carrying same in cars as well as storing along sidetracks.

Work in the Kansas fields, which has been tied up by the strike of the Alexander Howat followers in District 14, has been resumed in most of the strip mines and a number of the deep shafts, although intimidation and pressure on the part of the radical element among the old organization has handicapped operations.

Illinois, Oklahoma and Missouri coals are supplying the present demand. Missouri miners are at work as a result of the order of John Fleming, deposed acting president of District 14, who stated that the fight against the industrial court was to be centered in Kansas. Most of the conservative element in the Kansas field are with George L. Peck, provisional president and the international union of United Mine Workers.

Weather conditions have not been such as to stimulate buying and at the same time operators and jobbers have not been in a position to accept any great influx of orders. There are no changes in prices quoted.

West

DENVER

Operators Ask Authorization for Making Wage Reductions—Production Stimulated by Colder Weather.

Colder weather is bringing more orders and a steadier production, but complications involving a wage cut between operators and miners are to be thrashed out in a hearing in Colorado Springs, early in November, that may or may not precipitate a general walkout.

Colorado's production for September, 862,244 tons, showed an increase of 84,915 tons over the August output of 777,329 tons. Colorado mines have produced 6,602,510 tons since Jan. 1, and during a like period in 1920 the output was 9,038,518 tons.

News From the Coal Fields

Southern Appalachian

CONNELLSVILLE

Frick Coke Production Resumed After Five Months' Interim—Supplies Ample—Furnace Resumptions Probable After Freight Reductions.

The H. C. Frick Coke Co. is blowing in about 1,250 ovens, representing its first coke production in the region since last May. There is no increase in Steel Corporation blast furnace operations sufficient to balance this added production, and the resumption is probably due in large part to distribute some employment to the men.

The blowing in of additional merchant ovens continues, at a slow pace, but perhaps at a slightly greater pace than is warranted by market requirements. At any rate, furnace coke remains somewhat of a drug on the market, evidenced by the fact that prices are practically at cost of production. A little change in the balance in favor of producers sends the market up, as was evidenced a few days ago when a very small buying spurt sent spot furnace coke up about 15c., the market promptly receding afterwards to the old level.

The delay in freight rate reductions is apparently holding back demand, as several merchant furnaces show signs

of wishing to resume, making some stocks of pig iron and liquidating ore, but a decrease in freight rates would write a loss on stocks previously accumulated.

The November settlement price on foundry coke contracts providing monthly adjustment is set at $4.75, against $4.50 for October and $4.25 last summer. The market remains quotable as follows: Spot furnace, $3.25@$3.50; contract furnace, $3.40@$3.50 and spot foundry, $4.25@$4.75.

The *Courier* reports production in the week ended Oct. 22 at 17,900 tons by the furnace ovens and 44,610 tons by the merchant ovens, a total of 62,510 tons, an increase of 5,870 tons.

EASTERN OHIO

Production Best in Year—Trade Optimistic—Lake Business Declines—Prices Firm Up.

Few basic changes were noted in the industrial situation during the week ended Oct. 22. However, the threatened railroad strike caused a spurt in all lines and this was reflected in the production of coal to such an extent that a new high record in the weekly tonnage mined was registered. The field produced 455,000 tons, which is 73 per cent of rated capacity. An even greater volume would have been mined had not an appreciable car shortage developed at the close of the week. Notwithstanding this, the aggregated tonnage represents the peak for the year in weekly output.

The field has produced for the calendar year to date 14,427,000 tons as against a potential capacity of 26,275,000 tons, or 55 per cent of rated capacity. Figures given out by the operators' association indicate that their mines averaged a little less than 60 per cent, and that time lost account "no market" is now under 35 per cent.

The carriers have been amplifying their own fuel reserves. In the Lake trade, the anticipated increase in volume has failed to materialize; stocks of coal on hand with the railroads at lower ports are being reduced and nothing out of the ordinary is expected other than the usual cleaning up before the close of navigation. The Wheeling & Lake Erie and Bessemer & Lake Erie railroads have extended the preferential tariff thirty days beyond Oct. 31, when this cut-back expires on all the other Lake coal-carrying roads, but it is not felt that this extension will in any way stimulate the movement from eastern Ohio mines to the Northwest.

It is conservatively estimated that between 35 and 40 per cent of the coal production in the field is going to carriers for fuel, which volume is not only taking care of their present needs but is also for storage in anticipation of emergency and winter requirements.

There is considerable optimism in coal circles to the effect that industry generally has taken on more momentum, and that industrial sales will be in much larger quantities henceforth. The sudden spurt has caused only a slight stiffening in prices.

UNIONTOWN

Increasing Traffic Is Bringing Car Shortage—Frick Resumption Encouraging—Coal Market Firm.

Increased industrial activity of the past two months has brought signs of a return of car shortage, the major bugaboo of capacity production in the Connellsville coke region when business warrants. The situation has not yet reached serious proportions but both operators and consumers are now giving that matter more attention.

Cars that stood for six or seven months on side tracks and then placed back into active service are breaking down under the strain and it is not unusual for an operator to be notified of a change of equipment after a load of coal or coke has started on its destination.

Railroads are yet accepting all orders for equipment and have succeeded in placing them with difficulty. Operators fear that a return to the car plant rating and percentage placement is not far distant.

The H. C. Frick Co. has fired up many beehive ovens. These are the first ovens the company has operated since the suspension last spring. There were reports at the time that the company intended abandoning beehive coke making and would supply raw coal to byproduct plants of the Steel Corporation. There was never any official statement on the question but the blowing in of the ovens would make it appear an idle report.

The furnace coke market is fairly steady with quotations of $3.25@$3.50. Foundry carries a range of $4.25@$4.75.

UPPER POTOMAC

Contract Shipments Stronger — Spot Orders Negligible — Operations Still Low.

The only signs of operating activity during the week ended Oct. 22 were in Garrett County, Md., and in the Big Vein mines of the Georges Creek region. Spot prices were not sufficiently high to prompt many operators to accept and contracts alone kept mines producing.

CENTRAL PENNSYLVANIA

Unsettled Rail Conditions Strengthen Market — Production Increasing — Car Shortage Appears.

Business fell off slightly after the first flurry last week, but the unsettled rail conditions still have buyers guessing and few are taking a chance on being without fuel in the event of a strike.

Orders are coming from Eastern markets and the bulk of the coal is going to the New England states. The price has stiffened on the better grades 25c. a ton. Pool 10 is selling $2.40@$2.60; Pool 9 has kept pace and as listed $2.45@$2.70. Pool 11 is $1.85@$2, and Pool 1, $3@$3.20.

Operators on the B. and O. have experienced considerable difficulty in getting cars and the situation became acute the latter part of the week. The increase in the market, however, has not brought many of the closed mines into play, but the larger operations are making practically full time.

Up to and including Oct. 21, total production for the month was 44,071 cars as compared with 37,214 in the corresponding period of September. The total production for October will reach 77,000 cars, an increase of 18 per cent.

ANTHRACITE

Strike Settlement May Ease the Demand—Steam Moving Better — Glen Alden Reopening Delayed.

Production has been stimulated by the demand in anticipation of the threatened railroad strike. It is possible that a slight decrease in output will be the result of the settlement of that trouble.

Steam coals are moving more freely, and prices are well up to the company circular. The re-opening of the Glen Alden operations was postponed until the middle of the week ended Nov. 5.

FAIRMONT AND PANHANDLE

Better Market Tone—Production Stimulated—R.R. Fuel Orders Increase.

Fairmont

Production was increased during the week ended Oct. 22, not however, especially as a result of any buying rush because of the impending railroad strike. Such increase was due to a better industrial feeling although prices were not strengthened. There were occasional heavy Tidewater shipments, railroad fuel loadings were good but Lake business was on the wane.

Northern Panhandle

Better orders for railroad fuel enabled a production of about 70,000 tons. There was also a heavier domestic demand, but this was offset by the poor call for slack. There were inquiries in circulation for tonnage to April 1 although no actual contracts were closed.

PITTSBURGH

Rail Strike Scare Ended, but Remaining Demand Is Improved — Gas Coal Market Disappointing.

The sharply increased call, noted last week, has not continued in full force, but demand has not reverted entirely back to its former almost insignificant proportions. Part of the recent increase was due to the railroad strike scare in the Buffalo district and Canada, but there remains a slightly heavier line demand.

The steel industry is operating still better, but most of its demand is supplied by the Connellsville and other non-union districts. The steel industry's demand for high grade gas coal, which would necessarily have to be met by the Pittsburgh district, proves smaller than might be expected. Gas coal in the district commands scarcely any margin over steam, all prices being dictated by cost of production, or the amount operators are willing to lose for the sake of maintaining some sort of work time.

The prospect remains that there will be a complete cessation of mining in the union fields April 1. This prospect,

which in some quarters has been expected to stimulate demand in the next few months, appears to have had no influence at all thus far.

Production is in the neighborhood of 30 per cent, but no precise estimate can be made. The output is largely in gas and domestic grades. The market remains quotable as follows: Steam: Slack, $1.60@$1.70; mine run, $2.10@$2.20; ¾-in., $2.60@$2.70. Domestic, 1¼-in., $3@$3.25. Gas: Slack, $1.60@$1.70; ¾-in., $2.60@$2.70; mine run, $2.10@$2.25.

Middle West

SOUTHERN ILLINOIS

Threatened Strike Stimulated Market—Steam Business Slows Down—Prices Sag—Car Shortage Troublesome—Railroad Tonnage Good.

In the Carterville field the threatened railroad strike helped steam business wonderfully in the last ten days, but domestic has eased up on account of the warm weather. Lump is oversold, but egg and nut is heavy. Prices are holding fairly well.

Railroad tonnage has been unusually good. Steam business, however, is not heavy, but it has moved fairly well. Car shortage is affecting many mines, and at some places operations have been impossible.

Somewhat similar conditions prevail in both the Duquoin and Jackson county fields excepting price, the top of the market there being $4.05, otherwise prices are somewhat similar to those in Carterville. Railroad tonnage is good out of this district but the car supply is getting short.

Mt. Olive is running heavy on railroad coal, but the warm weather has eased up shipments of domestic, especially to St. Louis. Movement to the north and west is better. Car shortage is becoming troublesome, but nothing serious so far.

In the Standard field there has been a change all around for the better, but it is largely a day-to-day proposition. At times screenings went up to $1.25, and within 48 hours went back to 75c., while at this writing they are as low as 50c. This is caused by one jobber who buys for large interests breaking the price by enforcing the market. Railroad buying has been heavy; steam, however, is a little bit slow and moves in spurts.

Warm weather has eased up the demand for domestic, both city and country. Several producers have been idle on account of no cars and there are still a few mines that have never resumed working on account of the realization price being too low.

WESTERN KENTUCKY

Screenings Burden the Market—Better Movement of Prepared Industrial Demand Improves.

Screenings have been a burden the past few days as a result of the heavier production of prepared coal. The industrial improvement has been far short of being sufficient to take up the slack. Mine run movement as a whole is slow.

Mines are now running two and one-half to three days a week, and better in many instances. Some of the larger companies have run full-time.

Some spot screenings had to be sold as low as 35c., the average for the week being $1.07. Mine run prices remained fairly firm, and prepared rose as high as $3.75.

MIDWEST REVIEW

Market Erratic During Strike Uncertainty—Dull Period Ahead—Industrials Improve Slowly—Freight Reduction Prospects a Deterrent Factor.

Midwest coal markets have been very erratic during the past few days. One day the demand for both domestic and steam coals has been fairly good and the next day there would be practically no call at all. The market strengthened or weakened, according to the latest news bulletins on the railroad situation.

It might be said without fear of contradiction, that the Middle West has been buying domestic coal rather heavily during the last ten days. Operators who produce certain favored grades are from ten days to three weeks behind on some sizes. They are, however, expecting a slump in demand, as a result of the negotiations between the railroads and the brotherhood.

The retailers have shown a tendency to buy only on a narrow margin. With reduced freight rates predicted in the near future, it is expected that once the railroad trouble is out of the way there will be practically no demand for domestic coal until freight rates are reduced.

Screenings are holding fairly firm, the better grades bringing anywhere from $1.50@$1.85. This increase over the current price of two or three weeks ago has been caused entirely by the strike agitation. There is no denying it that the strike trouble between the brotherhood and the railroads proved to be a great benefit to the coal industry, as it whipped up the demand for coal so that a better market resulted than any experienced this year.

The industrial situation has shown but little improvement. There are, of course, some lines which are in better shape today than they have been for a long time. For instance, the steel people are enjoying greater running times. The malleable iron industry also seems to have improved to some slight extent. On the other hand, the cement industry is curtailing its activities, as the end of the road building season is almost in sight. As there has been practically no building done on a large scale in the Middle West, the only outlet the cement mills had for their product was with the road builders.

Thanks to the efforts of the press, who have been heralding better conditions, the feeling in the Middle West is very much better than it has been for some time and the outlook is considered fairly hopeful. This improvement, however, is largely a matter of prediction as but little actual benefit has taken place.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Unusual Scramble for Domestic Coal Ceases with End of Strike Talk—Production Hampered by Car Shortage.

After a rush for available coal, especially domestic, for shipment before the date set for the strike, the market is at a standstill, so far as new business is concerned. Most of the mines are loaded with orders and neither producers nor buyers are willing to set a price for November.

Car shortage slowed up shipments considerably in the last half of the month. On three or four days mines have had no cars at all and they have also been held down to old car ratings.

Middle Appalachian

HIGH-VOLATILE FIELDS

Rail Trouble Brings Few Coal Orders—Domestic in Good Demand—Car Shortage Appears—Lake Tonnage Dwindles.

KANAWHA

The production rate was unchanged during the week ended Oct. 22, or about 16,000 tons daily. In general, however, there was no extra demand as a result of the railroad situation. Slack was a great drawback to the preparation of lump coal, it being necessary in many instances, to sacrifice it whenever orders for prepared sizes were accepted.

LOGAN AND THACKER

Logan mines, were producing at the rate of about 50,000 tons daily, some of the additional tonnage being for the railroads. Substantial movement to the Lake and to Detroit and other Michigan markets aided production and there was a fairly active domestic demand.

Williamson mines were not producing more than 40 per cent of normal, "no market" losses amounting to 140,000 tons. Lack of an adequate car supply was causing some loss, but it was not material. The greater part of the output went to Western markets.

VIRGINIA

A prospective tie-up of transportation failed to alter conditions much and the production rate remained unchanged. Contract coal continued to furnish the bulk of the output and idleness was still very general. The only favorable development was the slightly increased domestic demand.

NORTHEASTERN KENTUCKY

There was a continued strengthening in the domestic demand, but as there was no accompanying improvement in the steam market, slack was almost unsalable. Much of the lump product continued to move to Lake points.

LOW-VOLATILE FIELDS

Production Increases, Especially in Pocahontas Field — Western Markets Active—Slack Sacrificed.

NEW RIVER AND THE GULF

New River production was only slightly heavier in anticipation of a possible rail tie-up, the increase not amounting to more than 5,000 tons daily. There was still a dearth of orders, about the only business being for egg and lump. In order to dispose of the accumulation of slack, some of that coal was sold down to $1.15. Tidewater business was negligible.

Gulf production was only slightly bolstered by the threatened railroad strike. The poor demand for slack stood in the way of a larger output. With the end of the Lake season in sight, it was generally anticipated that there would be a slump in mine operations early in November.

POCAHONTAS AND TUG RIVER

In sharp contrast to conditions prevailing in a great many other fields, a regular deluge of orders poured into the Pocahontas region during the week ended Oct. 22. The large production was made possible, notwithstanding a poor Tidewater demand, by the better spot market in the West. Prices, however, still failed to show much stimulation.

In the Tug River region, there was a larger production due in part to better takings by steel companies and to the threat of a railroad strike. In general, however, it was contract shipments and tonnage to associate companies which sustained production. Prices were not fluctuating to any extent.

West

UTAH

Better Buying Only Temporary—Prospect of Rail Trouble Fails to Bolster Market.

The warm weather has been counteracted to some extent by the threatened railroad strike. The news of the railroad trouble caused many people to make for the coal dealer, but the activity lasted only one or two days and things are getting rather quiet.

The price situation seems to be steady. Coal is not expected to go up unless there is an abnormal demand for the larger sizes. With industrial activity far below normal, producers are experiencing considerable difficulty in the marketing of slack.

News Items From Field and Trade

COLORADO

The Santa Fe, according to unofficial report, will purchase the properties of the **Yankee Fuel Co.**, the **New Mexico Coal Co.**, and the **Superior Coal Co.**, sold by Federal Judge Robert E. Lewis, in Denver. Mines owned and controlled by these three coal companies were sold at public auction for $150,000, to satisfy certain claims. The purchaser was the chairman of the bondholders' protective committee. According to the foreclosure application, which was filed in behalf of Trowbridge, Callaway and Robert Lawrence, the Yankee company and its associated interests issued bonds in the amount of $2,500,000 several years ago. The mortgage was secured on the property and the company's mines. The coal mining company subsequently defaulted. The properties are located in southern Colorado and northern New Mexico.

ILLINOIS

Announcement has been made by the **Eagle Coal Co.** of Kewanee, of the opening of a new mine at that place.

The strip mine operated at Duquoin by the **Scott-Smith Coal Co.**, of St. Louis, has again been put into operation after being idle nearly all summer.

The Sixteenth Annual Convention of the Associated Business Papers, Inc., was held on Oct. 24, 25 and 26, at the Congress Hotel, Chicago. The central theme of the convention was to speed the revival of business. At the election of officers, **James H. McGraw**, president of the McGraw-Hill Co., Inc., New York City, was made the president of the association.

INDIANA

Coal mining activities in the Petersburg field have taken a spurt and three mines have recently opened, including one new plant. The E. I. & T. H. Ry. has completed a switch to the Summerville Mine, south of Oakland City, which in the near future will be one of the largest producers in the field. A new stripping mine has been opened near Oakland City, known as the Enos Mine, giving employment to 100 men. Ingle Mine No. 7, disabled recently when a generator blew up, has resumed work.

KENTUCKY

A petition in bankruptcy has been entered in the United States Court at Covington against **Lee Congleton & Sons** as a firm and Lee, Claude and E. W. Congleton as individuals. The firm formerly was in the railway contracting business but within the past few years has developed several mines in the Jellico and Hazard districts. The petition shows a schedule of assets of $521,000 and liabilities of $1,127,000.

The Amburgy Coal Co., operating mines in the eastern Kentucky field, has filed amended articles, increasing its capital stock to $175,000.

Suit has been filed in the United States Court at Covington by T. H. Morris, trustee, against the **Liberty Coal Corporation** of Floyd, seeking to have a receiver appointed. The petition alleges that the corporation failed to make first payment of $50,000 on a note for $1,000,000.

At a recent meeting of the Kentucky Mining Institute at Lexington, the following officers were elected for the ensuing year: President, **A. G. Spillman**, Earlington, superintendent of the St. Bernard Coal Co.; vice-presidents, **T. E. Jenkins**, Sturgis; **W. G. Duncan, Jr.**, Greenville; **C. S. Nunn**, Marion; **Lawson Blankinsopp**, Lexington; **C. W. Connor**, Escow; **D. A. MacWhirter**, Pineville; **Joseph Cain**, Stearns; **William S. Leckie**, Aflex; **H. S. Carpenter**, Jenkins; **R. A. Hamilton**, Mansfield, Ohio; **H. A. Bullock**, Hazard, and **J. E. Jones**, Beattyville, and secretary-treasurer, **Mrs. Elizabeth C. Rogers**, Lexington.

MARYLAND

Mines in Garrett County or a number of them have found it possible to resume operations after a long idleness. **The West Bethlehem Co.**, with a plant at Bayard on the Western Maryland is getting in shape to operate again. It has also been possible to resume operations at the plant of **John W. McCullough** at Friendsville, also in the Garrett County field. There was also a resumption of operation of the **Turner Douglas Co.** The **Manor Coal Co.** at Vindex is on a full-time basis.

Coal Land will be developed by the **Towanda Coal Mining Co.**, chartered by Paul B. Jennings, Eugene S. Williams and Walter J. L. Smith, the capitalization being $1,000,000.

NEW YORK

S. D. Brady, president of the Brady Coal Corporation of Fairmont was a business visitor in New York recently.

The Pulverized Fuel Department of the **Quigley Furnace Specialties Co.** has been acquired by the **Hardinge Co.**, 120 Broadway, New York City.

The Powdered Coal Engineering & Equipment Co. moved the offices and manufacturing plant from Chicago to Buffalo on Nov. 1. H. B. Pruden has been elected as chairman of the board and J. W. Lansing of Buffalo has been elected president. The new board of directors is as follows: J. W. Lansing, Fenton M. Parke, J. E. Finley, Harry R. Wait, J. C. Trefts, H. B. Pruden, B. W. Wistar, W. M. Faher and Stephen T. Lockwood.

Thomas J. Freeman, managing director of the St. George's Coal Field, Ltd., of St. Johns, N. F., has been visiting New York on his way back from England. He is seeking capital for the operation of the mines near St. George's Bay.

OHIO

The Southern Ohio Coal Exchange points out that the people of Ohio have saved $1,500,000 because of the agitation against freight rate advances which has been carried on by that organization before both the Ohio Utilities Commission and the Interstate Commerce Commission. At the recent hearing before a special examiner of the I. C. C., the railroads sought to get the 40 per cent advance to maintain the differential between Ohio and West Virginia coal. By holding up this increase the saving above mentioned has been made.

H. D. Everett, trading as the **Western Coal Co.**, in reply to the cross petition of the **Emmons Coal Mining Co.**, seeks to have the counterclaim of the Emmons company for $20,500 for alleged breach of contract, dismissed in an application before Judge John Weld Peck in the United States District Court in Cincinnati. He denies that he breached the contract in any way.

The final event of the second annual golf tournament of Cleveland coal men was held at the Shaker Heights Country Club, Oct. 11, and the championship was carried away by the team of which **Joseph Mitcheltree of the M. A. Hanna Co.** was captain, and consisting of **Messrs. Mitcheltree, S. B Coolidge**, of the Clarkson Coal Co., **H. L. Findlay** of the Y. & O. Coal Co., and **Frank Armstrong** of the Pickands-Mather Co. The championship honor for the season was won by **George Enos** of the George Enos Coal Co.

The event was followed by a dinner at the Shaker Heights Country Club, at which **A. A. Augustus**, president of the Cambridge Collieries Co., acted as toastmaster. **D. Frederick Hurd**, secretary of the Pittsburgh Vein Operators' Association, as official handicapper and manager of events throughout the season, was accorded a vote of appreciation for the success of the tournament.

Failure to account and pay for coal under a contract to receive the output of three mines, is alleged by the **Tildesley Coal Co.** in a suit for $75,000 damages, filed in Common Pleas Court at Cincinnati, against the **Export Coal and Mining Co.** and the National Surety Company. The plaintiff says the surety company signed the Export company's bond for $75,000 for faithful performance of the contract.

The Massillon-Tuscarawas Coal Co. of Cleveland, has contracted with Roberts and Schaefer Co. for equipment for the new tipple at New Cumberland. This machinery will consist of horizontal screens and loading booms, together with refuse disposal machinery.

On Henry Ford's arrival in Cincinnati from an inspection trip in Harlan County, Ky., press reports announce that he contemplates the purchase of the **Cincinnati, Dayton and Toledo Traction Line**, between Cincinnati and Dayton, as a link to the **Detroit, Toledo and Ironton R. R.** he recently bought. The D., T. & I. has a connection into Dayton, and touches Springfield. Ford and his son Edsel, with three officials from the Detroit factory, inspected terminal sites to the traction line in Cincinnati.

William B. Coddington, who had charge of the Central Fuel Co.'s New York office until a couple of months ago is now connected with the Hutchinson Coal Co.'s Cincinnati office. **Samuel McLaughlin Jr.,** who has been connected with the latter company for some time past, has gone with the Cincinnati office of the Central Fuel Co.

PENNSYLVANIA

D. F. Williams, general sales agent for the Hudson Coal Co., with headquarters in Scranton, has been appointed a member of the Commission on Fisheries of the State of Pennsylvania.

Edward F. Berwind, of Berwind-White Coal Co., has gone to Europe for a brief vacation.

The J. S. Wentz Coal Co. is speeding up production at the new slope of the Upper Lehigh colliery. Three shifts of men are at work.

The Superior Coal Co., which recently resumed operations after a short idleness, has again closed down. This plant is owned by the Whyel interests of Uniontown.

The Iron Trade Products Co. has been appointed sales agent of the Snyder coal mine at Markleton, Somerset County.

The Allegheny Pittsburgh Coal Co. is selling an issue of $1,500,000 guaranteed mortgage twenty-year 8 per cent sinking fund gold bonds, with the interest and principal guaranteed by the West Penn Power Co. The issue is a first mortgage lien on all the land, equipment and all other property now owned or acquired. The West Penn Power Co. has a large coal contract with the Allegheny Pittsburgh Coal Co.

Ed Miller, of Wendel, has resigned his position as superintendent of Edna Nos. 1 and 2 mines, in Westmoreland County, of the Hillman Coal & Coke Co., and has accepted a similar position with the Ocean Coal Co., a subsidiary of the Berwind Coal Mining Co. His headquarters are at Hermanie, Pa.

Edward F. McGlynn, superintendent of the Marvine mine of the Hudson Coal Co. has been promoted to the Scranton offices as general colliery superintendent. **Samuel Oakley,** superintendent of the Greenwood mine, succeeds him.

The Big Four Coal Mining Co., has been organized at Altoona, capital $200,000. Michael J. Kelly, Curwensville, with James Redding, Altoona and Lawrence Redding, Snow Shoe, incorporated the company.

The Philadelphia and Reading Coal and Iron Co. has begun a policy of suspending its 1,000 employees at its Pottsville repair shops two days each week. The order is attributed to a general economizing policy, but in view of a possible strike next April, all the collieries of that company are working full time, even if it is necessary to store the coal.

A charter has been issued to the **Dolbois Coal Co.,** of Smock. It has a capitalization of $50,000 and Alva L. Gilleland Brownsville, is treasurer. The purpose of the company is to mine, buy, sell coal and manufacture and sell coke. The incorporators are Dr. Edward H. Rebok, Waltersburg; Alva L. Gilleland and Joseph Woodward, Uniontown.

The Fairlamb Co., of Philadelphia, has has been chartered to buy, sell and deal in coal, coke and other products, capitol stock, $125,000. The treasurer is John F. T. Lewis, Broomall, who is also one of the incorporators with George D. and J. B. Van Sciver, Philadelphia.

The Richland Fuel Co., is being organized by August P. Franks and Louis N. Peterson, to operate coal properties in the vicinity of Pittsburgh. W. H. Pratt, Pittsburgh, represents the company.

The Penova Coal Co., has arranged for an increase in capital from $100,000 to $1,000,000, for proposed expansion.

A total of 551,100 tons of river coal, having a value of $844,700, was reclaimed from the river and streams of Pennsylvania passing through the hard coal fields in 1920, according to summary of the river coal industry made public by the secretary of internal affairs, **James F. Woodward.**

D. S. Watkins, after serving twenty-nine years in an official capacity with the Buffalo, Rochester and Pittsburgh, has resigned. Mr. Watkins for the past fifteen years has been engineer of construction with headquarters at Du Bois, and was in charge of the extensive developments of his company in the Indiana County coal fields. He has not announced his future plans.

TENNESSEE

The Commercial Coal & Coke Co., at Pikeville, has purchased the property near Pikeville which was formerly owned and operated by the **Sequatchie Coal & Coke Co.,** and is reconstructing the railroad three miles out of Pikeville, from the present terminus of the Pikeville branch of the N. C & St. L. R R. to its new operation. The company is reopening the old mine formerly operated by the Sequatchie company.

UTAH

Organization of the **Great Western Coal Mines Co.** has been completed, and preparations made for the beginning of work as soon as possible in the construction of railroad lines from the company's new townsite to its coal veins. Incorporators are George Storrs, president, Joseph S. Welch, vice president, C. M. Croft, secretary, R. L. Bird, treasurer and three other directors. It is said that the company does not plan to sell any stock, but a bond issue of approximately $600,000 is probable a little later. The property is at Gordon Creek, near Helper and comprises about 4,500 acres of ranch and coal lands. The new town will be called Great Western and lots aggregating $50,000 have already been sold, principally to miners.

The Ucolo mine belonging to **Rasmussen Bros.,** in the San Juan region has just been opened. The coal is of an excellent burning quality and of fine grade.

H. F. Fernstrom, manager of the Bamberger Coal Co. in Salt Lake City, has succeeded **C. H. Fischer,** manager of the Western Fuel Co., the retail department of the United States Fuel Co. The latter has retired owing to ill health. Mr Fernstrom will be succeeded at the Bamberger by **C. C. Davis,** cashier.

Articles of incorporation of the **Mutual Fuel Co.** of Logan have been filed. The company is a subsidiary of the Mutual Coal Co. of Salt Lake City, a new co-operative concern.

The U. S. Fuel Co. has completed a road from west of Hiawatha to the top of Gentry Mountain for timber purposes. This company has bought about 40,000 props from the Manti forest reserve for use at its Carbon County mines.

WASHINGTON, D. C.

C. E. Dobbin of the Geological Survey has returned to Washington from Montana where he examined land in Garfield County for coal classification.

As friends of the court, Wm. J. Matthews and Hugh J. Martin have filed a brief in the Supreme Court upholding open price associations. They declare that market news is the basis of commerce, and point out that men do not start out blindly with colliers loaded with coal for a port but study trade conditions before every business venture. They quote Judge Sanborn in the Union Pacific Coal Co. case as saying that the Government must prove guilt in cases under the anti-trust law.

The point whether a shipper is liable in damages for failure to furnish a full cargo of coal has been presented to the Supreme Court for decision in the case of the Guayaquil and Quito R. R. vs. the **New York and Cuba Mail Steamship Co.** The carrier contracted to carry 2,500 tons of coal for the shipper from Hampton Roads to Guayaquil but was not ready to load, because of which breach of contract was alleged. Some of the coal was delivered to another carrier and when loading was accomplished there were 306 tons short

WEST VIRGINIA

Several coal concerns increased their capital stock during the latter part of September. They were the **Canyon Coal and Coke Co.,** of Uniontown, which operates in this state, the capital being increased from $500,000 to $750,000. **The Kelly Creek Colliery Co.,** having general offices in Cleveland, increased its capital stock from $1,400,000 to $1,900,000. This company has a large plant on Kelly's creek in the Kanawha field.

Robert Grant, of Boston, head of the New England Fuel & Transportation Co., spent a few days in the Fairmont region recently.

Among recent visitors at Wheeling was **Thomas W. Arnette,** president of the Antler Coal Co. of Fairmont.

Floyd S. Patton, of the Patton Coal Co. of Fairmont has returned from a visit to the Baltimore market.

Among those named by Governor E. F. Morgan as delegates to the Twenty-Fourth Annual Conference of the American Mining Congress in Chicago to represent West Virginia, has been **George Wolfe,** the secretary of the Winding Gulf Operators' Association.

Hereafter the **Stottlemeyer Coal Co.** will supply engine fuel to the B. & O., this company operating on the Charleston Division of that road, its plant being at Graves. In order to supply fuel to the railroad, it has been necessary for the company to build a coaling station.

The Greenbrier Smokeless Coal Co. has begun production in the Greenbrier field, the newest smokeless field in West Virginia. Quinwood is becoming the center of activities of the new field where in the last year or so more than $5,000,000 has been expended in railroad construction work and in the development of mining property.

After undergoing a severe operation not long ago, **John W. Smith,** superintendent of the Ingram Branch Coal Co., is well on the road to recovery.

A lease on 200 acres of coal land on Campbell's Creek from **W. D. Lewis** to **A. W. Allen** was recorded recently. The land lies on Sawmill and Pointlick branches of Campbell's Creek. The contract gives the right to manufacture coke and other by-products as well as to mine coal.

An improvement is being made at the Itmann plant of the **Pocahontas Fuel Co.** Excavations are being made for a washery. The Itmann property was opened up about the time the war broke out but was discontinued for a time. During the period of a strong market, operations were resumed at this place, which has become one of the important properties of the company in the Wyoming field.

In preparation for the time when it may not be possible to secure an adequate car supply, the **Gulf Smokeless Coal Co.** has under construction a storage bin adjoining the tipple of the plant at Tams. Construction work is about completed and the company will be able to use it within the near future.

C. C. Cooke has been succeeded by **E. A. Starling** as superintendent of the Guyan Mining Co., operating on the Guyan River in the Logan County field.

The Elk Coal Co. has decided to discontinue its office at Charleston and to take care of all business originating in West Virginia through its Columbus office. The Charleston office was under the direction of Harold P. Tompkins, who left recently for France.

BRITISH COLUMBIA

The Spokane & Alberta Coal and Coke Co has been financed by Middle Western bankers and will expend approximately $500,000 in completing the purchase of its property in the Crows' Nest district and in the next year's development of the company's holdings. Surveys are being made for a railroad from Coleman to the company's townsite, five miles distant on the railroad, near Crows' Nest.

NOVA SCOTIA

The Little River Coal Mining Co., Ltd., has been organized with a capital of $2,500,000 by H. Ollerhead and H. Bruce, of Sydney and several prominent Newfoundland capitalists, to mine coal areas located at Codroy in the St. Georges district on the west coast of Newfoundland. Diamond drilling will be commenced at once. Seams have been located near the seashore, the outcroppings of which resemble those of the Sydney coal fields.

Good progress has been made in the development of No. 7 colliery, the newest of the **Nova Scotia Steel & Coal Co.'s mines.** The work was started in September, 1920, and the mine is now yielding an average daily output of 400 tons.

ONTARIO

An analysis of the coal situation in the Western Provinces of Canada by **F. E. Harrison,** an official of the Federal Department of Labor, indicates the danger of a serious shortage during the winter. The requirements of domestic coal in Manitoba, Saskatchewan and Alberta are estimated as approximately 3,000,000 tons yearly. The amount of coal actually sold up to Oct. 1, however, was only 1,700,000 tons, owing to the withholdings of orders by consumers and dealers in the hope of a reduction in prices.

Traffic News

In the case before the I. C. C. involving the routing of coal from Western Maryland Ry. mines to Eastern destinations, brief has been filed asking that coal moving from the Western Maryland for B. & O. delivery east of Cherry Run, be interchanged with the B. & O. at Cherry Run, W. Va., instead of Cumberland, Md.

The commission will conduct hearings in the case involving reduced rates on coal to Kansas City, Mo., at Kansas City, Nov. 26.

The Pratt Engineering and Machine Co. of Atlanta complains against unreasonable rates on bulk coke from Tupelo, Miss., to Atlanta.

In the complaint of the **M. E. Case Coal Co.**, involving rates on bituminous coal from La Marsh, Ill., to Galesburg, Ill., the Eighth District Coal Operators' Association has been authorized to intervene.

Application for a loan of $800,000 has been made to the I. C. C. by the **Kansas, Oklahoma & Gulf R. R.** The company said it would apply the loan on the purchase of 500 steel coal cars.

Examiner G. D. Quevedo of Washington, took testimony in Milwaukee recently in the case of the **Milwaukee Western Fuel Co.** against the Director General of Railroads. The company alleges that it was charged excessive rates on shipments of coal from points on the Ashtabula Coal and Iron Ry. to docks at Toledo. Other railroads involved are the Hocking, Baltimore & Ohio, and Chesapeake & Ohio.

The hearing to be held by the I. C. C. at Chicago Oct. 24 in the complaint of the **Morton Salt Co.**, involving rates on coal from West Virginia mines to Lake ports for trans-shipment by vessel beyond has been canceled. The refund of 28c per ton recently authorized by the commission on Lake cargo coal expired Oct. 31, and some carriers have filed tariffs continuing this allowance for thirty days.

The Milwaukee Association of Commerce has complained to the commission against unreasonable rates on hard and soft coal from Duluth and Superior, and request nondiscriminatory rates from Milwaukee.

There has been a general reduction in freight charges on coke from the Lake Superior docks to South Dakota points, of from 10 to 15 per cent.

The I. C. C. has suspended until Feb 12 the proposal of the **Union Pacific System** to reduce rates on coal from mines in Wyoming to stations in Utah to the rates existing before the rate advance of Aug. 26, 1920.

The case concerning routing of coal from Western Maryland Ry. mines to Eastern destinations will be heard in oral arguments before the commission at Washington, Nov. 16.

In the complaint of the Commerce Club of St. Joseph, Mo., the commission has authorized the **Southwestern Interstate Coal Operators' Association** to intervene. This case relates to rates on coal from points in Illinois to St. Joseph.

In the complaint of the **Riverside Coal Co.**, an I. C. C. examiner recommends that rates on bituminous coal from mines on the Ohio and Kentucky Ry., near Ohio and Kentucky Junction, Ky., to Cincinnati, and points in central and western trunk line territories be held unreasonable.

Hearing on coal rates from Wyoming mines to stations in Utah will be held by the commission at Salt Lake, Nov. 21

The Salkeld Coal Co., of Pittsburgh, complains against unreasonable rates on bituminous coal from mines at Bulger, Pa., to Walford, Pa., reconsigned to Warren, Ohio.

The State Railroad Commission has ordered rates on coal from Milwaukee to Janesville, Madison and other southern Wisconsin cities reduced 92c. per ton.

The Silver Grove yards of the Chesapeake & Ohio, just outside of Cincinnati on the Kentucky side of the river, are to be changed in name to "Stevens." This is in honor of the late George W. Stevens, who conceived the idea of these terminals and where thousands of cars of coal have been held for delivery in times of stress during the war.

The Kellogg Toasted Corn Flake Co., of Battle Creek, Mich., complains against unreasonable rates on soft coal from the [illegible] and from the inner and outer [illegible] fields to Battle Creek.

In the complaint of **J. J. Stehley** the commission decides that the rate on bituminous coal from Stanton, N. D., to Hecla, S. D., is unreasonable.

The efforts of the U. P. R.R. to reduce rates on coal between Wyoming mines and Utah cities to the level maintained prior to the general rate increase of last year, have been nullified by the Interstate Commerce Commission. The change is suspended till Feb. 12, 1922. The suspension is believed to be due to the protests made by Utah coal operators, who declared that the reduction proposed would be discriminatory.

The commission has suspended until Feb. 22, 1922, railroad schedules proposing a reduction of 28½c. per ton on bituminous coal, lump and slack, from mines on lines of the Chicago & Alton, Kansas City Southern, Missouri Pacific, Missouri Kansas & Texas and St. Louis San Francisco railways in Kansas, Missouri, Arkansas, and Oklahoma and on slack from Springfield, Ill., to Kansas City, Kans., Kansas City, Mo., and contiguous points.

In the complaint of the **Merchants Coal & Coke Co.**, the commission decides that rates on lump coal from Eldnar Mine and Cantine, Ill., to Rose Hill, Ill., and from Cantine to Jefferson Park, Ill., during Federal control were not unreasonable.

In the complaint of the **Illinois Coal Traffic Bureau**, involving rates on coal from mines in the Fulton-Peoria, northern Illinois, Danville, Centralia, Duquoin and southern Illinois groups in Illinois to Council Bluffs, Ia., Omaha, Nebr., and South Omaha, the commission has authorized the **Eighth District Coal Operators' Association**, and the **Southwestern Interstate Coal Operators' Association** to intervene.

Association Activities

National Retail Coal Merchants' Association

Directors of the association, meeting at Indianapolis recently, approved a report of their statistical committee adopting two uniform accounting systems, to be known as the simplified system and the complete system. These systems are suggested for the use of retail coal dealers, that data may be uniformly compiled for government information and public education. The next meeting of the board of directors will be in February, either at Boston or Philadelphia, the city to be determined by the board.

The directors also considered traffic problems, and formulated plans for an endeavor to remove the inequalities of freight rates. Another section planned a publicity campaign, to take the form of educational matter in the reading columns of newspapers and trade publications. The object of this campaign is to avoid coal shortage this winter.

Smokeless Coal Operators' Association of West Virginia

At the October meeting of the association, held in New York, with Second Vice-President O. M. Deyerle of Bluefield in the chair, the association declined the offer of Chairman Lasker of the Shipping Board for the use of Shipping Board boats at $1 a year because after investigating the question of costs, it was obvious to the association that the boats could not be operated in competition with vessels of foreign registry. Investigation disclosed the fact that the operating cost would be 25 per cent greater than foreign manned ships. It was decided, however, at the meeting, to lay all the facts in connection with the foreign shipping of coal before Secretary Hoover of the Department of Commerce.

It was found necessary to create a special committee of twelve for the purpose of making a last stand in securing a reduction of railroad rates on coal for export, this committee being named to interview the presidents of the three Tidewater roads from West Virginia. Vice-presidents of these roads have declined to act favorably upon a request made by an association committee for a reduction in the rate. On the committee are five from the Norfolk & Western territory, five from the Chesapeake & Ohio and two from the Virginian, all being coal producers actively engaged on those lines.

Recent Patents

Means for Operating Reciprocating Conveyers or Screens. Richard S. Jacobsen, Chicago, Ill., assignor to Jacobsen & Schraeder, Inc., Chicago, Ill., 1,386,505. Aug. 2, 1921. Filed Sept. 11, 1916; serial No. 119,554.

Coal-Mining Machine. Thomas Donohoe, Edgewood, Pa., 1,387,886. Aug. 16, 1921. Filed Oct. 18, 1915; serial No. 56,372.

Feed Regulator for Powdered Coal. Hanson Thomas and John Dahlstrom, Pittsburgh, Pa., 1,388,129. Aug. 16, 1921. Filed Sept. 12, 1919; serial No. 323,381.

Feed Regulator for Powdered Fuel. Wm. P. Keyser and John A. Moore, Richland district West Va., 1,388,185. Aug. 23, 1921. Filed June 10, 1919; serial No. 303,074.

Rock Drill. Omar E. Clark, Denver, Colo., assignor to The Denver Rock Drill Mfg. Co., Denver, Colo., 1,388,406. Aug. 23, 1921. Filed July 19, 1918; serial No. 245,696.

Automatic Trapdoor for Mines. W. W. Wingo, Wilburton Okla., 1,388,681. Aug. 23, 1921. Filed May 14, 1920; serial No. 381,351.

Steel Mine-Rail Tie. Patrick J. Murphy, Dubois, Pa., 1,389,066. Aug. 30, 1921. Filed Dec. 27, 1920; serial No. 433,193.

Mining Locomotive. Wm. W. Sloane, Chicago, Ill., assignor to Goodman Mfg. Co., Chicago, Ill., 1,389,076. Aug. 30, 1921. Filed Nov. 25, 1918; serial No. 263,997.

Obituary

After having been missing several days, **James Bott**, wholesale coal broker, aged 80, was found dead in his apartment in Allentown, Pa. He was treasurer of the Livingston Club, and 50 years a prominent figure in the social life of Allentown.

George E. Burbidge, president and general manager of the Burbidge Coal Co., Salt Lake City, Utah, died recently after a year's illness. Mr. Burbidge was 52 years of age.

C. P. Willoughby, representative in eastern and central Kentucky for the Atlas Coal and Coke Co., Chicago, died suddenly from acute indigestion in Lexington, Ky. Mr. Willoughby owned a coal yard also at Richmond, Ky.

Samuel T. Peters, of Williams & Peters, wholesale coal dealers at 1 Broadway, New York City, died recently at his home in Islip, Long Island, aged sixty-seven years. He had been in the coal business for more than thirty-five years. Mr. Peters was a director in many coal companies and banks and was a member of several clubs.

The death of **Sir William Garforth, L.L.D.**, is a loss to the British coal industry. He was well known to engineers and coal owners throughout the Continent for his great knowledge of all branches of mining, his systematic application of science to the industry and his successful experiments to insure underground safety.

Coming Meetings

The National Industrial Traffic League will hold its annual meeting Nov. 9 and 10 at the Sherman Hotel, Chicago, Ill. Executive secretary L. H. Beek, Conway Building, Chicago, Ill.

The Coal Mining Institute of America will hold its annual meeting at Pittsburgh, Pa., Dec. 7, 8 and 9. Secretary H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

American Gas Association. Annual convention Nov. 7 to 12 at Congress and Auditorium Hotels, Chicago, Ill. Secretary, O. H. Fogg, 130 E. 15th St., New York City.

The Illinois Mining Institute will hold its fall meeting in the City Hall, Springfield, Ill., Saturday, Nov. 19. Secretary Martin Bolt, Springfield, Ill.

American Society of Mechanical Engineers will hold its annual meeting Dec. 5-9 at the Engineering Societies' Building, 29 West 39th Street, New York City. Secretary Calvin W. Rice, 29 West 39th Street, New York City.

COAL AGE

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Associations Further Business Co-operation

DESPITE the criticism that has been heaped upon trade associations and the disinclination of the Department of Justice to attempt to clarify the situation prior to the decision of the Supreme Court in the hardwood lumber case, the Department of Commerce is actively championing the trade-association idea. Secretary Hoover and members of his staff are taking pains to show that the questionable conduct of a few trade associations, or aggregations calling themselves trade associations, has resulted in uncharitable criticism of all trade organizations. Mr. Hoover has expressed himself so definitely on the subject that there can be no doubt that he believes trade associations are necessary to the maximum progress of industry. The rapid multiplication of trade associations until they number nearly 3,000 is interpreted by Mr. Hoover to indicate "a great and vital movement and something permanent in our economic system."

Mr. Hoover also said that "The coming together of manufacturers and producers in the different trades for the purpose of the advancement of their industries as a whole is a profound step toward co-operation in the whole business world. Out of it will be gained tremendous benefits for the business public. The various trade associations present a point of contact with the government such as did not exist ten years ago. I know of no way in which we can undertake the solution of collective questions except by the co-operative organization of the men in the industry. We cannot go on maintaining our standard of living in the face of foreign competition unless we can make some progress in the collective sense. The only way that we can hope for it is through the organization of associations that will take up the problems common to all, that gain inch by inch the efficiency and stability that make for national efficiency."

Banishment of the Check-Off at Issue

SETTLING wage questions by legal processes has its disadvantages. No sooner had Federal Judge Anderson at Indianapolis decreed that the check-off is illegal and enjoined its use, the union operators more or less generally accepted the mandate of the court and announced their decision to discontinue collecting the sinews of war for the United Mine Workers, and the mine workers begun to strike, than the Federal Court of Appeals at Chicago suspended the temporary injunction, leaving the question still to be settled.

The events of last week point to one thing above all others. The majority of the operators having contracts with the United Mine Workers are willing, even anxious, to throw overboard the check-off system. Whatever the courts finally decide, whatever be the disposition of the legal issue raised by the Mingo operators and Judge Anderson, there can be no doubt that the check-off is under the fire of more than the court.

Technically the question before the courts relates to the alleged conspiracy between operators and miners in certain fields to organize other fields. The check-off simply is held to be a means to that end and an evidence of alleged unlawful intent. But before a court of wider jurisdiction—the bar of public opinion—the whole question of the check-off is brought to the forefront.

The check-off as a practice is on trial. Begun some twenty years ago as a means of paying out of miners' coal the wages of their checkweighman, it has extended to cover all employees and for every conceivable classification of expenditure. Operators, ten years ago sectional in their viewpoint, today view with alarm the outgrowth of the check-off system that compels them to pay tribute in one field that the mine workers' organization may have funds to force the unionization of their mines in another field.

In what respects has the check-off failed? Why are the operators ready to abandon it? Although by this means millions of dollars have poured into the treasury of the international organization there still remain large and important areas of non-union territory. The major portion of West Virginia, eastern Kentucky, Alabama and important parts of Pennsylvania are not unionized. The union has not lived up to its earlier promises to bring these districts within the fold. So long as wages and prices were on an ascending scale, as from 1898 to 1920, the situation was not unbearable for the union fields. Time after time in that period the operators yielded to circumstances, anticipated the termination of contracts with the men, and raised wages to meet the increase in non-union fields. On a rising market where the competition was for labor, the operators in the organized districts were no sticklers for contract terms when the men asked for increases in advance of the date previously agreed upon.

With the tide receding, however, the miners refuse to reciprocate. Wages have gone down in every other industry. Wages at non-union coal mines have dropped to the 1917 level or lower, while those bound by the award of the President's Bituminous Coal Commission now face competition they cannot meet because the union will not consider a decrease in wages. With the grief of this year behind them and the prospect of more to come, including the possibility before wages can be adjusted, of a strike or strikes, during which the non-union fields will reap a harvest, it is small wonder many hold that the check-off has failed of its main purpose.

The check-off has had a baneful effect on the union itself. When demand exceeds supply in any market, salesmen become nothing but "order takers" and all incentive is lost for resourcefulness and initiative. Under a system that automatically keeps the membership of the miners' union at 100 per cent wherever it is recognized, the great incentive of holding the men is replaced by that of holding office. An organization the funds for which are supplied in abundance by the automatic, even forceful, extraction from pay envelopes

loses its punch. Self-perpetuating jobs do not produce the kind of leaders who built up the United Mine Workers. The present officers, particularly in the districts and locals, are not the type of citizen that a generation ago put the miners' union on the map nor are they the type to bring the organization back to its maximum usefulness.

More Reasons for Frankness About Coal Facts

WISCONSIN has investigated the coal situation and has found no fault with the local dealers. The report by P. H. Pressentin, a special investigator of the Wisconsin Department of Markets, concludes that "in so far as Wisconsin coal men are concerned, both wholesalers and retailers are not profiteering, but that they are themselves at the mercy of a situation over which they have no control."

As no coal is produced in Wisconsin the investigation covered only the relation between the distributor or wholesaler handling Eastern or Illinois coal in that territory and the retail dealers. Here some very interesting data are revealed. The average margin between cost to dealers and price delivered to consumer in five cities—Sheboygan, Ashland, Superior, Milwaukee and Racine—was found to be $2.49 per net ton of anthracite. The highest margin reported was $3.30 on pea size, in Milwaukee; the lowest was $1.95 on stove and nut sizes, in Racine. The highest average for all sizes was $2.60, in Milwaukee, doubtless because of so many small yards; the lowest average was $2.31, in Racine. Net profit in handling anthracite was found to be from 20c. to 45c. per ton, varying from the smaller figure with large companies to the larger figure for the smaller yards. The average is reported as 35c. per ton.

Retail margins on bituminous coal are reported to have ranged from $1.67 to $2.36 per ton on Illinois coal and from $2 to $2.50 on Eastern coal—that is, West Virginia splint, Pocahontas and Hocking. The conclusion of the investigator that the net profit per ton of from 25c. to 50c. on the small tonnage handled by many of the dealers is "insufficient to meet living costs today" is significant. The coal trade of Wisconsin is relieved of the charge of profiteering. The moral of the tale is found in the conclusion respecting the industry supplying the coal to the Wisconsin dealers. It was admitted that freight rates were too high and that the wages paid mine labor were high but fixed until April, 1922, by a Federal commission.

Having cleared the dealers in the state from any odium of evercharging for coal the report adds: "That the hard-coal industry is practically a monopoly controlled by coal-sales companies who are subsidiary organizations of large Eastern railroads. They fix the price at which the coal is to be sold all over the nation. Independent dealers are bound to accept the prices fixed or go without coal. The supply and price of coal in Wisconsin indicate a national condition which only control by the Federal government can reach. What profits coal-mine operators have made in the past and are making today cannot be learned by any investigation made in Wisconsin. If the mines were in Wisconsin it would be a different situation.

"There is substantial concentration in the anthracite-producing industry. Whether there has been any collusion by Eastern operators to keep down production, causing a shortage, in past years, is open for inquiry. It does not appear that such a condition exists the present year in so far as production goes. A sinister condition in the coal situation is the apparently monopolistic control the Eastern operators have of the whole business reaching from mine to retailer, as the larger dock companies (wholesalers) also conduct a retail business, making their interests so interlocked that it does not give an independent an opportunity, except upon such terms and conditions as the dock companies name. In other words, they must either pay the price that the dock companies fix, which price is primarily set by the price made by the Eastern operator, or go without coal."

The investigator deplores the fact that it is almost impossible to get "basic facts and figures relating to the fuel industry prior to the coal coming to the state."

Thus one large, influential, non-coal-producing state has put the burden of proof on the producer and distributor. The voters of this state find themselves powerless to get the facts about costs of production and distribution of coal; hence they are suspicious of combination and profits. Where they have been able to get the facts—that is, of local conditions—they are satisfied. The coal that flows through retailers' yards to households is more and more coming to be viewed as a public question; the business of supplying coal to voters is being looked upon as a public utility. We do not believe the industry has anything to hide, that the element that has in the past and that might now, if conditions permitted, take advantage of the consumer, is decidedly in the minority. For three years the activities of the producer and distributor have been investigated by the Senate with negative results as far as the public is concerned.

No violations of law by the coal industry were indicated, the defense against the onslaughts of opponents was successfully met, but the public is far from convinced that all is right even yet. It would seem that what is lacking is some means whereby an investigator, as in Wisconsin, can secure the "basic facts and figures relating to the fuel industry prior to the coal coming to the state." It must be apparent to all that the result of this particular investigation and report is to increase the pressure on the congressional delegation from Wisconsin to provide, through Federal legislation, that type of data. Surely the point has been passed where the producer and distributor may sit back and say that what he charges for coal is none of the business of the consumer, or that he may expect the buyer to be content with his assertion that he is making but a reasonable profit, or even losing money.

It is no simple matter to set forth the facts in a form to appeal to the man who shovels his coal into his furnace. But before even that can be attempted, the coal producers and distributors must get past the point of agreeing that fact finding is a good thing and desirable, and must find some way to make it an accomplished fact. A producer of coal may appeal to the business judgment of his large customers, the industrials, railroads or public utilities, and satisfy them as to the reasonableness of his position, but another method of approach to the household consumer must be adopted. None so far considered excels the possibilities of approach through the newspaper with a story based on facts ascertained by or through the government. The public that controls Congress wants the facts and will eventually get them. It would seem better to offer the data than to have them extracted by force.

Mixed-Pressure Turbine Installation with Regenerator Appreciably Decreases Power Costs at Nokomis

Exhaust from Mine Hoist Passed Through Rateau Regenerator and Mixed-Pressure Turbine Greatly Lowers Power Cost—Service More Continuous Than That Obtained from Purchased Power

By C. W. Smith,*
Chicago, Ill.

THE Nokomis Coal Co. recently put into operation at its Nokomis mine, in Illinois, one of the most modern coal-mine power plants in the state. This plant is of 1,300-kw. capacity, being equipped with a 1,000-kw. mixed-pressure and a 300-kw. high-pressure turbine. Prior to the installation of this plant all electric power used was purchased from a local public-service company. The hoist, which was driven by two 28 x 48-in. steam engines, together with an 18 x 18-in. fan engine and several pumps, was supplied by steam from six 84 in. x 20 ft. horizontal return-tubular boilers.

Power was purchased for general lighting and for driving, the tipple machinery and also for all underground operations. The day load in addition to the tipple machinery consisted of thirty alternating-current cutting machines each equipped with a 30-hp. squirrel-cage motor, also two synchronous motor-generator sets—one of 150- and the other of 200-kw. capacity—operating the main-line haulage motors. The night load consisted of two 110-kw. motor-generator sets used for charging the seventeen storage-battery gathering locomotives and the night illumination above and below ground. The maximum demand during a five-minute interval was between 450 and 500 kw., and the momentary demand often ran up to 700 kw.

Particularly Expensive in Slack Periods

Although the electrical installation at this mine was planned to be as economical as possible, the method of both purchasing and generating power made the plant as a whole extremely expensive to operate†. This was especially true during periods of slack work when it was necessary to keep firemen on duty and to pay high primary or service charges to the power company. The lack of economy became more pronounced during the last two years, when the power company's rates were almost doubled. Another objection to this type of power installation in addition to the expense of operation was the numerous and expensive shutdowns caused by frequent failure of the utility company to deliver current. These shutdowns often occurred at a time when continuous operation of the mine was highly desirable.

Accordingly the power situation at this mine was studied carefully to ascertain what changes could be made to effect the desired economies. There were found to be three schemes worthy of trial: (1) To discard the steam hoist and replace it with an electric machine, purchasing all power. (2) To install additional boilers and a high-pressure power plant generating all power. (3) To install a mixed-pressure turbine, thus utilizing the waste steam from the hoist engines, adding boilers to supply any additional steam that might be required.

These three schemes were studied with care and it was decided that the third was the most desirable. A mixed-pressure plant appeared to be the least expensive in first cost and if successfully installed it would be the most economical to operate. After consultations with numerous manufacturers and engineers, C. M. Garland, consulting engineer, of Chicago, was engaged to make a report on the power situation as it then existed and to make recommendations as to the installation best adapted to the situation.

Mr. Garland, after careful investigation, reported that a mixed-pressure installation was entirely feasible and

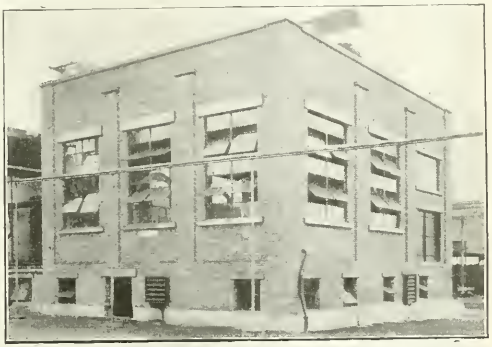

FIG 1. EXTERIOR OF TURBINE ROOM WITH REGENERATOR HOUSE AT EXTREME LEFT

The power house is constructed of common brick laid with red mortar and trimmed with reinforced-concrete coping, lintels and sills. It is large and roomy and has a pleasing appearance. Large windows, fitted with steel sash, provide plenty of light and ventilation.

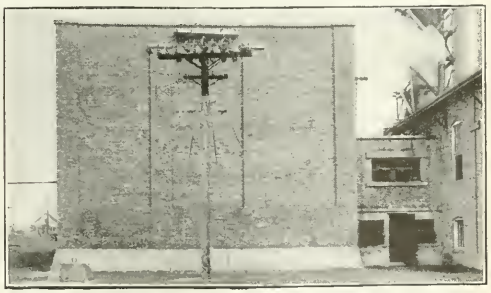

FIG. 2. TIPPLE SIDE OF TURBINE BUILDING WITH REGENERATOR ROOM ON RIGHT

The turbine-room floor was built level with the floor of the hoist-engine room and is connected thereto by a covered passage above the regenerator room. As the building is located near the mine tipple it was feared that coal dust might cause trouble in operating the turbine. To overcome this no windows were put in the side nearest the tipple. The switchboard was mounted along this blank wall.

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†A general description of this electrical installation appeared in *Coal Age* of Oct. 16, 1919.

that in his opinion it could be operated without additional boilers. Accordingly he was commissioned to make the plans for and to supervise the erection of the new turbine plant. Construction was begun in July, 1920, but because of the difficulty experienced in obtaining material and machinery at that time the plant was not actually put into operation until June, 1921.

In order to conserve all steam possible it was decided to electrify all machinery on the surface, with the exception of three car-puller engines. In this way not only was all the steam actually conserved but also the condensation in the various steam lines. In accordance with this plan the repair shop, ventilating fan and water-supply pumps were electrified. As the maximum demand was between 450 and 500 kw. before these changes were made, it was decided to make the main unit in the new installation of 1,000-kw. capacity.

This would be a satisfactory size for economical operation and would provide enough surplus power to take care of any future increase in the mine consumption. This unit was to be a mixed-pressure turbine in order to utilize the waste steam from the hoist engine. To handle the night load it was decided to install a 300-kw. high-pressure turbine. It was planned to run the 1,000-kw. unit sixteen hours each day and the 300-kw. machine eight hours. In case of necessity, however, the 300-kw. machine can carry the load for the sixteen hours the mine is not hoisting. Even in event of an accident to the 1,000-kw. unit, the storage-battery locomotives can be used on the main-line haulage and maintain mine production at about 50 per cent of normal capacity.

As shown in Figs. 1 and 2, the power plant is housed in a new brick structure about 41 x 51 ft. in size, constructed adjacent to the hoist-engine room. The building is 37 ft. 6 in. high above the floor of the basement. The distance from the basement floor to the top of the turbine-room floor is 12 ft., giving ample space for the condensers and auxiliaries. The new building proper was set about 13 ft. away from the hoist-engine room and this space was used to house the Rateau regenerator. The exterior of this regenerator room may be seen in Figs. 1 and 2.

This arrangement places the regenerator in a direct line between the hoist engine and the mixed pressure turbine and provides a housing at small expense for protecting the regenerator from the weather. In addition to this, doors are provided in the dividing wall between the basement of the turbine room and the regenerator room so that the heat given off by the regenerator is utilized in winter for heating the turbine room.

The 1,000-kw. mixed-pressure turbine was built by the Ridgway Dynamo & Engine Co. and was designed to carry the rated load on either high-pressure steam at 150-lb. gage with 28-in. vacuum or on low pressure steam at 18-lb. absolute and 28 in. of vacuum. The generator was designed for 2,300-volt 3-phase, 60-cycle current and provided with direct-connected exciter.

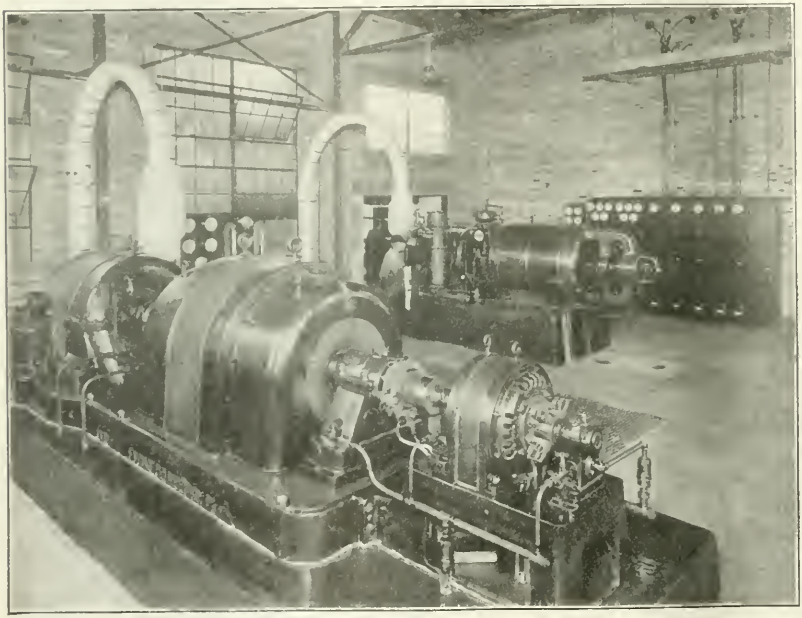


FIG. 3.

Turbine-Room Interior with Switchboard

The 1000-kw. mixed-pressure turbine is shown in the foreground, and behind it is the 300-kw. high-pressure turbine. The turbine room is roomy and well lighted. Behind the 300-kw. machine is the passage to the hoist-engine room.

This unit is mounted over a Worthington surface condenser with turbine-driven circulating pump, motor-driven condensate pump and steam-driven rotative dry-vacuum pump. The condenser was designed to provide a 28-in. vacuum with 70 deg. cooling water.

Live steam for the 1,000-kw. unit and its auxiliaries is taken from an 8-in. high-pressure header located in the basement of the turbine room. This header also supplies steam for the 300-kw. unit. Fig. 3 shows the turbine room and Fig. 4 the condenser and auxiliaries.

The exhaust steam as it comes from the hoist engine passes through an 18-in. header to the Rateau regenerator. This is 9 ft. in diameter and 25 ft. long and is equipped with back-pressure valves set at 3 lb., which is the maximum back pressure on the hoist engine. From the regenerator the exhaust steam passes to the low-

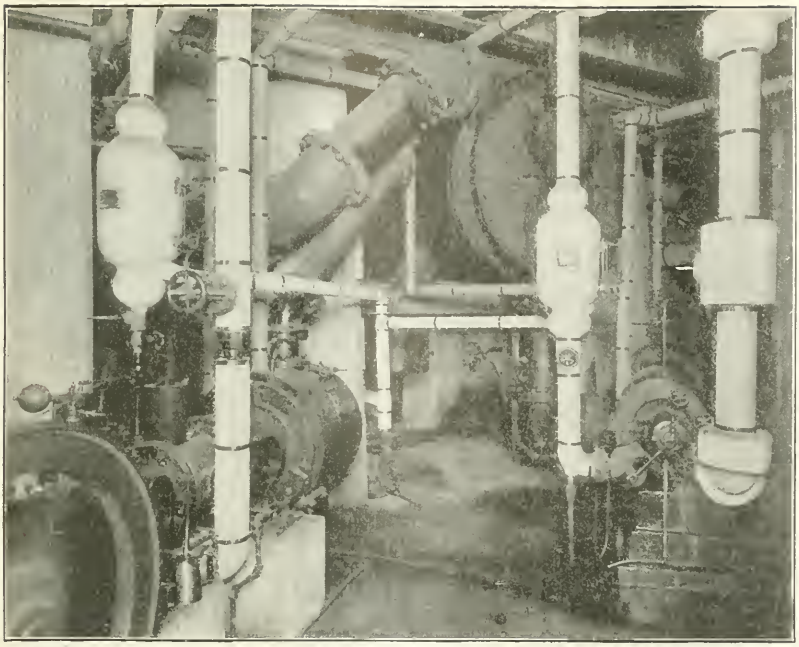


FIG. 4.

Condenser and Auxiliaries for 1,000-kw. Turbine

This unit is mounted over a Worthington surface condenser with turbine-driven circulating pump, motor-driven condensate pump, and steam-driven rotative dry vacuum pump. The condenser was designed to provide a 28-in. vacuum with 70 deg. cooling water.

pressure side of the Ridgway turbine through an 18-in. line and an oil separator. When the pressure in the regenerator falls to about 1½ lb. per square inch below the atmospheric pressure, the governor on the mixed-pressure turbine automatically admits enough live steam to carry the load until the pressure in the regenerator is again sufficient to carry the load alone. This governor has been found to operate in a highly satisfactory manner.

Steam from the auxiliaries used in connection with this unit is exhausted into the 18-in. low-pressure line leading from the regenerator. Two 4-in. pop valves placed on the 8-in. high-pressure header also are connected so as to blow off into the 18-in. low-pressure header. These are set to pop off at a pressure slightly below that which lifts the safety valves on the boilers, thus saving the steam that usually is lost when the pressure in the boilers exceeds that desired.

Circulating water from the condenser is pumped through a spray cooling system by a 12-in. steam turbine-driven centrifugal pump. This spray system was installed over an existing pond holding the reserve water supply. This reservoir is 300 ft. long by 50 ft. wide and is located at a distance of about 150 ft. from the plant.

FIG. 5.

Turbine Building and Spray Pond

Circulating water from the condenser is pumped through a spray cooling system which is installed over a 50 x 300 ft. pond holding the reserve water supply located 150 ft. from the plant. The circulating water from the Schutte-Koerting condenser is not passed through the spray nozzles, as it would require an additional circulating pump. This water is allowed to circulate from one end of the pond to the other.

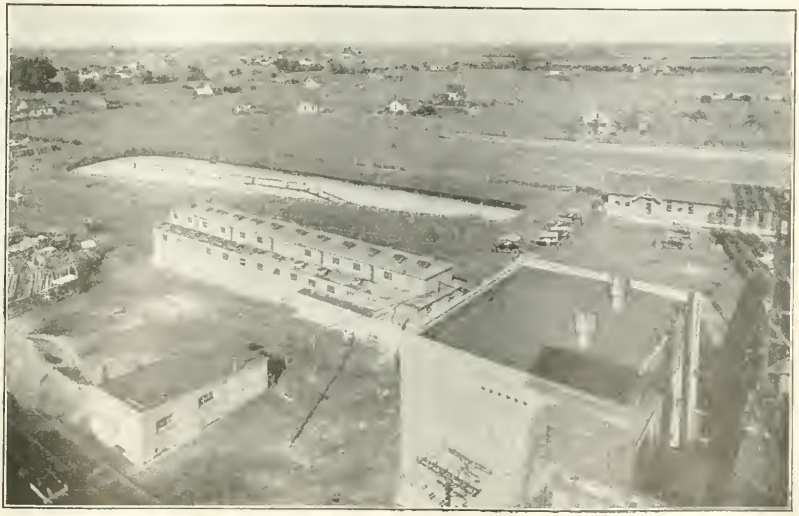


Fig. 5 shows a general view of the Nokomis power plant.

The 300 kw. high-pressure turbine, furnished by the General Electric Co., is equipped with a Schutte-Koerting jet condenser to which circulating water is supplied by a 6-in. motor-driven centrifugal pump. This is returned to the cooling pond by gravity.

The circulating water from the Schutte-Koerting condenser is not passed through the spray nozzles, as this would require an additional circulating pump. It is allowed to circulate from the discharge near one end of the pond to the suction line at the opposite end. During the normal operation for which this unit was intended this arrangement is entirely satisfactory. Even in the summer months the temperature of the pond rises only a few degrees. When this unit has to be operated for more than sixteen hours a day, as sometimes happens, when the mine is not working, the circulating pump on the large condenser is operated once or twice a day for a period of approximately an hour in order to cool down the temperature of the pond. This has proven a highly satisfactory manner of eliminating an additional circulating pump and of saving the power required for its operation.

The switchboard, which was constructed by the Westinghouse Electric & Manufacturing Co., is of remote-control type with all the 2,300-volt equipment located in the basement. It is provided with a voltage regulator and synchronizers for the paralleling of the two generators. The 1,000-kw. machine is protected by circuit breakers on the feeder panels and the 300-kw. generator is protected by an overload attachment on the generator switch. This arrangement is made necessary by the fact that at night the small generator must supply current over the feeders which are ordinarily supplied during the working period by the 1,000-kw. machine. Two generator panels, a feeder panel for the bottom, one for the mine fan, one for the tipple, and one for station auxiliaries are provided. A lighting panel is installed for the distribution of the current to the lighting circuits on the surface as well as a swinging bracket for the voltage regulator and station instruments.

FIG. 6. HIGH VOLTAGE SWITCHBOARD EQUIPMENT IN TURBINE ROOM BASEMENT

The switchboard, which was constructed by the Westinghouse Electric & Manufacturing Co., is one of the remote-control type with all 2,300 volt equipment located in the basement.

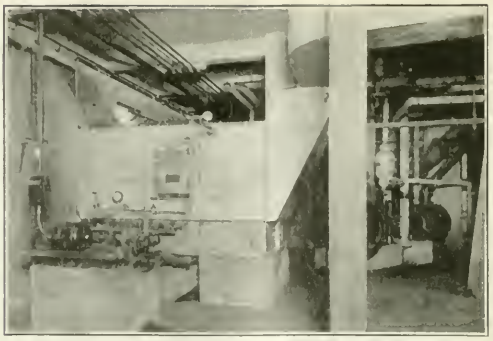


FIG. 7. MOTOR-DRIVEN AIR WASHER

As the turbine building is located near the mine tipple it was feared that the coal dust might cause trouble in operating the turbines. An air washer was provided for washing all air used in ventilating and cooling the turbines.

Both generator and feeder panels are equipped with integrating wattmeters for measuring the current supplied to the different departments. A flow meter is provided for measuring the amount of high-pressure steam supplied to the turbine plant. Fig. 6 shows the high-tension equipment located in the basement.

The power house is constructed of common brick laid in red mortar and trimmed with reinforced-concrete coping, lintels and sills. It is large, roomy and of pleasing appearance. Large windows, fitted with steel sash provide plenty of light and ventilation. The floor of the turbine room was built level with that of the hoist engine room and is connected thereto by a covered passage above the regenerator room shown in Fig. 2. As the building is located near the mine tipple it was feared that coal dust might cause trouble in operating the turbine. To reduce this possibility no windows were put on that side. The switchboard was mounted along this blank wall. An air washer was provided for washing all air used in ventilating and cooling the generators. Fig. 7 shows the air washer and pump.

Power for the mine is taken direct from the 3-phase 60-cycle 2,300-volt bus. Transformers reduce the voltage to 270 for operating the tipple machinery, shop motor, pumps and mining machines, but the ventilating-fan motor and motor-generator sets are operated directly from the 2,300-volt line.

The new plant was placed in operation about July 1 and was run for about two weeks before the supply of power from the public service company was disconnected. Notwithstanding the special nature of the design, the plant was placed in operation with practically none of the troubles ordinarily encountered at this particular period in the life of every plant. Since that time it has been carrying the load without difficulty and without interruption to service. The most gratifying circumstance has been the performance of the mixed-pressure turbine in shifting from high-pressure to low-pressure steam under variable loads. It can be truth-

fully said that the operation of the mixed-pressure turbine on variable loads and on passing from high-to low-pressure steam and the reverse is just as steady as that of a high-pressure machine operating on similar loads.

This matter of regulation in shifting from high pressure to low-pressure and the reverse under variable loads has been the weakest feature in the design of mixed-pressure installations. The elimination of this weakness in this machine greatly broadened the field for the mixed-pressure turbine for mining and similar operations involving the utilization of an intermittent supply of low-pressure steam.

It has been found also that the regenerator, instead of increasing the back pressure on the hoisting engines, has caused it to be reduced, for the original exhaust lines were too small. This, together with the electrification of the fan drive and the pumps, has had the effect of lowering the steam consumption, and the six original boilers now operate the entire plant with greater ease than they did before the installation of the turbines. It is estimated that the reduced steam consumption will save 3,000 tons of coal per annum.

Power Generation Adds Only Two On Roll

Only two men have had to be added to the force since this plant was put into operation. On account of the large tonnage handled it has been customary for many years to employ two hoisting engineers. These men relieve each other every hour. Formerly the engineer off duty looked after the oiling of engines, pumps and other machinery, but since the turbines were installed he has acted as power-plant attendant. This has necessitated the employment of an oiler. It also has been necessary to place a fireman on the third shift to relieve the hoisting engineer employed on this shift, who formerly did his own firing. In addition it has been necessary on operating days to have an engineer put in an extra hour in the morning, as his help is needed in starting up the mixed-pressure turbine.

This plant has effected a large reduction in the cost of power for the Nokomis Coal Co. and undoubtedly will cause radical changes in the design of plants serving relatively deep mines where large production is desired. Although the steam hoist has been recognized as much more flexible and less expensive than an electric installation, yet it has been considered wasteful to operate. This waste, however, can be entirely overcome by the installation of a mixed-pressure power plant. Furthermore at a deep-shaft mine with a short hoisting cycle, a steam hoist with a mixed-pressure turbine installation will give virtually the same efficiency in the use of steam as will a high-pressure turbine installation with motor-generator sets and an electric hoist.

Analyses of Southern Somerset County Coal

SOMERSET County, Pennsylvania, was explored by the second geological survey of that state, when only six commercial mines were working outside of the Salisbury basin, and so there were few data available on which the study could be based. For this reason J. D. Sisler, of the Bureau of Topographic and Geological Survey, with G. H. Ashley, State Geologist, is making an inquiry and has published in typewritten form an account of his preliminary findings.

In the southern part of Somerset County are found the Brookville bed, with an average thickness of 36 in., many binders and much sulphur; the Clarion bed, about 18 in. thick, with many fine shale binders and rather high in sulphur; the Lower Kittanning bed, 28 in. in average thickness, clean but with high sulphur; the Middle Kittanning, which is merely of geological interest but which is not mineable; the Upper Kittanning, the average thickness of which is 4 to 5 ft. where mined, which is never entirely clean or easy to rid of its impurities and is in places rather high in ash and sulphur; the Lower Freeport, which has a maximum thickness of 5 ft. 4 in. including impurities and which has a large shale and bone binder in the center; the Upper Freeport, which is of equal thickness but always has shale and bony binders; the Bakerstown, if that is really what it is, which is 2 ft. thick and clean; the Pittsburgh, which is confined to the Berlin-Salisbury basin and is 7 ft. 9 in. thick including binders that are here larger than in ordinary Pittsburgh coal; the Redstone, which is confined to the same basin and which averages 4 ft. 8 in. and is fairly clean with two small characteristic binders.

This region has three basins: The Wellersburg, which is the tailing out of the Georges Creek basin of Maryland; the Salisbury-Berlin basin with large areas in the troughs of lightly covered Pittsburgh and Redstone coals and the Somerset-Confluence basin, which contains only the Allegheny series of coals from the Clarion to the Upper Freeport. Although the Wellersburg area is a fringe of the Georges Creek basin of Maryland, yet, because of the overshadowing value of the latter region, the Wellersburg field has a small production and has never been fully prospected.

ANALYSES OF COAL IN THE MINES OF THE SOUTHERN HALF OF SOMERSET COUNTY, PENNSYLVANIA

Name of Company	Name of Mine	Location	Coal Bed	Moisture	Volatile Matter	Fixed Carbon	Ash	Sulphur	B t u.
Berlin-Salisbury Basin									
Meyersdale Fuel Co.	Meyersdale No. 3	6 mi. S. of Meyersdale	Redstone	3 43	20 41	62 54	13 62	1 98	12,774
Consolidation Coal Co.	Consolidation No. 105	2½ mi. S.W. of Meyersdale	Redstone	2 54	21 71	63 55	12 20	0 74	13,184
E. Stattler & Son	Stattler	¼ mi. N.W. of Meyersdale	Redstone	5 97	19 56	64 31	10 16	0 96	12,580
Boynton Coal Co.	Chapman No. 3	½ mi. W. of Salisbury	Pittsburgh	3 15	21 55	69 55	5 75	0 90	14,208
	Merchants No. 3	1½ mi. N.E. of Salisbury	Pittsburgh	3 00	19 60	70 30	7 00	0 70	14,175
Meyersdale Fuel Co.	Myersdale Fuel No. 3	6 mi. So. of Meyersdale	Pittsburgh	3 59	22 69	68 12	5 60	1 14	14,108
Consolidation Coal Co.	Consolidation No 104	2½ mi. S.W. of Meyersdale	Pittsburgh	3 14	20 35	67 36	9 15	1 09	13,692
E. Stattler & Son	Stattler	¼ mi. N.W. of Meyersdale	Pittsburgh	3 24	21 80	65 23	9 73	1 46	13,551
	Consolidation No. 112	2 mi. S.W. of Berlin	Little Pittsburgh	2 60	21 50	68 00	7 90	1 70	13,903
Black Coal Co.		¾ mi. N.W. of Meyersdale	Upper Freeport	3 82	19 09	68 66	8 43	2 38	13,698
	Coronet No. 3	1½ mi. E. of Berlin	Upper Freeport	1 40	18 60	68 40	11 60	1 90	13,604
		1½ mi. N. of Garrett	Lower Freeport	2 28	18 99	68 30	10 43	1 20	13,549
	Eagle	2½ mi. E. of Salisbury	Lower Freeport	3 50	18 20	69 70	8 60	1 50	13,667
McAllen Coal Co.	John Wills No. 2	1½ mi. N.E. of Berlin	Upper Kittanning	3 20	19 90	66 60	10 30	1 70	13,509
	John Wills No. 3	1½ mi. E. of Berlin	Upper Kittanning	3 40	20 60	66 50	9 50	1 30	13,619
	Pen Mar No. 2	1½ mi. S.W. of MacDonaldton	Lower Kittanning	1 10	15 40	73 50	10 00	0 90	13,627
	Pen Mar No. 3	MacDonaldton	Lower Kittanning	1 00	16 00	72 60	10 40	2 20	13,758
Atlantic Coal Co.	Atlantic Coal Co. No. 1	5 mi. N.W. of Garrett	Brookville	8 76	17 40	66 11	7 73	0 66	12,799
Somerset-Confluence Basin									
Quemahoning Co.	Quemahoning No. 10	½ mi. W. of Rockwood	Upper Freeport	2 93	20 04	66 01	11 02	2 05	13,340
Ursina Fuel Co.	Mill	¼ mi. E. of Ursina	Upper Freeport	2 61	24 24	59 96	13 19	1 18	13,056
	Linner	4½ mi. S.E. of Confluence	Upper Kittanning	2 89	25 90	63 10	8 20	2 40	13,867
MacGregor Coal Co.	MacGregor Coal Co. No 1	4 mi. N. of Rockwood	Lower Kittanning	2 5	19 94	68 70	8 85	2 23	13,747
J. M. Murdock & Bros.		6 mi. N. of Rockwood	Lower Kittanning	2 08	21 30	64 15	12 47	2 95	13,182
M. A. Snyder Coal Co.		¼ mi. E. of Markleton	Lower Kittanning	3 15	20 86	62 20	13 79	2 88	12,803

Advantage of Using an Isometric Mine Map Bearing Selected Operating Date

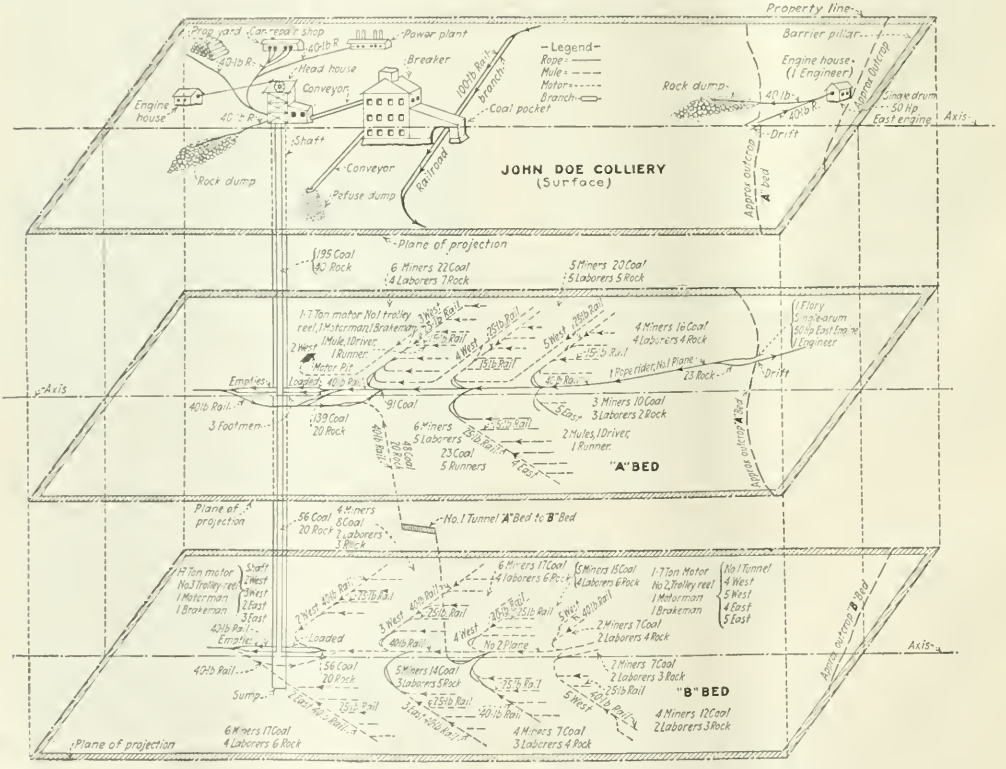
By Thomas F. Kennedy
Scranton, Pa.

ALL the problems around the mines, whether they relate to transportation, ventilation, drainage, power distribution or power utilization, have reached such a high degree of complexity that their solution is now more difficult than ever, especially where conditions make it hard even for superintendents and engineers to visualize accurately the relative locations under and above ground. In the early stages of development of any coal property, it is an easy matter for the average superintendent, foreman or engineer to remember the number of miners and laborers employed at any particular point, the number of cars of coal and rock produced, the location of the various working chambers, the kind of haulage and the like. As development progresses, however, it is almost impossible for the superintendent or engineer in charge to keep in mind the varied and many additional factors all of which contribute to an increased output.

As an aid to the solution of the foregoing problems pictures of the working maps can be made by reducing the scale to one of, say, 1 in. equals 400 ft., and delineating upon these reduced maps of the surface and underground workings the various factors relating to transportation, power, drainage, ventilation and the like.

To illustrate the procedure to be followed I have selected a typical example involving transportation. In Fig. 1 an outline of a colliery is shown presenting its general and important surface features so far as transportation is concerned. Figs. 2 and 3 show the "A" and "B" beds with the various working gangways and chambers, the number of miners and laborers employed, the various weights of rail used in the track system, etc. Where only a few beds are considered, it is easy to visualize the whole transportation system in general by studying the plans, but when the number of measures worked is large and the transportation is complicated, it is almost impossible to develop a picture of the system without frequent reference to many maps. This means the expenditure of much time and energy. Consequently, in order to save trouble, I have resorted to the development of a distorted isometric view of the several coal beds. This is shown below. The transportation systems in each bed are drawn or projected upon the plane of projection of the colliery property. The view of No. 1 Tunnel connecting the "A" and "B" beds is shown distorted.

By this means transportation from the face to the



STEREOGRAM OF A COAL-MINING PROPERTY WITH HEADINGS AND ROOMS IN SKELETON

By this type of map the various operations are placed in due relation to each other, though somewhat distorted by isometric projection. Somewhat the same effect is attained by the subsequent arrangement, however, though the relation is not so clear to one who is not a mining man. The use of the skeleton saves labor in reproduction and, what is more important, makes it possible to compress the working detail into less space. This is important, as half the value of information lies in its conciseness.

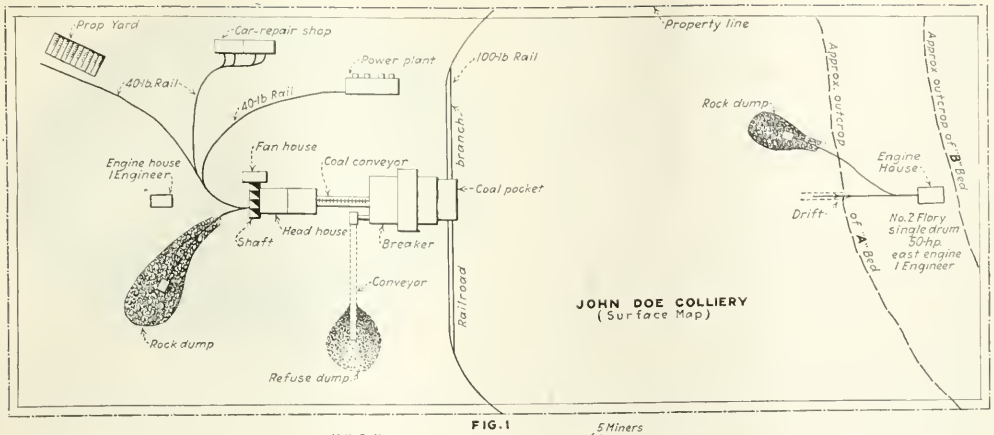


FIG. 1

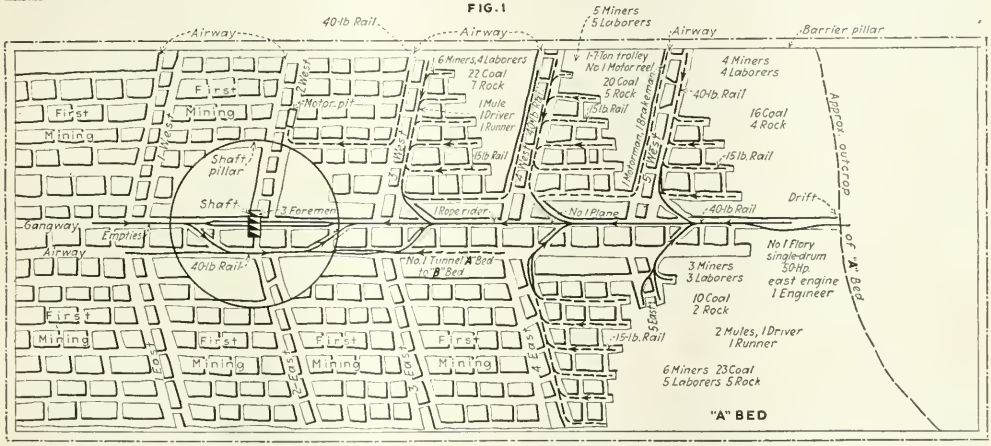


FIG. 2

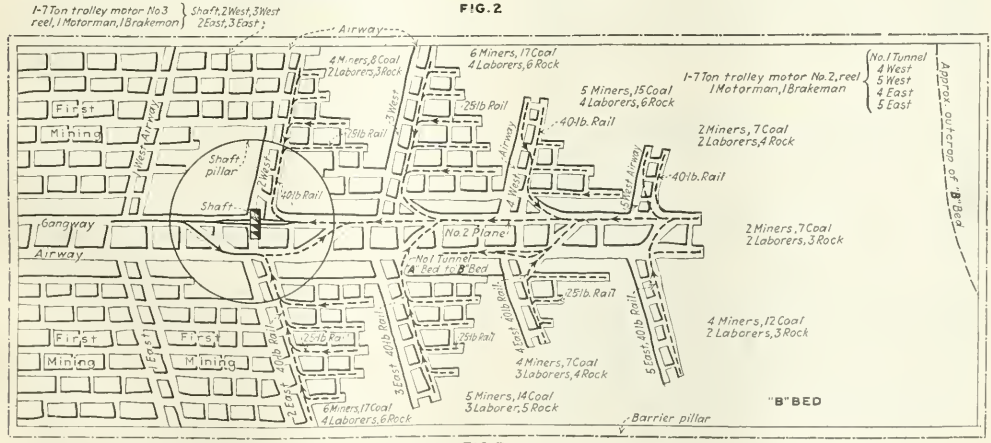


FIG. 3

MAPS OF SAME PROPERTY AT DIFFERENT LEVELS, SHOWING CERTAIN OPERATING DATA

It is becoming apparent that the payroll record which deals with the whole mining force and frequently fails to group the employees of like occupation affords but poor indication of operating conditions. Too many mines have no other record. Others, like the Hudson Coal Co., are using variColored pins disposed on a wall chart. Some of these maps were exhibited at the Marvine Colliery on the occasion of inspection by the members of the American Institute of Mining Engineers during their recent trip to the anthracite region. This method of annotation, while objectionable because corrected only at much labor, gives the information effectively at the time for which the map is made and is intelligible even to the novice.

coal pocket can be traced with small effort. A study of both plans and isometric views furnishes all important information necessary for a quick and accurate visualization of the whole transportation system.

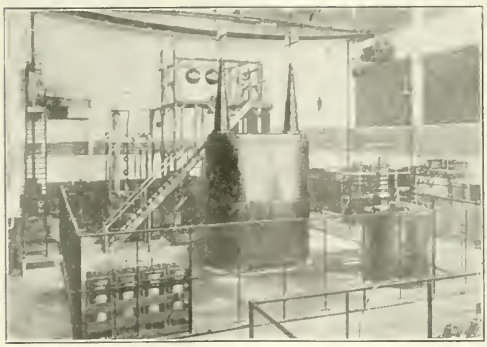
The same principle, namely, that of drawing distorted isometric views, can be applied also and with advantage to the ventilation, power and drainage systems. Such drawings may become a valuable aid in reports compiled for coal operators and laymen.

Million-Volt Current Tests Point to Mines As Possible Electrification Centers

ONLY by using high voltages can coal mines hope to be the sites of power-generating stations for the industries of the United States. One peculiarity of our one-sided development is that regions where coal is produced are not the great manufacturing centers that they might be reasonably expected to be, unless Pittsburgh and St. Louis may be regarded as exceptions. The first, however, in the main manufactures the larger products, and St. Louis is over the edge of the coal fields and derives its importance from having been for many years a railroad center, and still earlier a lively Mississippi port. Generally speaking, factories have not moved toward coal but coal toward factories. Population is segregated along the Atlantic seaboard and not in the coal-mining states.

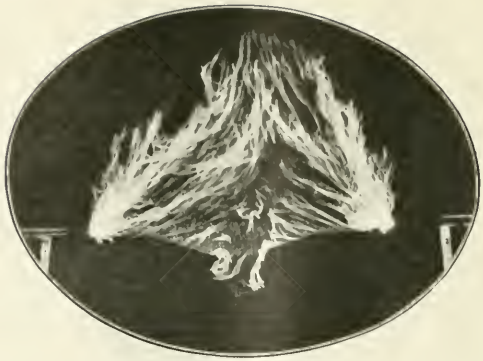
West Virginia, one of the greatest of coal producers and one where much of the best coal is produced, is extremely backward in manufacture, and other areas, such as parts of Virginia and Kentucky, have excellent coal and great activity as coal centers, yet they make few of the goods which the United States needs. The population also is sparse, partly by reason of inaccessibility and also because of the history of our industrial development.

It seems, therefore, that the railroads must continue to transport our coal with great economic loss or else means must be provided such as will make it possible to transmit electricity over greater distances. Owing to the facts stated and to the necessity for the transshipment of other raw products than coal into the mine regions and the freighting of the finished products to



APPARATUS FOR GENERATING AND TESTING MILLION-VOLT CURRENT

The highest commercial voltage is 220,000, this now being installed on the Pacific coast. Difficulties arise with excessively high voltage owing to the higher costs of insulation, pole construction and heavy conductors. The conductors for a million volts would have to be 4 in. in diameter or larger.



A 105-IN. SPARKOVER AT 1,100,000 VOLTS

The air is a poor dielectric for high voltages. Note the long travel through air made by lightning discharges, which are sparkovers of titanic dimensions. This spark is nearly 9 ft. long.

the districts which the large populations now occupy we cannot expect in this generation to fill the mining regions with a manufacturing population, for which indeed the rugged character of the country and the water-supply difficulties of all mining areas render them in a large degree unsuited.

It has been said that the voltage should be 1,000 per mile of transmission. A thousand-mile transmission should therefore be at a million volts. Can electricity be conducted with safety and certainty at such a voltage? All experiments in this direction are of vital interest to those who would use the coal mines as power-generating centers. The great super-power project does not contemplate any such distances as one thousand miles. It looks to the nearer coal fields and regards them as feeders in the main for those parts of the manufacturing East as are nearest to the coal fields. Though the power would be interconnected it is not supposed that Clearfield, much less West Virginia, would supply power for Boston and the other manufacturing centers of New England.

Though there are many economic difficulties in the effective use of large voltages and though many engineers question whether current created at the mines can compete with current made from coal at the point of sale and doubt whether it is economically possible to condense with the water at the mines the large quantities of steam used in a super-power station, yet it is of interest to coal-mining men that successful manipulation of electric power at more than one million volts and at commercial frequencies has been accomplished in the high-voltage engineering laboratory at the Pittsfield works of the General Electric Co. During the course of the experiments just completed much valuable data was gathered indicating the feasibility of appreciably higher transmission voltages than are now in use.

Physical laws usually accepted as applying to high-voltage phenomena were found to hold true at these enormous potentials. In the course of the experiments the spacings for sphere- and needle-spark gaps were carefully checked up and prolongation of existing curves (750,000 volts and under) were found correct up to 1,000,000 volts.

Arc-over tests also were made on strings of standard 10-in. suspension insulators at potentials up to 1,100,000 volts. The accepted laws of corona were

checked at similar potentials and found to hold true. A short transmission line was tested for corona conditions and the results indicated that a line using conductors 4 in. in diameter or larger would be necessary at 1,000,000 volts.

The successful conclusion of these tests is the result of more than thirty years of constant experimentation, during which time transmission voltages have risen steadily from the first 15,000-volt line built in Pittsfield in 1891 to the present high commercial potential of 220,000 volts, equipment for which was recently shipped from Pittsfield and is now being installed on the Pacific coast.

These tests confirm the belief of the Pittsfield engineers that it will be commercially feasible to use appreciably higher voltages than are now employed in the transmission of power and betoken the extension of long-distance transmission beyond limits heretofore believed possible. Electrical engineers are now in a position to forecast results.

The significance of these tests is well stated by F. W. Peek, Jr., director of the laboratory, as follows:

For some time engineers have been able to predict with certainty the corona and spark-over characteristics of high-voltage transmission. These predictions were based on laws of corona established by careful tests made up to about 250 kv. and on spark-over curves established on needle and sphere gaps as well as on line insulators at somewhat more than double this potential. Commercial apparatus has already been built for 220-kv. operation.

It was of great present theoretical and probably future practical interest to determine experimentally if there was a discontinuity in the established laws and curves at a million volts or over. Although no deviation was expected, no one could be certain until actual tests were made. It might, for instance, be considered that because of the great length of lightning sparks the air must be relatively weaker at extreme voltages.

Tests on potentials up to about 1,100 kv. were made on the various elements entering a transmission line. The results secured were as follows: (a) The spark-over curve showed no discontinuity. The spark-over at 1,100 kv. was found to be about 105 in. (b) The spark-over curve between 75-cm. spheres showed no great deviation from calculated values. (c) Tests were made on strings of line insulators and the spark-over voltages proved to be as expected; for instance, a string of eighteen standard suspension insulators arced over at about 900 kv., while a string of twenty-two insulators did not arc over at more than 1,000 kv. (d) Visual corona tests were made on brass-tube lines 3½ in. in diameter operating single-phase. The corona starting voltage (about 900 kv.) checked closely with the calculated value.

While thus far laboratory experiments have been conducted only on these extreme potentials they have demonstrated clearly the possible future trend of development. For many years the super-power plant erected at the mine mouth with its high-tension lines extending into far-distant territory has been a dream, in some cases now approaching a reality. Demonstrations such as those made at Pittsfield and here described brings its fullest realization appreciably nearer.

Approved Methods of Fitting Pinions to Their Shafts

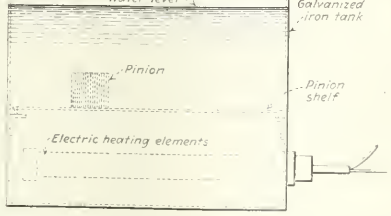
A Clean Even Fit Upon the Shaft Is a Prime Requisite —Drive Should Not Be Made Through the Key, Which Is Merely a Safety Device in Case Pinion Should Tend to Slip

By H. H. Johnston*
East Pittsburgh, Pa.

Many details must be observed in placing motor pinions upon their shafts if successful results are to be uniformly achieved. Though the process of installation is by no means either difficult or complicated, highly important essentials are sometimes overlooked, either through ignorance or otherwise. This omission often results in failure. Pinions that are merely slipped onto their shafts with the nuts tightened will not operate satisfactorily and probably will loosen and cause the failure of parts other than the pinion itself. A key between pinion and shaft is not, as is sometimes believed, for the purpose of driving the gears, the load being taken by the key. The drive should be accomplished rather through a "press fit" or a "shrink fit" of the pinion upon the motor shaft. In reality the key is a safety device in the event that the pinion should loosen from its grip upon the shaft.

Pinions may be applied by means of either pressure or heat. In either case when placing them upon motor shafts with taper fits it is necessary to have the tapered surfaces of both shaft and pinion clean and free from burrs. The bore of the pinion should be in actual contact with not less than three-quarters of the surface of the shaft taper. This can be checked up by rubbing on Prussian blue, thin red lead and oil, or thin lamp black and oil, and then fitting the pinion onto the shaft.

It is important also to note that the pinion keyway is of proper size for the key on the shaft. The pinion should not bind on either the top or the sides of the key, nor should it ride the key when pressed finally home. Other points to note are that the pinion keyway can be 0.002 in. wider than the key but must not be narrower, for in such a case the pinion could be forced to place only against the pressure of the key. Between the top of the key and the bottom of the keyway in the pinion a clearance of $\frac{1}{64}$ in. is permissible. The key corners should be rounded to prevent them from cutting.



HEATING PINION IN BOILING WATER BEFORE FITTING ON SHAFT

A galvanized-iron tank is employed, the lower part being used for the electric heating elements and the upper for the water to be boiled and for the pinion which is to be expanded by the influence of the heat. Time of boiling, 30 minutes. Method suited to pinions of 125-hp. motors. Where pinions are over 3 in. in diameter an hour's boiling is necessary.

*General engineering department, Westinghouse Electric & Manufacturing Co.

Where pinions are put in place by the aid of heat, satisfactory results can be obtained without the use of a high-pressure press. The process is simple but varies slightly for different sizes of motors. For machines up to 125 hp., pinions with bores 3 in. in diameter and less are heated in boiling water for thirty minutes. Pinions exceeding 3 in. in bore diameter should be so heated for one hour.

When the pinions have assumed the temperature of the boiling water (100 deg. C. or 212 deg. F.) they are removed from the liquid and the bore is quickly wiped clean. Before the pinion has had opportunity to cool it is slipped onto the shaft and tapped to place by means of a copper bar or with a 6- or 8-lb. hammer, using a heavy piece of wood or copper between it and the pinion. This tapping is done evenly around the end of the pinion, three or four blows being struck. It should be noted that the purpose of tapping is not to secure a drive fit but to make sure that the pinion is well seated. When fully home the nut and lockwasher can be put in place and drawn up tightly by using a wrench with a 3- or 4-ft. lever arm.

On motors of more than 125 hp. the pinions should be heated with a gas flame applied within the bore in such a manner as not to touch the teeth, as the heat might affect the temper of the metal. It should take 45 to 75 minutes to bring such a pinion up to a temperature of 125 deg. to 150 deg. C. (251 deg. to 302 deg. F.) In measuring the temperature the bulb of the thermometer should be placed against the pinion between the teeth, the surface where the bulb touches being made perfectly clean by rubbing with emery cloth.

It is important to protect the exposed end of the thermometer from the gas flame. This may be accomplished by covering it with asbestos cloth. When the pinion has attained the temperature above mentioned it may be removed, and the bore wiped clean and then put on the shaft by the same process of tapping as has been described for the 125-hp. motors.

REMOVING PINION WITH HOT-WATER BATH

The pinion being removed from the tank its bore is quickly wiped clean. It is slipped onto the shaft before it has had a chance to cool.

DRIVING PINION ON SHAFT WITH COPPER BAR

Care has to be taken to prevent the pinion being injured in driving. Either a copper bar should be used for this purpose or a 6 or 8 lb. hammer with a piece of copper placed between it and the pinion. Not more than three or four blows should be struck and these should be disposed evenly around the end of the pinion.

Suitable heating equipment for pinions used on motors of 125 hp. or less consists of a galvanized-iron tank provided with a shelf upon which the pinions may be placed at about the center of the tank. A gas flame, steam coil or an electric element can be used to heat the water. To prevent rusting and to insure a clean surface at the pinion fit, washing soda should be used in the proportion of about ¼ lb. to each five gallons of water.

Any furnace may be used in which the pinions can be heated, provided it is so arranged as to prevent the teeth from coming in contact with the flame. Pinions used on motors up to 125 hp. are heated by a flame so regulated as to keep them at a temperature of 100 deg. C. (212 deg. F.). Those used on machines larger than 125 hp. are kept at 125 deg. C. (257 deg. F.) until the mechanic is ready to apply them to the motor shafts.

When pinions are put in place after boiling in water, they will hold against a pressure of twelve to twenty-five tons. Those heated to a temperature above 125 deg. C. but not more than 150 deg. C. will hold against a pressure of forty to eighty tons, depending upon the diameter of the pinion bore and the length of its fit. If the above processes for applying pinions are followed, it is possible to make them remain in place and function satisfactorily under the hardest loads imposed on the motors.

Pinions can be cold-pressed onto motor shafts by wheel presses. Twelve to twenty-five tons pressure will be required for pinions used on motors up to 125 hp., and forty to eighty tons for those on motors exceeding this size. Measured from the point where the pinion is in place and firmly seated on the shaft before pressing, pinions with bores up to 3 in. should advance on the shaft approximately $\frac{3}{32}$ in., those with 3- to 4-in. bores should move approximately $\frac{5}{32}$ in. and those with 4- to 5½-in. bores should advance $\frac{7}{32}$ in. under the pressure necessary to hold them in place.

Why Leave Anthracite Preparation to the Mercy of Mine Superintendents with Pressing Underground Duties?

To Reduce Degradation, to Keep Good Coal from Slate Dump, to Clean Coal Thoroughly and Size It Advantageously and to Effect These at Minimum Cost Are Among the Many Duties of the Breaker Foreman

By D. C. Ashmead
Kingston, Pa.

MANY of the processes in the preparation of anthracite are susceptible of improvement, sufficient care not being given as a rule to avoid the degradation of the product to lessen the quantity of coal going to the slate pile and to prevent the mixing of the more expensive oversize with coal of any particular grade and to provide that the undersize shall be about that, and yet not more than that, which the recognized tolerances permit.

The breaker foreman is a boss neither with time for accurate observation nor with equipment for experiments. His immediate superior is a mine superintendent who knows mines but not breakers and has no time for a close study of preparation. Why not put the preparation of coal under a separate head, leaving the personnel to the breaker foreman?

Improper or inadequate supervision may readily lower the percentage of desirable sizes. In this connection breakage or degradation should first be considered. A general manager of one of the large anthracite-producing companies states that 10 to 15 per cent of the mine output is broken within the breaker. By this he meant that the larger sizes are broken down to smaller sizes, but not that this proportion of prepared, or domestic, sizes was broken to steam sizes or slush.

Loss due to breakage is unquestionable, however, and doubtless could be much reduced if existing methods of moving coal through the breaker were thoroughly studied and so altered as to obtain the best possible results. How much actual cold cash could thus be saved cannot, unfortunately, be determined. The results obtained would vary widely with the field but would be appreciable in any section.

Coal going to the dump forms the second increment of loss in breaker operation. Under present methods of supervision it is practically impossible for the breaker foreman to watch this detail as closely as its importance warrants. Though it is quite true that this loss affects chiefly only the smaller sizes, the quantity of good coal thus sent to waste not unfrequently amounts to as much as 4 per cent of the output. In most instances it is admittedly much smaller than the figure here named, but if only 1 per cent could be saved, in a year's time its cash value would be material.

When a carload of coal leaves the breaker it should hold only coal of the grade it is supposed to contain together with the allowable percentage of undersize. Where the coal is of pea size or lower it should not contain any oversize. All oversize in such cases is a loss to the producer and if he is not at pains to exclude it he cannot realize his legitimate return. Proper supervision would do much to correct this and render possible the receipt of full value by the company. Of course watching this detail is a part of the breaker foreman's duties but it is difficult for him to do so at all times, as I hope to be able to show conclusively later.

In preparing the various sizes of anthracite it is customary to allow a certain percentage of smaller material in any shipment. The omission of this coal means a loss to the operator where the coal is smaller than egg. This allowable percentage of undersize for which the breaker foreman and coal inspectors are jointly responsible often is overlooked. Of course if competition grows keen it sometimes becomes necessary to decrease the amount of off-size coal that may be included in shipments of any particular grade.

At present supervision of preparation is about as follows: The breaker foreman has immediate charge of all operations in the breaker. It is his duty to see that the machinery functions as intended, that it is properly lubricated, that repairs are made promptly, that the men employed perform their respective duties, that no coal goes to the slate bank and no slate to the coal car, that breakage is kept down as far as possible, that in sizes below pea no oversize is shipped and that the included undersize closely approaches the allowable limit.

This appears to be a job that no one man alone can handle efficiently. The breaker foreman reports to the superintendent, who in turn is answerable to the general manager. The superintendent has not only the breaker but the whole mine under his care. Consequently the time that he can devote to the preparation plant and processes is small.

In many instances also the superintendent has had little or no actual breaker experience, having come up through either the engineering or operating department. As a result his knowledge of the minutiae of preparation processes is limited and his ideas and opinions concerning them are next to worthless. As a result best-demonstrated practice may not be followed, the methods and means of preparation adhered to may be conspicuously antiquated and the company may thus be losing the money that adherence to best practice, if adopted at that particular operation, would effect.

It is a physical impossibility for the breaker foreman himself to see to it that all machinery and processes throughout the entire building are at all times functioning properly. A breaker is a large structure of great height. Numerous operations take place within it, and no one man can continuously supervise all of them. The foreman can neither make the tests necessary to

ascertain if best possible results are being obtained nor conduct the experiments that would determine what might be improved.

It is, of course, necessary that the superintendent be held responsible for breaker operation, as otherwise he would not be concerned with the quality of the coal reaching the breaker. At the delivery end of the building, however, the character or quality of the product is carefully inspected to make sure that it complies with certain definite standards. If the prescribed limits of excellence are not attained it is condemned and sent back through the breaker for re-treatment. All this is done in order that sales of the product may be maintained.

Why should not the slate going to the bank be examined? Why are not the amount of degradation, the percentage of small sizes entering any prepared grade, the proportion of oversize watched with equal diligence? Why are not new and improved methods of preparation studied and tried in order to fix their applicability to the particular breaker in question and the coal it handles? The breaker foreman constantly watches the costs of production in the endeavor to keep them down; consequently he lacks the time to seek out those processes or practices that would augment production and enhance the value of the product.

It would appear that some means might be devised whereby the results of preparation might be greatly improved. Probably many expedients might be adopted to this end, among which the following might well be suggested: A separate unit of the organization known as the preparation department should be formed. It would have a superintendent of preparation at its head whose sole duty it would be to supervise the treatment given the coal. He would pay particular attention to increasing the value of the product and decreasing the losses arising from waste. Under this superintendent would be several assistants who would have charge of some particular phase or process. Under these assistants would be a corps of inspectors. Men in this department would have no authority over the breaker foreman, but they would keep constant watch and make frequent tests of the breaker product. Their efforts continually would have as their object the improvement of product, the lessening of waste and a lowering of cost.

Daily reports would be made by this department to the colliery superintendent in which recommendations for changes of a minor character might be made. Copies of such reports would go to the general manager and to the district superintendent while of course a copy would be retained by the head of the preparation department. If important or radical alterations were suggested these would, of course, be referred to the proper officials and if approved would be executed by the proper department of the colliery.

Composed of a number of men of the proper kind whose sole duty it would be to determine by trial and experiment the means and methods productive of best results in preparation it hardly appears possible that such a department could be anything but a success, nor that it would fail to pay for itself in less than a year's time. In addition to the duties outlined above, provision should be made whereby these men might be enabled to visit other plants both of their own and other companies, so that they might observe the preparation methods followed by others, adopting the most efficient to use in their own plant.

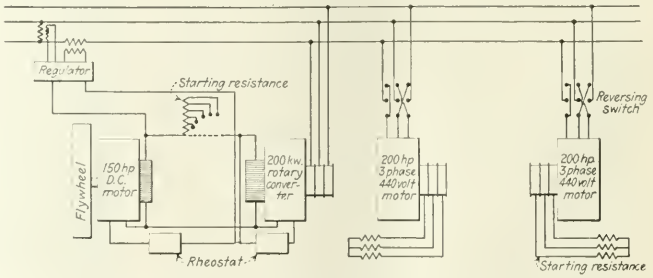
Scheme for Meeting Peak Hoisting Loads*

By J. L. Knight†
Glen White, W. Va.

PEAK loads on a mine hoist may be quite troublesome, and many means have been adopted with more or less success to eliminate or counteract them. One of the oldest and best known means so used is the flywheel set.

The accompanying illustration shows a proposed method of caring for a peak load of this kind. A slip-ring induction motor or motors will be used for hoisting. A rotary converter is connected to the line as shown and to its direct-current end is connected a compound-wound direct-current motor upon the shaft of which is placed a heavy flywheel. When there is no load on the hoist motor or motors or when the load is light the regulator cuts resistance into the field circuit of this machine, decreasing the counter voltage and causing it to run as a motor. When the load on the hoist or hoists rises above a predetermined amount the regulator cuts out resistance, strengthening the field of the flywheel motor and causing it to run as a generator under the action of the flywheel, thus pumping power back into the line through the rotary converter. The field of this machine, being in series with that of the flywheel motor, will give an improved power factor under heavy load over that obtaining if the induction hoist motor or motors simply drew energy from the transmission line.

If the method as above outlined is practical it will effect a large saving in cost of equipment over that necessary with the usual flywheel motor-generator set because in the ordinary process of mining the rotary converter would be simultaneously available for equalizing both the mining and hoisting load. Furthermore, the equalizer is independent of all other equipment, so that in case of trouble developing in either the converter or the flywheel unit the hoists may be operated directly from the power line.



WILL FLYWHEEL ON DIRECT-CURRENT MOTOR HELP HOISTS OVER PEAK?

The hoist motors are shown at the right. A rotary convertor connected to the line drives a 150 hp. direct-current motor carrying a heavy flywheel. When a peak comes on the hoists the flywheel drives the direct-current motor as a generator feeding current back to the line by way of the rotary convertor, thus assisting the hoists over the peak.

*The author requests constructive criticism of the scheme here described.

†Chief Electrician, E. E. White Coal Co.

Hoist and Compressor on Common Bedplate Driven by Internal-Combustion Engine

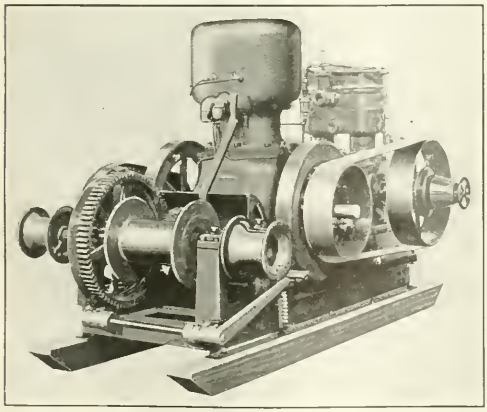
IN MANY places about the mines a need exists for a hoist of small size as well as for a small air compressor. Generally speaking such a machine or machines would be used in various kinds of construction work such as slope sinking, the driving of drainage tunnels, sewer digging, the erection of steel and wood trestles or buildings and the like.

To meet this need as well as for use in general contracting, the Novo Engine Co., of Lansing, Mich., has placed upon the market the combination hoist and air compressor shown in the accompanying illustration.

The outfit consists of a 15-hp. internal-combustion engine geared to a non-reversible hoist, while a belt from the engine shaft leads to a pulley on the shaft of a 6 x 6-in. air compressor mounted on an extension of the channel-iron bedframe joining the other two machines. Both hoist and compressor are fitted with clutches so that either may be operated independently of the other.

The hoist is equipped with a drum capable of holding 700 ft. of ½-in. cable. Either end of the drum shaft is fitted with a niggerhead and the drum is provided with a lock so that it may be disengaged from the shaft while these niggerheads are in use. A band-friction clutch is mounted on the intermediate shaft controlling the operation of the drum and niggerheads and a powerful asbestos-lined foot brake equipped with a ratchet lock holds the load.

With a capacity of 60 cu.ft. per minute the compressor is of sufficient size to drive a hand rock-drill or riveting hammer, do calking, light drilling, reaming or similar operations. It is provided with a circulating pump and tank for cooling water, and a visible overflow showing the pump's performance. An unloader cuts out the compressor when the supply of air exceeds the demand. This device is adjustable and entirely automatic in its operation.



UTILITY COMBINATION ENGINE FOR SLOPE SINKING OR TUNNEL DRIVING

Internal-combustion engines even at coal mines have their uses. For a small temporary installation it is not advisable to bring in a boiler and at a permanent location it is not desirable to use the sizable boilers of the completed plant for the smaller purposes of slope or tunnel driving. With the internal combustion engine less attention and labor are necessary than with a steam plant. In any event for opening work some small class of machinery, steam or internal combustion, must be used for the purpose, so why not use the latter, which is more compact, lighter and less expensive?

Crankcase and cylinder of the compressor are separate castings. Lubrication is effected by the familiar splash system, obviating all necessity for lubricators, grease cups and similar devices. The air valves are of light sheet steel. They thus seat quickly with little wear and are extremely quiet in operation. No valve springs are necessary and the port openings being large, air enters and leaves freely with slight friction. This construction is patented.

Of course this combination of machines is not intended for heavy lifting or the driving of a fleet of tripod rock drills. If such work is to be performed heavier machines will be necessary. For comparatively light work, however, such as slope sinking in isolated localities, the erection of steel or wooden structures, the laying of sewer or water pipe and many other operations it can be employed to advantage.

At Gassy Mines Care Should Be Taken to Avoid Firing Gas on Surface

IN MANY plants where safety lamps are used and gas is plentiful much of the air in the return comes from places where the gas percentage is relatively low. The air from these places dilutes the gas from other quarters to such an extent that the aggregate is harmless. But that is not always the case.

Certain it is that if the air at the foot of the shaft is dangerously contaminated with methane the same air at the surface before it has mixed with the free air will be equally dangerous. Where the fan is stopped the amount of air passing through the workings is less, the methane content is still higher and the need for care at the surface is greater and extends over a larger area. At a recent meeting of the Midland Institute of Mining, Civil and Mechanical Engineers, of Great Britain, held at Sheffield, Mr. Hays said that at the Metropolitan Colliery in Australia, outbursts of gas frequently occurred of such severity that it was necessary to use safety lamps on the surface at night whenever the fan was shut down on account of the presence of gas at the shaft top. H. Rhodes added that at No. 2 pit of the Durban Navigation Collieries, Natal, there were two 18-ft. diameter circular shafts 560 ft. deep. In January, 1920, they had seventeen working faces 14 ft. wide. The fan was stopped at 12 m. on Saturday in order to take off the fan belt. At 2:30 p.m., when the work was in progress, a man standing in the fan house, outside the fan drift, close to the belt, lit a cigarette and the whole place blew up. The tops of both shafts were blown off, and the plant was absolutely wrecked. The quantity of air circulating at 12 m., when the fan was stopped, was said to be 120,000 cu.ft. per minute yet though natural ventilation diluted the gas the quantity emitted in 2½ hr. was enough to produce the serious results described.

THE BUDGET FOR the various municipal departments of the City of New York for 1922 provides for appropriations totalling $6,436,973.37 for the purchase of fuel. This is a decrease of $1,007,887.95 from the amount granted for this year. The Board of Education was hit the hardest in the pruning, its request being chopped $377,647.45. Other branches of the city government that suffered included the Department of Water Supply, Gas & Electricity, $127,420; Department of Public Welfare, $121,400; New York Public Library, $21,164; Department of Correction, $46,567, and the President of the Borough of Manhattan, $38,500.

Problems of Operating Men

Edited by James T. Beard

Calculating Room Switch, Fixed Points

Two Kinds of Room Switches in Mining Practice—Fixed Points Require Shorter Lead and Follower Rails Than Latches—Knowing Frog Number, Plat Switch to Scale and Measure Desired Parts

I HAVE watched with much interest the discussion started by the inquiry of a West Virginia mine foreman, *Coal Age*, Apr. 7, p. 629, asking for a good rule to determine the proper kind of frog to use and other data required in laying a mine switch. Although the inquiry does not state the kind of switch intended, several correspondents have assumed that the reference is to a room switch.

An Indiana trackman, replying to this inquiry in the issue, Aug. 18, p. 261, calculates the length of lead rail, for a track gage of 3½ ft., as 7 ft., for a No.-1 frog, and 14 ft. for a No.-2 frog. From his reference to a previous correspondent, who suggested using a guardrail at the fixed point of a room switch, I take it his own calculations are intended to apply to a similar switch with fixed points; but in that case they are wrong.

Both the guard and the follower rails of a switch that has fixed points are always shorter than the same rails in a latch switch. For example, for a gage of 3½ ft. and using fixed points, the length of lead rail for a No.-1 frog is 5½ ft. and for a No.-2 frog 10½ ft., instead of 7 and 14 ft., respectively, as he figures.

Switch with Fixed Points Not Treated by Authorities

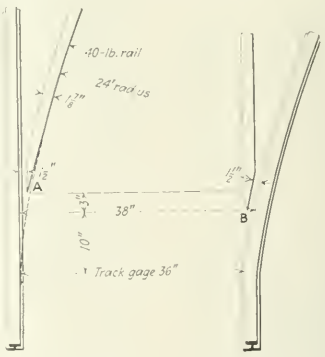
As far as I have been able to learn, authorities on mine tracks do not refer to the difference in the lengths of the lead and follower rails, in the use of fixed points and latches. The formulas commonly given apply only to latch switches. On this account, I have found it necessary to plat such a switch to a scale of, say 1 ft. to the inch, and make the necessary measurements on this plat, to determine the different dimensions required.

For the sake of practice, a short time ago, I platted a room switch on a 3-ft. track gage and using a No.-2 frog and a radius of curvature, for the lead rail, of 24 ft., which corresponded to a room switch laid in our mine. The plat was drawn to a scale of 1 in. to the foot.

In order to draw the curved rail on this scale, I used a yardstick with a graphophone needle stuck through it, for a center. A sharpened lead taken from a pencil was inserted at a distance of 24 in. from the needle. The length of the lead rail, scaled on this drawing, from the point of frog to where the outside of the lead rail touched the gage line of the straight rail, was 9 ft. 3 in.; and the measurement from the same point of frog to the fixed point on the straight rail, or what is called the "lead of the switch," was 8 ft. 8 in.

Going into the mine, I measured one of our manufactured switches of this kind and found they tallied with the measurements scaled from the drawing, except that the lead rail was 3 in. shorter than the measurement taken from my plat, the lead rail in the mine being 9 ft. in length.

I am enclosing a sketch giving the dimensions and relative position of the fixed points, as taken from a room switch in the mine. No explanation of the drawing is needed further than to say that the point *A* is made a little higher than the straight rail close to



ROOM SWITCH WITH FIXED POINTS

it, so as to lift the tread of the wheel clear of the main track when the car takes a switch.

It will be observed that in a distance of 10 in. before the carwheel reaches the fixed point *B*, on the side of the follower rail, the track gage has widened from 36 to 38 in., a difference of 2 in. As there is a clearance of only 1½ in. between the fixed point at *A* and the straight rail of the main track, there would be danger of the wheel flange striking the point *A* if that point was exactly opposite to the point *B*.

In order to avoid this taking place, the point *A* is set back 3 in. behind the point *B* and the fixed point *B* of the straight-rail is beveled off a half inch or more on the gage line. This enables the wheels to right themselves, by shifting the truck to the left before the other wheel reaches the point *A*.

In the same manner, the fixed point of the lead rail is beveled a similar amount on the gage-line side, this bevel extending back a somewhat greater distance to conform to the track gage as measured from the follower rail. In each case, the off sides of the fixed points are beveled to correspond to the gage line of the rails lying next to them.

My advice to the West Virginia mine foreman is that he inspect some of the successful mine-haulage systems to be found in his own locality, or elsewhere, and pattern his switches after those known to be giving satisfaction. The switch shown in my sketch is constructed of 40-lb. iron and adapted to the use of 8-ton gathering locomotives.

The practice here is for the miners to push their cars in the rooms, and the locomotive backs into each room-neck to get the cars standing there. No cars are allowed to stand on the entry. The fixed-point switch is used to enable the motorman to make better time, without fear of a switch latch being set for a room, which would mean disaster.

It may be of interest to state here that, using a 24-ft. radius of lead rail, a 3-ft. track gage, in an entry having a 4-ft. manway, or clearance, on the side of the track where the rooms are turned, if the room sights are set 6 ft. from the outby rib of a room and the fixed switch points set 18 ft. back from the line of the room sight, the track will center on the room sights and give a good clearance at the corner of the outby rib of the room.

Before closing, let me say with reference to guardrails at switch points, I have often seen them used in mule haulage and where the men pushed their cars. I have always regarded them as a temporary arrangement. In a fixed-point switch, the rails on the follower side, should not be lower than those on the side of the lead rail; but the straight track should be level at the switch points.

Bayview, Ala. JOHN WALLS, SR.

Standardizing Mine Switches

Need of standard mine switches—Poor track conditions discourage the men, prevent good work and increase expense of upkeep and operation.

GOOD track conditions in mines, particularly with reference to room switches, is a phase of mine practice that has not been given the attention it deserves. The reading of several recent letters, in *Coal Age*, discussing a number of details regarding room switches has suggested to my mind the growing need of standardizing these switches.

Most mining men will agree that the question of having good room switches is an important factor in the economy of mine operation. To get the cars in

and out of rooms quickly and without the risk of derailment is a matter that has always proved a source of trouble in mines where good switches are not provided.

There are many mines that still continue the use of old and worn-out switches that should have been scrapped long ago. There are mine foremen who, with an eye to keeping down the cost-sheet adopt any kind of makeshift means and methods in laying room switches. They fail to realize that this work requires good material and should be in the hands of expert trackmen who understand the laying of a switch.

Time and again we hear the argument advanced, or the reason given for having poor switches and bad tracks, that "the company cannot afford anything better." In truth, the fact is just the opposite, if it was only known. No company can afford to incur the expense and loss due to poor track and switches, which cause delay and are a constant expense to keep in repair.

Opinions Differ as to What Is a Proper Standard

Owing to the difference of opinion among mining men as to what constitutes standard track and switches, under the varying conditions in mines, this question will always be open for discussion. Practice differs in respect to the weight of rails to be used, the kind of frogs, dimensions of switch rails and the manner of laying the switch.

One mine, in my acquaintance, developed a daily capacity of 1,000 tons before the management began to realize that the use of 25-lb. rails and 6-ton locomotives on the main haulage road were far from being adequate. The light iron in use on the roads required constant repair to keep the tracks in order and it was finally decided to replace these light rails with 45-lb. iron.

Another lesson the company learned was the inability of workmen to accomplish results when out of humor because of being compelled to work under bad conditions. To the hard-working miner, or the industrious driver, the most annoying thing that can happen is the derailment of a car. About the hardest work a brakeman or driver has to perform is to lift the car again on the track.

Men Accomplish Double Under Satisfactory Conditions

This company found that men will accomplish twice the amount of work, with less fatigue, and find less fault when they work under satisfactory conditions. In the present instance, this was brought about by the company scrapping all out-of-date equipment and all makeshift material and putting in its place what was good.

Particular attention was given to track arrangements, the road was well ballasted and as many good ties placed under each switch as were required to afford a solid bed. It was a hard fight to bring certain of the officials to believe that this mine could be developed to produce 2,000 tons of coal a day. It required getting them out of the rut into which they had fallen.

The new management, however, continued to insist on a larger daily output, although it led to the resignation of a few of the mine officials. Since making these changes, however, the output has been nearly doubled, while there has been no material increase in the costs for repairs.

The haulage crews are actually accomplishing twice as much work with apparently less effort and are in far better humor, while hauling accidents have been decreased 60 per cent.

Pikeville, Ky. George Edwards.

Certified Men in Demand

Analyzing the so-called practical foreman—Province of the mine foreman—The truly qualified man possesses technical knowledge—Large operations employ only certified men.

PREVIOUS to the enactment of legislation requiring the certification of mine foremen and firebosses, the bituminous mines of this state were in charge of so-called practical foremen. The large majority of these men were practical *as bosses*, but could hardly be so considered *as foremen*.

If such men, as a class, were efficient foremen we ask: Why was it necessary to establish a standard of qualifications for that office? The fact is evident that standardization was required to increase the economy of coal production and secure greater safety in the mine.

Unfortunately, on the enactment of the Workmen's Compensation Law, in Pennsylvania, which became effective Jan. 1, 1916, the certification law was modified, authorizing coal operators to employ men in these positions who were, in their judgment, equally competent with certified men.

Need of Impartial Comparison in Selection of Men

It cannot be denied that many operators have assumed to exercise this right, by choosing men to serve as mine foremen and firebosses, from a purely personal and interested standpoint. However, to question these motives would be irrelevant, being based on pure assumption.

In order to make an impartial comparison between certified and uncertified men, we must seek to ascertain why the certification law was found to be necessary, and understand more clearly the relation of the operator to his employees acting in an official capacity.

It would appear to have been the generally accepted opinion of a large number of coal operators and mine foremen as well, that the chief if not the sole duty of a foreman is to produce coal. The measure of a foreman's ability was the ratio that the cost-sheet bore to the daily tonnage of the mine.

In most cases, it can be said, that little thought or attention has been given to the question of safety or the conservation of natural resources, which were matters of less importance than getting out the coal at a minimum cost.

Mine Officials Must Possess More Than Practical Knowledge

Then, it came to be realized that the true province of a mine foreman did not cease with getting out the coal, but in providing greater safety of operation and more economical extraction of the coal. The question was asked: Can the purely practical man, who has not made a study of the principles of mining, possess the qualities that fit him for fulfilling these conditions? It was answered in the negative.

To meet this demand, legislation was enacted requiring the examination and certification of men for the positions named. This enactment is concerned solely with regulations for safety to lives and the security of property, which are basic requirements of law for the protection of the people.

A foreman who is wholly practical, today, is a man who not only knows by experience what to do, but has learned how the work can be done in the safest and best manner. The man who does not possess this knowledge and use it in the discharge of his duties does not measure up to the capabilities required of the present mine foreman or fireboss.

Today, a truly qualified man must possess technical knowledge, which involves the knowing *how* and being able to *do* practical things in an intelligent way. He must not only know what and how to do, however, but must understand the reason *why*.

Are Examinations of Mine Officials Too Technical?

Objection is often heard to the effect that mining examinations are too technical, which may be true in some few instances. The discouraging feature to many men is the mathematics involved in solving mining problems. A successful foreman, however, *must* know the rudiments of arithmetic, which will enable him to work out most of the questions asked in mining examinations.

It is true, mine ventilation involves some simple formulas. Also, questions on pumping, haulage and timbering frequently require the use of formulas. Few foremen will deny that it is important to know how to solve these questions in the daily work of the mine.

Undoubtedly, there are many able men among our uncertified foremen; but it will be generally agreed that they would be more efficient if they possessed a knowledge of the science of mining in addition to their practical experience.

Finally, that the worth of the certified man is well established is demonstrated by the fact that, today, our largest coal operations will not employ uncertified men in official positions. Such operations have more at stake than would permit them to consider the slight reduction possible in the employment of uncertified men. Efficient management is of far more importance to them than the saving of a few dollars in the salary of a foreman or a fireboss.

Maple Ridge, Pa. I. C. Parfitt.

Renewal of Certificate

Requirement of renewal of certificate would keep men up to date and studying—Illinois law requires mine examined by certificated men.

LIKE my friend, W. M. Chambers, writing in *Coal Age*, Sept. 8, p. 382, I believe the only way to keep men up to date on mining matters is to require the renewal of the certificate every few years.

For a long time past, I have had this subject on my mind and have wondered that the law does not require

that a man should pass another examination and get a new certificate, from time to time. What seems strange to me, is that, in many mines, an uncertified man is allowed to have authority over men holding certificates.

From what has already been said by other writers, such is the case in Pennsylvania. In many of the mines in our state, the assistant mine manager (assistant foreman) holds no certificate and is neither qualified as a miner nor familiar with first-aid and rescue work.

Our law requires that the mine examiner (fireboss) shall be a certificated man, as well as the mine manager (foreman). It has been my desire, for some time, to study and secure a certificate and, for that purpose, I have been attending a mining school away from home.

Where the state mining law authorizes coal operators to employ men who have no certificate, it is not strange that men from the farm seek work in the mines and get positions for which they are not qualified, after working but a short time underground. It is no encouragement to men to study for a certificate when that is the case.

Springfield, Ill. A. F.

Do Years Make Safe Workers?

Past experiences — Conditions favor green hands who are given less dangerous work—More expected of old experienced men—Difficult to say which class make the safer workers.

I HAVE been reading the article entitled "Experience vs. Safety," *Coal Age*, Sept. 15, p. 422, and it revives some of my own past experiences in the training of men regarding their personal safety.

Going over these experiences of the past years in my mining career, I find that the green men have much in their favor. These men are rarely, if ever, put to work where there is danger, but are started in a comparatively safe place in the mine and given in charge of an experienced man as a "buddy."

On the other hand, more is expected of older and experienced men, who are supposed to look out for themselves. Where dangerous work is to be performed it is the experienced man that is chosen for the place. No foreman would think of putting a green man to work drawing pillars, braking on a motor trip, or assisting the operator of a chain machine.

Green Hands More Teachable Than the Older Workers

By way of comparison, I have found the green hand more teachable and willing to listen to the instructions given him concerning his personal safety. I have found that he will keep his side of the room better posted, than the old man who has him in charge. The new man seems to be more alert to danger and more careful to protect himself than one longer in the mine.

However, this attitude of a green hand soon wears off when he observes the actions and habits of his more experienced buddy. Each day finds the former more willing to take risks and less careful to set his posts promptly and keep himself protected. It is not long before he has fallen into the same indifferent manner of performing his work as men of longer experience.

The quality of self preservation is the first law of nature, but is not developed alike in all people. Regard for one's safety is more observable in proportion as the man is the more intelligent. Years of experience do not make safe miner workers. Men who have mined coal all their lives are frequently less capable of safeguarding themselves than the man new on the job.

Narrow Escapes of Old Miners

Talking with experienced miners, we often find that they have had a number of narrow escapes of which they seem to boast. They admit that they have been lucky in avoiding danger many times, and we are forced to conclude that it is not the result of their own care that they are still in the game. Long years on the job do not, therefore, mean a safe worker.

My conclusion is that, everything considered, it is difficult to decide which class of workers are actually the safer to employ. Experience in mining should make men more careful of their own safety; but here the old saying proves true, "Familiarity breeds contempt."

Of course, if it were possible to make a test between two mines—one employing green men exclusively, and the other operated by experienced miners—there would be no question but that the green men would lose by comparison.

Pikeville, Ky. George Edwards.

Inquiries Of General Interest

Rope Haulage in Slopes of Variable Grades

Haulage Rope Rubs Roof in Slope Where Grades Are Variable—Sag of Rope How Calculated—Will Shooting Down the Roof at Such Point Avoid the Trouble?

PLEASE explain the method of calculating the sag in a haulage rope, under the following conditions: We are hauling coal, with a 1⅛-in. rope, in a slope where the grades are variable. Starting from the surface, the slope dips for 800 ft. on a 11 per cent grade; then flattens out to a 4 per cent grade, for 500 ft., after which it falls on a 9 per cent grade to the inby parting.

The accompanying sketch shows the situation. When hauling a train of sixteen loaded cars weighing 3½ tons each, making a total of 56 tons, up the 9 per cent grade, starting from the inby parting at the foot of the slope, the rope rubs badly on the roof where the 4 per cent grade changes to 11 per cent. At this point, we have been using roof rollers, which need constant replacement.

It is thought that to shoot down a portion of the roof, here, sufficient to allow the rope to clear the roof would avoid the trouble. What we desire to know is how much the rope sags, at this point, when hauling a loaded trip of cars up the 9 per cent grade. Knowing this, it would seem possible to calculate the amount necessary to shoot the top so as to clear the rope and avoid the use of rollers in the roof.

We know that the rope sags in what is called a "catenary curve," but are unable to calculate the sag and will much appreciate the method being explained in *Coal Age*. H. M. K.

———, Tenn.

The first step in estimating the sag is to calculate the tension on the haulage rope when the engine is hauling a loaded trip up the 9 per cent grade. The necessary data have not been given; but we will assume a track resistance of, say 30 lb. per ton. The grade resistance, being 20 lb. per ton for each per cent of

PROFILE OF SLOPE SHOWING GRADES AND ELEVATIONS

grade, is 9 × 20 = 180 lb. per ton, in this case, which makes the total resistance of track and grade 30 + 180 = 210 lb. per ton of moving load.

The tension or load on the rope is, therefore, 56 × 210 = 11,760 lb. Knowing the total weight of the rope (W) the length of span (S) and the tension of the rope (T); the sag or deflection (D), at the center between the two points of support, is calculated by the formula

$$D = \frac{WS}{8T}$$

The section of rope in question reaches from the winding drum at A to the roller at B, making the span, S = 800 + 500 = 1,300 ft. The weight of 1,300 ft. of 1⅛-in. rope, at 2 lb. per lineal foot, is $W = 2 \times 1{,}300 = 2{,}600$ lb., and the tension or load on the rope is T = 11,760 lb. Substituting these values in the formula

gives for the deflection or sag, at the center of the rope,

$$D = (2{,}600 \times 1{,}300) \div 8 \times 11{,}760 = \text{say } 36 \text{ ft.}$$

The rope being supported at the two points A and B, the sag or deflection just found is measured, vertically, from the center of the straight line joining the two points. Calling the elevation of the point B, zero, the rise of the 4 per cent grade is $0.04 \times 500 = 20$ ft.; and the rise of the 11 per cent grade is $0.11 \times 800 = 88$ ft., making the total rise from B to A $20 + 88 = 108$ ft., which is the elevation of the rope at A. The elevation of the roof of the haulage road, at C, for a 6-ft. seam, is $20 + 6 = 26$ ft. The elevation of the sagging rope, at its center point, would be $\frac{1}{2}(108) - 36 = 18$ ft.

But, the point C, where the rope rubs the roof, is 150 ft. downgrade from the center point; and the fall of the straight line joining A and B, in this distance, is $150/1{,}300(108) = 12.5$ ft. From the center point, however, the rope approaches this line, approximately, as the square of the ratio 150:650; or $0.23^2 = 0.053$ of the total sag, which gives $0.053 \times 36 = 1.9$, say 2 ft., which makes the fall of the rope, from the center point to C, $12.5 - 2 = 10.5$ ft. This makes the elevation of the rope at C, $18 - 10.5 = 7\frac{1}{2}$ ft.

Assuming a Static Condition Rope Would Lie on Floor

It shows that, for a static condition and a pull on the rope of 11,760 lb., the rope would hang $26 - 7\frac{1}{2} = 18\frac{1}{2}$ ft. below the roof at C, if there was that headroom in the slope. Or, under a static condition and the estimated pull due to the loaded trip, the weight of the rope would cause it to lie on the rollers at the floor of the slope, the entire length of the roadway.

However, in rope haulage on a slope having variable grades the static condition never exists; but, where the grade changes as at C, the rope would bound violently up and down when hauling the loaded trip, owing to a dynamic condition resulting from the elasticity of the rope and variations in the tension or pull.

Again, we have assumed a track resistance of 30 lb. per ton of moving load. It frequently happens that, under bad conditions of track and rolling equipment, this resistance may reach 50 lb. per ton, which would increase the pull on the rope more than 1,000 lb. and give a less deflection than the estimated amount.

Moreover, if the rope has been in use for some time, its weight may be less than the estimated 2 lb. per lineal foot, which would again reduce the deflection of the rope at C and increase the trouble. In any case, however, it is not possible to estimate with any accuracy the amount necessary to shoot the roof, by calculating the catenary curve of the rope for a static condition.

Practically, the remedy for this trouble in hauling on a slope with varying grades is to straighten the grade as far as this is practicable throughout the length of the road, by lifting bottom for a distance on either side of B and ripping the roof for a distance on either side of C. This would mean, approximately, lowering the grade 5 or 6 ft. at B and raising it about 10 ft. at C. Conditions alone can determine whether or not this amount of work would pay.

Examination Questions Answered

Alabama First-Class Examination, Birmingham, July 25-28, 1921

(Selected Questions)

QUESTION—*What conditions are necessary in order to insure good ventilation in a mine producing 800 tons of coal per day?*

ANSWER—First, assuming the average output of coal is $3\frac{1}{3}$ tons, per man, per day, a daily output of 800 tons will require $800 \div 3\frac{1}{3} = 240$ men underground. To handle this output, under average conditions in the mine will require, say 10 mules. The Alabama Mining Law (Sec. 40) requires a circulation of at least 100 cu.ft. of air per minute, per man, 500 cu.ft., per mule, and as much more (Sec. 47) as the inspector shall decide is necessary for the proper ventilation of the mine. We will assume, therefore, in this mine, a circulation of at least 30,000 cu.ft. of air per minute. To insure good ventilation at the working face, this air must be distributed according to the requirements in each section, so as to dilute, render harmless and sweep away the noxious and explosive gases generated. Adequate means must be provided to maintain the required circulation in the mine, continuously.

QUESTION—*(a) Should a non-gaseous mine need as much air per man and mule as a gaseous mine? (b) What amount does the Alabama law require, per man and per mule? (c) Does it discriminate between gaseous and non-gaseous mines?*

ANSWER—(a) A mine generating gas in any considerable quantity will require more air, per man and per mule, than a mine free from gas. The Alabama law also authorizes the mine inspector to determine what volume of air, in his judgment, is required to properly ventilate the mine (Sec. 47).

(b) The law requires at least 100 cu.ft. of air per minute for each man and 500 cu.ft. per min. for each mule employed underground.

(c) In reference to mines generating gas in quantities sufficient to render the air explosive, the law requires: (Sec. 27) the mine foreman in charge shall hold a first-class certificate; (Sec. 30) the mine shall be sprayed or sprinkled; and (Sec. 32) a competent fireboss shall be employed, whose duty shall be to examine every working place in the mine before the men are permitted to enter for work, and to inform every man as to the state and condition of his working place, in respect to a dangerous quantity of gas therein. The examination for gas shall be made by the fireboss, every morning, using a safety lamp for that purpose. The fireboss is also required to leave a conspicuous sign or mark at the neck of each room and at a point 25 ft. distant from the face of each slope, drift or entry where gas has been found in dangerous quantity.

QUESTION—*Name a few important factors that must be observed, in order to insure efficient ventilation.*

ANSWER—A ventilator or other means of producing the required circulation of air must be provided that will be reliable. The air must be distributed according to the requirements in each section of the mine, and conducted to the working faces by means of doors, air bridges, stoppings and brattices, in such a manner as to sweep away the gases that would otherwise accumulate. Sufficient air must be provided and kept in circulation to render each working place healthful and safe. In addition to this, each working place must be carefully inspected, at frequent intervals during the day while the men are at work, especially if gas is being generated or the mine is producing much dust. Where safety lamps are in use, the velocity of the air at the working face should not exceed 360 ft. per min.

QUESTION—*If the water gage suddenly shows a rise of half an inch, without having increased the speed of the fan, what would you understand from this and what would be your movements? Answer fully.*

ANSWER—Assuming the fan is running at the same speed and the water gage is observed to take a sudden rise of half an inch, it is natural to suppose that the increased gage is due to a greater mine resistance, which is probably caused by some undue obstruction of the air current. This will call for an immediate investigation to ascertain the cause. It may be that a heavy fall of roof has blocked the airway at some point in the mine; or the obstruction may be caused by the movement of a particularly heavily loaded trip against the air, or the blocking of a crosscut with tool boxes.

QUESTION—*Name the different means of producing ventilation in mines; state what method you think the best and why?*

ANSWER—Natural ventilation is produced by a mine furnace heating the air in the upcast shaft, the furnace being located a short distance from the foot of the shaft. Also, in a few isolated cases, a waterfall in the shaft, or a windcowl at the surface, is used to produce circulation of air in the mine. These two types of ventilators are now obsolete. Mechanical ventilation is produced by some type of ventilating fan, either a centrifugal fan or a disc fan of the propeller type. The former is the more reliable in operation and commonly employed. In a few instances, ventilation is produced by a steam jet arranged at the foot of the upcast shaft. The centrifugal fan is the best type of mine ventilator in use.

Destination of Lake Cargo Coal Shipped During Season to End of September

WHERE the 18,117,000 tons of bituminous cargo coal shipped up the Lakes from the opening of the present season to Sept. 30 have gone is shown in the subjoined table, which also gives similar figures for 1919 and 1920. The year 1919 offers the better standard for comparison. Of the total tonnage, 14,162,000 tons, or 78.2 per cent, were shipped to American points, and 3,955,000 tons, or 21.8 per cent, to Canadian destinations. In comparison with 1919 there was an increase in total shipments of 436,000 tons, of which the larger part went to Canadian ports. The most important changes in distribution were the increase, both actual and relative, in shipments to points on Lake Superior and the decrease in shipments to Lake Michigan ports. The movement to American destinations on Lake Superior increased from 7,762,000 tons in 1919 to 8,650,000 tons in 1921, and was 47.8 per cent of the total shipments.

DESTINATION OF CARGO COAL DUMPED AT LAKE ERIE PORTS FROM OPENING OF SEASON TO SEPT. 30*

	1919		1920		1921	
Destination	Net Tons	Per Cent	Net Tons	Per Cent	Net Tons	Per Cent
American						
Lake Superior ports	7,762,000	43 9	5,684,000	38.9	8,650,000	47 8
Sault Ste. Marie and river points	276,000	1.6	424,000	2 9	265,000	1 4
Lake Huron-Georgian Bay ports	238,000	1.4	155,000	1 1	133,000	0 7
Lake Michigan ports	5,419,000	30.7	3,602,000	24 6	4,624,000	25.5
Port Huron and Detroit River	240,000	1 3	628,000	4 3	443,000	2.5
Lake Erie ports	59,000	0 3	28,000	0 2	47,000	0.3
Total American	11,994,000	79 2	10,521,000	72 0	14,162,000	78.2
Canadian						
Lake Superior ports	1,283,000	7 2	1,196,000	8 2	1,724,000	9.5
Sault Ste. Marie and river points	649,000	3 7	869,000	5.9	601,000	3.3
Lake Huron-Georgian Bay ports	577,000	3 2	613,000	4 2	681,000	3.8
Port Huron and Detroit River	287,000	1 6	305,000	2 1	289,000	1.6
Lake Erie ports	38,000	0 3	10,000	0.1	71,000	0.4
Lake Ontario and St. Lawrence River	853,000	4 8	1,090,000	7.5	589,000	3.2
Total Canadian	3,687,000	20 8	4,083,000	28 0	3,955,000	21 8
Grand total	17,681,000	100 0	14,604 000	100.0	18,117,000	100.0

*Statistics furnished by courtesy of Ore & Coal Exchange.

U. S. Chamber of Commerce to Educate the Public in Natural-Resource Problems

HALF of the difficulties of the natural resource industries would disappear if the public were well educated in their problems. This is the opinion of W. DuB. Brookings, the head of the natural resources production department of the Chamber of Commerce of the United States. This department is preparing an active program in an effort to render constructive service to the raw-material industries. In that connection it was pointed out that this work is supplementary to that of the various trade associations. It is believed, however, that this nationwide organization of business men can render great assistance to the industries and to the public by conducting a campaign of education intended to enlighten the public on the vital problems of natural-resource activities.

The organization of the natural resources department is just being perfected. An advisory committee has been named, of which C. S. Keith, president of the Central Coal & Coke Co. of Kansas City, is chairman. The other members of the advisory committee are J. H. Ross, president, Exchange Supply Co., Winter Haven, Fla.; J. E. Spurr, editor, *Engineering and Mining Journal*, New York; Christy Payne, president, Peoples and Hope Natural Gas Co., New York; E. T. Meredith, former Secretary of Agriculture, Des Moines, Iowa; Sidney J. Jennings, vice-president, United States Smelting, Mining & Refining Co., Boston, Mass.; R. V. Norris, mining engineer, Wilkes-Barre, Pa.; Van H. Manning, American Petroleum Institute, New York, and William N. Davis, president, Midcontinent Oil and Gas Association, Bartlesville, Okla.

It is the opinion of Mr. Brookings that nothing is of more importance in this day with its tendencies toward Federal regulation of business than to obtain for the natural-resource industries a high degree of public confidence. This, he believes, can be achieved if the public knows the real facts in regard to these industries. Unless some means can be devised to acquaint them with the real facts these industries are in constant danger of being wrecked by unreasonable demands on the part of the public. The last few years have shown how quickly unreasonable public demands have resulted in regulatory legislation.

Mr. Brookings, who is to direct the natural-resource work of the Chamber of Commerce of the United States, is a retired California lumberman. Throughout his business career, however, he has been interested in coal, oil, natural gas, waterpower and other natural resources. He has made a personal survey of the timber and power resources in both the United States and Canada.

High-Priced Goods Completely Liquidated Expect Rivival of Business and Prices

AFTER personal visits to a number of coal-consuming centers and a telegraphic survey of the situation among wholesalers, George H. Cushing, managing director of the American Wholesale Coal Association, has reached the following conclusions:

(1) The stocks of high-priced goods of all kinds have about been worked off. Manufacturers everywhere are buying raw material only after they have orders for the finished product, manufacturing the raw material into a finished product as quickly as possible, and are making shipments almost instantly. Everywhere there is a definite feeling that price liquidation has reached bottom on the present wage scale. Everywhere there is a feeling that business activity is starting to resume and there is an expectation of a price recovery.

(2) The stocks of coal in the hands of retail dealers are equal to November demands for at least two weeks and range in some places as high as three weeks. Almost uniformly public utilities have on hand a thirty-day supply of coal. The householders have taken coal into their own bins to the extent of between thirty and forty per cent of their winter's requirements. Stocks on hand by industrial plants range from practically nothing at all up to a supply equal to 100 days.

(3) There was no general belief that the railroad strike would occur. There was a little precautionary buying but not much. In one or two places there were slight price advances. Generally the market was dull.

(4) In Ohio, western West Virginia and eastern Kentucky there is already a shortage of cars. It is rather surprising to see that railroad loadings of all commodities have been for three weeks on the basis of 915,000 cars per week, which is close to what have been considered prosperous times.

Cure High Prices and Irregular Output by Storing Coal, Says Harry Taylor

IN INDORSING the statement made at Chicago by Director Smith of the U. S. Geological Survey in regard to leaks in the coal industry, Harry Taylor, former president of the National Coal Association, in a letter to Dr. Smith says among other things:

"You have covered that situation in a clear and concise manner and it is generally understood by operating men that the buyer of coal is often unwilling to recognize the invisible increase in cost caused by lack of running done and irregular distribution of work at mines. Again this is a matter the public can cure if we can ever arouse the public itself to interest in a more regular placing of orders throughout the twelve months of the year. I read the letter from President Harding to the Mining Congress in which he suggests storage. I believe that if the consuming public thoroughly understood the economic waste involved in the irregular distribution of coal and the saving that could be made in the country if the industry could function every month in the year it would give serious consideration to the storage of coal and its direct effect upon the cost of production."

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

FURTHER revival of business has occurred in the last few weeks, but the gains have not in any sense assumed the proportions of a boom, according to the *Guaranty Survey* for November. "In part the present volume of business reflects merely seasonal production and trade," the *Survey* continues, "but when allowance is made for this condition it appears that substantial progress is being made toward normal business activity, which should be realized if the foreign and domestic clouds on the horizon are cleared.

"The tendency of group prices to resume more nearly their pre-war relative positions represents an approach to conditions contributing to the revival of general business activity.

"It is too early to predict with assurance a forthcoming stabilization of prices at approximately present levels, but the fact that in recent months in many other countries as well as in the United States there has been a noticeable tendency of general prices either to rise slightly or to remain comparatively unchanged supports the belief that any further changes in the immediate future should be comparatively slow.

"The country's daily pig iron output, which in August for the first time since October, 1920, showed an increase compared with the production of the previous month, made a further gain in September. The increase in the tonnage of unfilled orders of the Steel Corporation, as reported for Sept. 30, representing the first monthly increase since July, 1920, is further evidence of definitely better business for the iron and steel industry. Contracts awarded in September reflect substantial gains in activity in the building industry.

"The early reduction of railway rates is presaged by the steps in this direction already taken by the Executive Committee of the Association of Railway Executives and the Interstate Commerce Commission. Apparently no horizontal percentage reduction is contemplated, but rather such readjustments downward of particular rates as will substantially reduce the average. The immediate effect of reductions on the earnings of the roads would doubtless be adverse. What may reasonably be expected is that the stimulus to business in general resulting from reduced transportation costs, especially for basic commodities and foodstuffs, would in the long run so increase the volume of tonnage carried as to counterbalance the immediate loss of revenue."

Freight Loadings Gain 56,258 Cars

Loading of revenue freight on American railroads during the week ended Oct. 22 totaled 962,292 cars or 56,258 cars more than during the previous week, according to reports by the Car Service Division of the American Railway Association. This was within 46,526 cars or 96 per cent of the number loaded during the corresponding week in 1920 and only 14,759 cars less than were loaded during the corresponding week in 1919. Comparisons show that the loading for the week was the largest since Oct. 30, 1920. The gain over the week before was due principally to the increased movement of coal and also merchandise and miscellaneous freight, which includes manufactured products, although increases were reported in the loading of all commodities.

The total number of freight cars idle on railroads on Oct. 23 was 294,404, or a reduction of 21,973 as compared with the total on Oct. 15. The reduction was due almost entirely to increased demand for coal cars. Tabulations showed 49,908 surplus coal cars in good repair on Oct. 23, compared with 68,383 on Oct. 15, or a reduction within that time of 18,475, while there were 26,624 surplus box cars immediately available, a reduction of 858 compared with the total at the middle of the month.

Army of Idle Is Dwindling

That the army of idle men and women is gradually dwindling is shown by government reports, which also indicate less labor unrest than a month ago. Secretary of Commerce Hoover, directing the unemployment canvass, expresses confidence that an actual survey now shown by government reports, created by the recent conference, will show the situation less acute than at first suspected. Mr. Hoover believes the number of men in need of jobs is greatly below all previous estimates.

Employs 2,000 More Needleworkers

M. E. Smith & Co., of Omaha, manufacturers of men's and women's garments, with factories in a dozen Western cities, are so confident of returning business that on Nov. 2 they ordered all their factories to resume work with full forces and to employ 2,000 additional sewing women. The Indianapolis factory was ordered to place 500 women at work immediately and the Omaha factory will add another 500.

Steel Mill Resumes Operations

The Parkersburg Iron & Steel Co., Parkersburg, W. Va., has resumed operations after a curtailment of several months according to the *Iron Age*. Employment will be given to about 500 men.

44 Tin Plate Plants Reopen

Officials of the McKeesport Tin Plate Co. announced that the forty-four mills of the plant would be operated full time beginning Sunday, Oct. 31, and that there was assurance of continuous operation until Jan. 1, 1922. For the past few months the plant has been operated only in part, but with resumption in full about 3,000 men will be employed.

So. Pac. Places Big Rail Order

One of the largest orders for steel rails placed in many months was announced Oct. 29 by the Southern Pacific R. R. The order was for 44,600 tons of rails for 1922 delivery, placed with the Tennessee Coal & Iron Co., a subsidiary of the United States Steel Corporation. The contract was said to bring the total of orders for the Steel Corporation, since it reduced the price of rails $7 a ton to $40 on Oct. 22, to approximately 125,000 tons. The normal requirements of steel rails for the carriers of the United States is approximately 2,000,000 tons annually. During recent years the roads have been economizing in the purchase of rails, and as a result are far behind in their normal requirements. Consequently steel men look for an unusual demand for rails next year.

Geological Survey Issues Report on Proposed Superpower System

THE U. S. Geological Survey has just issued a report on the proposed superpower system for the region between Boston and Washington, under the title Professional Paper 123. An appropriation of $125,000 was made by Congress for the purpose of the survey, and $26,000 additional was contributed by utilities and industries in the superpower zone. The investigation was begun July 1, 1920, and was completed within a year.

The superpower project makes its appeal to the general public as a means of saving coal and of increasing the productivity of labor. The nation's business demands greater and cheaper production and better and cheaper transportation, the report states, and the electrification of industries and railroads is the answer to that demand. To connect all the large generating plants—both steam and water power—in one great system means more and cheaper electric current, because each ton of coal will be used to the best advantage and our idle rivers will be made to turn wheels, especially in the regions farthest removed from the coal fields.

Looking ahead to 1930, with the increased demand for power that can then be reasonably expected, the total coal saved annually under the unified system, it is stated, will be fifty million tons. Under motor operation the industries could save $190,000,000 annually in their power bill and could make a greater output of product.

The North Atlantic coast region, to which it is proposed to supply more and cheaper electric current, was selected for this study because its industries and railroads have the maximum requirements for power. The superpower zone has relatively small hydro-electric resources and maximum industrial-power requirements. Fortunately some of the best coal deposits in the country lie near this great industrial territory, and a prime economic purpose should be so to conjoin the hydro-electric supply of power to the steam-electric supply as to produce a maximum of energy for a minimum investment of capital and a minimum operating expense, and at the same time to conserve the rapidly disappearing cheap fuels of the Appalachian coal fields.

Economy of Investment and Operation Sought

The superpower system comprehends also a plan of power production that includes the generation of electricity by steam at tidewater and on inland waters where a sufficient quantity of condensing water can be obtained, and also the utilization of all hydro-electric power that may be economically obtainable from rivers within the zone or within transmission distance of it. The electric power so generated will be co-ordinated through a system of interconnected transmission lines, the potentials of which will be on the order of 220,000 and 110,000 volts.

Economy of investment and economy of operation are the two ends sought by this plan, the outstanding feature of which is a great network of inter-connecting transmission lines which makes a system out of many units. This transmission network and its substations would require $104,000,000 by 1930, and the total investment cost of the system the same year is given by the engineers as $1,109,564,000, of which $693,218,000 would be new money, for more than $400,000,000 worth of existing steam-electric and hydro-electric plants are retained in service.

The question of railroad electrification must be decided according to density of traffic, the report states, and so it is that of the 36,000 miles of main line, yards and sidings in this superpower zone, only about 19,000 miles could be profitably electrified. This electrification would cost nearly half a billion dollars, but it would save from 11 to 19 per cent on the investment, or an average of 14 per cent. Electrification is the next step in railroad expansion absolutely necessary to increase both the capacity and the efficiency of our transportation system. Incidentally, the annual saving of 9,000,000 tons of coal by the railroads would greatly increase the available car supply.

In his letter to the President, Secretary Fall says: "Had the superpower project outlined in this report been in operation in 1919 it is believed that twenty-five million tons of coal could have been saved, and with the rapid growth expected in the present decade the saving possible in 1930 by the interconnected electrification of industries and railroads would be fifty million tons."

Will Sell Coal Lands of Reading for Taxes

BECAUSE Dauphin County, Pennsylvania, increased the assessments on the coal lands of the Philadelphia & Reading Coal & Iron Co. 357 per cent that company refused to pay the land taxes levied in 1918 in Rush, East Hanover and Middle Paxton townships. The county commissioners plan to offer the coal land for sale at the next County Treasurer's sale to be held in August, 1922. The commissioners have taken the same stand regarding a small tract of coal land assessed at $32,288 in the names of J. J. Dull and W. Hoff.

The coal company has paid taxes on the valuations existing prior to the establishment of the increased valuations at the last triennial assessment and these payments have been credited from year to year as on account.

Prior to 1918 the valuation assessments on the Dauphin County anthracite lands of the Reading ran about $300,000, but the new valuation placed the holdings of the company at $1,372,755. The tax on the increase having been returned as unpaid, the commissioners hold that this action acts as a lien against the property. The commissioners have not acted during the past few years because of a similar situation in Lebanon County, where the assessment disputes have been carried to the courts. The decisions in those cases, however, have not been rendered.

The assessments against the several coal tracts owned by the Reading Company, as made by W. K. Sekol, mining engineer employed by the commissioners, are as follows: Rush Township, 5,957 acres of land, of which 871 acres contain coal, valuation, $276,028; Middle Paxton Township, 2,710 acres of land, 1,389 acres of coal, valuation, $391,386; East Hanover Township, 4,570 acres of land, 1,067 acres of coal, valuation, $705,340.

Urging Patrons to Obtain their supplies of winter coal at once, S. Ennes, general manager of the Wheeling & Lake Erie Railroad Co., has issued an appeal to residents of towns along the road to order their fuel at once. He said the railroads have plenty of cars with which to handle the coal and therefore are in a position to give immediate service which may not be possible if a sudden cold snap brings an excessive demand. The notice says: "A careful study of the domestic coal situation develops the fact that a very small percentage of the coal necessary to meet with the requirements of the coal consumers has been purchased; hence it is a self-evident fact that the first appearance of cold weather will result in there being a rush to secure fuel, which undoubtedly, will cause a shortage of such fuel for immediate use, thereby causing no little suffering on account of lack of fuel for heating purposes."

Subcontracting Adopted in Mexican Mines.—Work has been resumed in the San Juan mine of the American Smelting & Refining Co., near Durango, Mexico, following a settlement between officials of the plant and representatives of the union miners over wage matters. The miners went on strike last May, when an attempt was made to reduce wages, and till recently did not return. The settlement is in the form of a contract, with the contractors hiring and paying their own help and delivering coal to the headings, from which place the smelter employees will move it through a tunnel and over a tramway to the tipple. About thirty men are affected.

According to statistics just made public by the Interstate Commerce Commission, the consumption of coal in road service on 165 steam roads, exclusive of switching and terminal companies, in August, 1921, was 2,479,005 net tons, compared with 2,768,783 in August, 1920. The same roads in the eight months ended with August this year consumed 20,538,315 net tons, compared with 22,299,001 tons in the same period of 1920.

Injunction Upset Operators and Union: Strike Not Likely To Be Successful

THERE is ample evidence in Washington that operators in the unionized coal fields are not going to find fault with the non-union operators for applying for the injunction which Judge Anderson granted. Most operators in the unionized fields always have been opposed to the collection of the union dues, and the belief that the practice is illegal has been growing. There has been general realization of the fact that recognition of the check-off by the President of the United States, by the Fuel Administrator and other officials has in no way made it legal. Judge Anderson's pronouncement temporarily placed all operators, including those outside the immediate jurisdiction of his court, in an embarrassing position.

The position of the unions threatened to be even more embarrassing. They could not surrender the check-off without a blow. At the same time they were in the worst possible position to be called upon to use the strike weapon. It would not be a strike against the operators; it would be a strike against Judge Anderson and the judicial authority of the nation. A strike at this time would not affect the anthracite region and it is known that the aid of the anthracite workers was being relied upon strongly in the plans for the strike next spring.

It is believed by coal specialists in Washington that while a strike could be made almost completely effective in Illinois, Indiana and Ohio, there would be much difficulty in making it effective in Pennsylvania, West Virginia, Kentucky, Tennessee and Alabama. In the unionized sections of those states it is believed that the men would go out during the initial stage of the strike, but would not be likely to stay out. This belief is based largely on the fact that miners generally are not in a good position to strike after a long period of slack work, and as a result it is believed that there would be a gradual resumption of work in the union fields in those states where the union is weakest. It is generally admitted that were a general strike to be precipitated at this time the chances would be very much in favor of the operators coming out on top.

The statement is heard frequently that the operators would welcome a strike under conditions such as existed after the pronouncement of Judge Anderson's opinion. This is not the case, judging from the opinions which have come into Washington from numerous operators.

There is evidence that many miners would prefer to have more work at a smaller wage with the resulting increase in the aggregate of income. That advantage to the operator, however, would not compensate for the losses he would be forced to sustain by the strike and the danger he would incur of bringing down regulatory legislation upon the industry. It is thoroughly understood that a strike at this time, on the threshold of winter, would bring with it powerful demands for relief via the route of Federal legislation. The situation so far as the public is concerned has been measurably improved by the large additions made to stocks since the announcement of the threat to call a railroad strike. Incidentally the Indianapolis injunction came just at the time to prevent a material slump in coal production. The loadings the first of last week indicate that a rapid decline was about to set in but production seems to have recovered sharply during the latter part of the week ended Nov. 5.

There is a feeling in many quarters outside of labor circles that a court injunction is no way to settle labor disputes. This process is cumbersome and slow and many hold it to be an entirely impracticable remedy for an acute situation requiring prompt action. Secretary Hoover points to this as only another indication that something fundamental must be done in the matter of industrial relations. He has pointed out the utter fallibility of attempting to penalize strikers in a statutory manner. It is his opinion that a type of tribunal can be evolved to pass on matters of industrial relations and that public opinion can be relied upon to insist upon compliance with the mandates of its tribunal.

Operators recognize that the union cannot be killed in the Central Competitive Field. The check-off is not a requisite for its maintenance. An example is had in the anthracite region, which is entirely unionized and has no check-off. It is obvious, however, that the loss of the check-off in the outlying fields would be a serious handicap to the progress of unionization.

Hampton Roads Shippers Ask Readjustment Of N. & W. Demurrage Charges

TWENTY-ONE coal shippers doing business at Hampton Roads have instituted proceedings before the Interstate Commerce Commission seeking readjustment of demurrage charges on the Norfolk & Western Ry. and a recovery of excess payments they assert have been already made to the amount of approximately $500,000. Construction of tariffs covering demurrage charges on coal shipped to the Lamberts Point Coal Exchange by members of that institution is involved in the proceedings. The bill was filed with the commission by K. K. Gartner, of Washington, attorney for the shippers, and the proceedings are the result of a conference of coal shippers held in Norfolk early in October at which a committee headed by W. W. Houston, of Norfolk, was appointed to institute the action.

The proceedings ask an investigation to determine the basis of the present demurrage charges and to construe the tariffs to ascertain if they are being applied properly. If the construction placed on the tariffs by the railroads is correct, shippers ask to have it amended so as to allow credit for cars dumped in advance of the expiration of five days' free time allowed before demurrage is assessed. The bill also seeks reparation for excess payments and relief from payment of outstanding bills in excess of what the complainants feel the charges should be.

The contention of the shippers is set forth in a memorandum prepared at the Norfolk conference in October. It points out that the Lamberts Point Coal Exchange is the real consignee of all coal shipped to its tidewater pools and that demurrage against members of the exchange must be computed collectively and assessed proportionately. The memorandum says that the Norfolk & Western tariff provides for a computation of demurrage on the basis of car detention and assessment against individual members but that it has in error computed the charges on a basis of credits in different pools from the date of car arrivals and not upon the actual detention of cars. Even should car detention be the proper basis of demurrage, the memorandum says, members of the exchange should be allowed credit for cars dumped before the expiration of free time.

The coal companies joining in the proceedings before the commission are the Smokeless Fuel Co., Charleston, W. Va.; Castner, Curran & Bullitt, New York; Cosgrove & Wynkoop Co., New York; Dexter & Carpenter Co., New York; Emmons Coal Mining Co., Philadelphia; Fort Dearborn Coal & Export Co., Norfolk; Hasler & Co., Norfolk; Jewett, Bigelow & Brooks, Detroit; Kentenia Coal Co., Cincinnati; Lake & Export Coal Corporation, Huntington, W. Va.; W. A. Marshall & Co., New York; Matlack Coal & Iron Corporation, New York; Raleigh Smokeless Fuel Co., Beckley, W. Va.; C. H. Sprague & Son Co., Boston; Virginia Smokeless Coal Co., Tazewell; George E. Warren Corporation, Boston; Weston Dodson & Co., Bethlehem, Pa., and West Virginia Coal Co., Richmond.

Senate Defeats Smoot Sales Tax Amendments

BY votes of 43 to 25 and 46 to 25 the Senate defeated the Smoot sales tax amendments to the tax bill, the former proposing a "manufacturers' and producers' tax of 1 per cent upon every commodity manufactured or produced, when sold, leased or licensed for consumption or use without further process of manufacture," and the latter a business sales tax of one-half per cent on sales of goods, wares or merchandise manufactured or purchased by such person for sale, the production of coal to constitute manufacture.

Senator Lenroot, of Wisconsin, was the principal opponent of the sales tax, directing his remarks mainly to the tax on coal. He said purchasers would be compelled to pay it.

September Bituminous Production by States, As Estimated by Geological Survey

ORIGIN, by states, of the 35,127,000 tons of soft coal produced in the month of September is given in the subjoined table. The figures are estimates by the Geological Survey based upon records of cars loaded by the principal coal-carrying roads, and checked against what limited statistics of current mine production are available from state and local sources. While the estimates of total production are shown by experience to be within 2 per cent of correct, the state estimates are subject to a much larger margin of error. The principal obstacle to accuracy in the preparation of these estimates is the necessity for arbitrarily apportioning between states the tonnage of roads originating coal in more than one state.

ESTIMATED PRODUCTION OF SOFT COAL, BY STATES, JULY TO SEPTEMBER, 1921

(In Net Tons)

	July	August	September	Year to Sept. 30
Alabama	870,000	1,005,000	1,045,000	9,081,000
Arkansas	147,000	157,000	152,000	1,236,000
Colorado	*663,000	777,000	862,000	6,586,000
Illinois	4,841,000	6,196,000	6,325,000	49,395,000
Indiana	1,360,000	1,720,000	1,750,000	14,722,000
Iowa	354,000	456,000	483,000	4,073,000
Kansas	396,000	426,000	433,000	3,69,000
Kentucky	2,311,000	2,562,000	2,601,000	21,371,000
Maryland	158,000	162,000	157,000	1,700,000
Michigan	77,000	102,000	94,000	805,000
Missouri	319,000	332,000	350,000	2,988,000
Montana	226,000	307,000	351,000	2,327,000
New Mexico	192,000	189,000	188,000	1,783,000
North Dakota	35,000	50,000	63,000	411,000
Ohio	2,615,000	2,868,000	2,715,000	23,390,000
Oklahoma	198,000	235,000	221,000	1,772,000
Pennsylvania	*8,175,000	9,158,000	9,161,000	81,802,000
Tennessee	330,000	387,000	395,000	3,364,000
Texas	96,000	84,000	74,000	780,000
Utah	267,000	412,000	442,000	2,850,000
Virginia	385,000	389,000	445,000	3,727,000
Washington	172,000	191,000	231,000	1,894,000
West Virginia	5,659,000	5,654,000	5,796,000	51,104,000
Wyoming	529,000	709,000	784,000	5,423,000
Other States†	10,000	10,000	9,000	89,000
Total bituminous	30,385,000	34,538,000	35,127,000	296,342,000

* Revised from last report. † Includes Alaska, California, Georgia, Idaho North Carolina, Oregon and South Dakota.

PRODUCTION OF SOFT COAL, BY GROUPS OF STATES, 1919-1921

(In net tons)

Region	First Nine Months of 1921	Year 1921 at Same Rate as First Nine Months	1920	1919
Northeast (a)	176,835,000	235,780,000	331,510,000	300,420,275
Southern Appalachian (b)	12,482,000	16,643,000	23,500,000	20,803,263
Eastern Interior (c)	71,187,000	94,916,000	130,800,000	90,407,132
Western Interior (d)	14,519,000	19,359,000	29,930,000	21,741,003
Mountain States and Northwest (e)	21,286,000	28,381,000	40,680,000	32,381,012
Total (f)	296,309,000	395,079,000	556,420,000	465,752,685

(a) Michigan, Pennsylvania, Ohio, West Virginia, Maryland, Eastern Kentucky, and Virginia. (b) Alabama, Georgia, and Tennessee. (c) Illinois, Indiana, and Western Kentucky. (d) Iowa, Kansas, Missouri, Oklahoma, Arkansas and Texas. (e) Colorado, New Mexico, Utah, Wyoming, Montana, North Dakota, and Washington. (f) Alaska, California, Idaho, North Carolina, Oregon, and South Dakota not included.

Two Thousand Gather at Institute Banquet

ON THURSDAY evening, Oct. 27, the Hazleton Mining Institute held its annual banquet in the girls' dining room of the Duplan Silk Mills of the city of Hazleton, Pa. It was probably one of the largest gatherings of its kind ever held in the anthracite fields. Places were set for 1,700 men and fully three hundred had to wait until the others were served. Men were present who in industrial life filled all positions from president to door boy. All nationalities in the anthracite field were represented. Many could hardly understand English.

Owing to the sickness of John W. Crooks, president of the institute, Robert A. Evans, the new superintendent of the Hazleton division of the Lehigh Valley Coal Co., presided at the banquet. The invocation was made by the Rev. John Harvey.

Following the dinner Mr. Evans acted as toastmaster and introduced the speaker of the evening. Mr. Evans in his introductory remarks made some interesting statements in relation to the institute. He said that there were more than 2,400 members, comprising not only the men who conceived the plans of mining but also the men who cut and loaded the coal. At the meeting of the institute on Dec. 12, 1908, only twenty-nine men were present. At the banquet in 1911 425 men attended, whereas on this occasion 2,000 men were present of the 2,400 who were enrolled.

Mr. Evans added that the larger and cleaner beds of coal were becoming rapidly exhausted and that they had to turn to the thinner and dirtier beds. Pumping lifts were higher and the amount of water raised was greater, transportation was over greater distances, and coal had to be prepared more carefully, as the market was more exacting. No longer, therefore, can the officials in selecting foremen choose men promiscuously from the body of the employees. The mine boss must know mining and have a degree of education. To supply this was the purpose of the institute. He spoke of the classes provided and of the lectures that were given at the regular meetings of the institute.

At the conclusion of his talk he introduced John Dennis Mahoney, of Philadelphia, who spoke of democracy and then introduced Major Victor Bruce Grant, formerly of the English army and now a correspondent of the Associated Press. The banquet was ended with the singing of "The Star Spangled Banner."

Hollenback Shaft Catches Fire

A DISASTROUS fire occurred at the Hollenback colliery of the Lehigh & Wilkes-Barre Coal Co. on Oct. 29, the cause of which is so far unknown. The fire apparently started in the shaft and is under control. For a while the flames shot out of the shaft to a height of 75 ft. The fire still continues at all the level landings. The breaker is built adjoining the shaft and if it had not been for the firemen of the city of Wilkes-Barre, where the shaft is located, and the protection afforded by a sheathing of iron, the breaker could not have been saved. The shaft timbers are burned down to the collar and it would appear as if they will all have to be replaced. The shaft has four compartments for hoisting and one for pumping.

September Coal-Mine Fatalities Reduced 45, or 0.06 Per Million Tons

ACCORDING to reports received by the U. S. Bureau of Mines from the various state mine inspectors, 152 men were killed during September in and about the coal mines of the country, as compared with 197 killed in the corresponding month of 1920. The 1921 figures show a decrease of 45 fatalities, or about 23 per cent, from the record of the same month of last year. Based upon an estimated output of 42,229,000 net tons in September, 1921, the fatality rate is 3.60 per million tons produced. The mortality rate during September last year was 3.66 and the production of coal was 53,810,000 net tons. The average number of lives lost during September of each year from 1913 to 1920 has been 189. The production of coal has averaged 51,886,000 tons, showing a fatality rate of 3.64 per million tons as representative of the month of September for the past eight years.

During the first nine months of the present year 1,455 men were killed by accidents at coal mines, against 1,686 killed during the corresponding months of 1920, a decrease of 231 fatalities, or 14 per cent. These figures represent a fatality rate of 4.01 per million tons mined in 1921 and 3.56 per million tons mined in 1920.

Of the total of 152 fatalities during September, 30 occurred at the bituminous coal mines in Pennsylvania, a decrease of 115 from September a year ago; 25 in West Virginia, a decrease of 6; 14 in Illinois, a reduction of 3; 6 in Kentucky, a reduction of 8; 5 in Ohio, a reduction of 4; 4 in Indiana, a reduction of 8; 5 in Ohio, a reduction of 13; 5 in Alabama, a reduction of 4; 3 in Indiana, a reduction of 12. At the anthracite mines in Pennsylvania, 41 men were killed, as against 20 during September of last year.

THE LABORER'S HIRE is not always determined by the laborer's ire.—*Columbia Record.*

THE INDUSTRIAL UNREST doesn't impede our progress nearly so much as the industrial rest.—*Columbia Record.*

Court of Appeals Temporarily Lifts Anderson Injunction Against Check-Off; Strike Threat Delayed

CONSEQUENT on a decision of the Federal Court of Appeals at Chicago which suspended the injunction issued at Indianapolis by Judge A. B. Anderson, forbidding the check-off, the general strike of coal-mine workers which seemed imminent earlier in the week is averted. It seems likely that no trouble will be experienced anywhere, although the operators, feeling, from testimony recently given, that the check-off is a thing of infamy which no good citizen should pay, are anxious to cease to deduct it from the wages of their men. If the check-off is used to buy rifles to convert non-union men into union men by murder and maiming it is not the part of an operator even to act under compulsion as a go-between in such a transaction. This sentiment makes it difficult for the operators to understand the action of the court Nov. 14 in Chicago and to wonder whether on Nov. 16, when that action comes under review, Judge Anderson will not be sustained.

However, Indiana operators will re-establish the check-off, the United Mine Workers of America having been so notified by P. H. Penna, secretary-treasurer of the Indiana Bituminous Coal Operators Association. William Mitch, who occupies the same position with District No. 11 (the State of Indiana), says that all the men will return to work.

Miners Work Pending Decision of Court of Appeals

In the other districts the tendency is to work while awaiting the final decision of the Court of Appeals. Both operators and men seem firmly convinced that it is best to find out how the ground stands before precipitating a struggle. What that decision will be it is hard to forecast. William A. Glasgow, of Philadelphia, and Henry Warum, of Indianapolis, who appeared for the union before the Court of Appeals, which included Judges Baker, Alshuler and Evans, laid stress on the fact that the injunction violated a "legal contract" and declared that neither he, Mr. Glasgow nor Mr. Lewis could undertake for the union that there would be no more unionizing in West Virginia. Neither of these arguments seems likely to have much influence with the court, for the contract has yet to be proved legal, and if Messrs. Glasgow and Lewis cannot prevent a violation of the law, then the court must. The Court of Appeals in making its decision did not have the benefit of copies of the evidence given before Judge Anderson or of the affidavits in relation to the matter at issue. It has ordered that the clerk of the District Court at Indianapolis forward these documents to Chicago.

Passing in review the events of the week: The injunction of Judge Anderson was followed by a telegram sent out from the headquarters of the United Mine Workers at Indianapolis, Nov. 1. In this dispatch, which was addressed to union officials in Pennsylvania, Ohio, West Virginia, Illinois, Indiana, Missouri, Kentucky, Michigan, Iowa, Kansas, Oklahoma, Arkansas, Texas, Wyoming, Montana and Washington, sixteen states in all, the international union leaders referred to the fact, if it be indeed a fact, that the contract made was in accord with the award of the U. S. Bituminous Coal Commission. This appeal to Caesar, however, is quite specious, for it is not true that the mine workers are employed under the contract written by that commission. No sooner was it made than the mine workers broke it. Another contract was made with large wage concessions. This contract was arranged to terminate at the same time as the commission agreement, namely, March 31, 1922. It is still in full force and effect, not by virtue of the commission's ruling, which it abundantly violates, but by reason of the signatures of the operators.

The commision said: "The terms, conditions and provisions, mining rates and wage schedules in effect on Oct. 31, 1919, in what is known as the Washington Agreement, dated Oct. 6, 1917, and in the agreement" which preceded it should continue in effect subject to certain wage and other modifications. The chek-off was not among the terms modified. It undoubtedly was permitted to remain among the conditions of the agreement, and it was not surrendered in the later contract. But the majority report of the commission did not speak favorably of it and actually recommended that a scale committee be appointed to consider among other matters its discontinuance. The union was not pleased with the section of the award and quietly ignored it. As a result no committee was appointed and the check-off continued to flourish. Nothing could be more hollow than the sanctimonious professions made by union officials in the preamble of the telegram calling on the districts to take appropriate action against Judge Anderson's decision. They are untruthful when they say that the commission's award rules today as also when they add that the same body approved the check-off.

The United Mine Workers' telegram concludes with these mysterious words: "Any abrogation or setting aside of any part or section of this agreement, including the section providing for the checking-off for the United Mine Workers of America of union dues and assessments, cannot be regarded as other than a violation of the agreement and should be treated accordingly by the district officers and local unions within your jurisdictions."

This telegraphed notice from union headquarters was somewhat generally regarded by union men, the operators and the public as an adroit and dishonest "passing of the buck," for Lewis, Murray and Green, from whom it emanated, did not explain the telegram even when asked point-blank by the correspondents. What, it was asked, was the meaning of the expression "cannot be regarded as other than a violation of the agreement, and should be treated accordingly."?

Farrington Asks Lewis to Interpret Message

Frank Farrington, president of the Illinois district and one of Lewis's foremost antagonists, called on Mr. Lewis in a telegram to interpret the document. Did the international officials want the district presidents to call a strike if the operators in their districts refused to collect the check-off? Would they be repudiated if they did? Lewis replied as evasively a sever, saying that the operators who abrogated the existing contract impaired the validity of the instrument, which statement, indeed, cleared up none of Farrington's problems.

Meanwhile men were striking. They had anticipated Judge Anderson's injunction and were ready. The day after it was written and the day before it came into effect five mines in Indiana employing more than 1,500 men were reported closed. At Floodwood, Ohio, at mine No. 26 of the New York Coal Co., 300 went out without waiting for the statement from union headquarters at Indianapolis. While Lewis, Murray and Green were busy with counsel these men struck. Not until evening of that day was the shilly-shally word from headquarters with its enigmatic language put over the wires.

Samuel Gompers, president of the American Federation of Labor, on hearing of Judge Anderson's decision is reported to have declared him a "slave driver," saying that such actions "are making it impossible for us to have a law-abiding patriotic and rational labor organization of American citizens"—as much as to say that if the union could not compel the operators to collect union dues, revolution and violence were excusable.

Questions naturally arose whether Judge Anderson's decision was effective outside Indiana, and the Illinois operators inquired of their counsel whether they should obey the injunction of the Federal judge or should regard themselves bound by that of Judge Charles H. Miller, of Franklin County, Illinois, which prohibited them from interfering with the check-off. To Colorado, Iowa and Oklahoma operators it seemed quite clear that the injunction did not refer to them and consequently there was no talk of abandoning the check-off and it will be collected as usual.

The Indiana operators, not being troubled by a conflict of

injunctions and being clearly subject to Judge Anderson's decision, early undertook to be govered by the injunction. As a result only sixteen mines were running in that state on Nov. 2. Decision was not easy for the Illinois operators. They put off the matter till Nov. 10, planning a meeting on that date in Chicago.

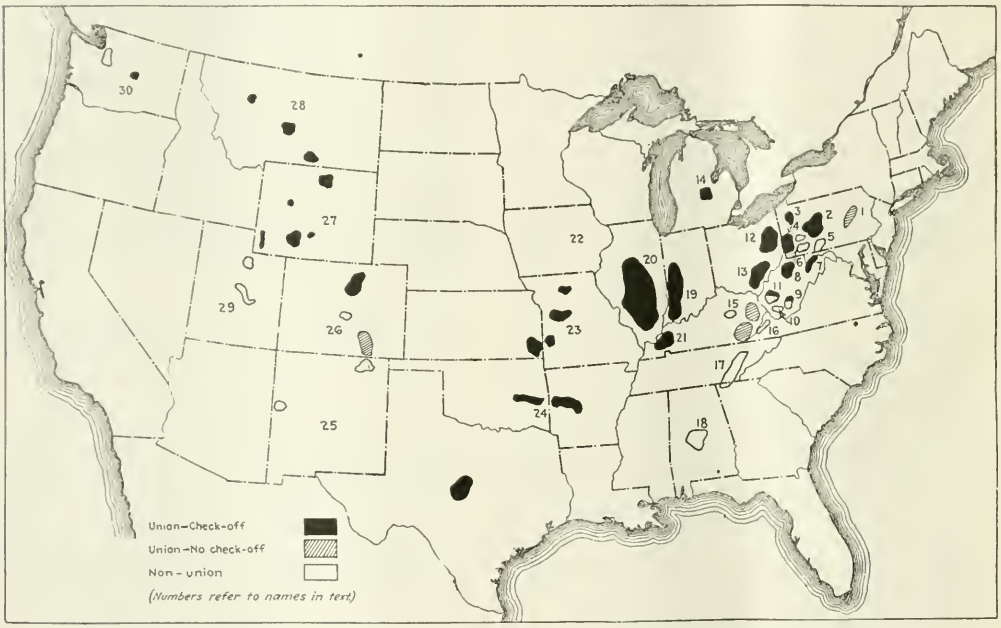
The Pittsburgh operators seemed more desirous than all others to rid themselves of the check-off, which was at once a conspiracy in restraint of trade and a contribution to violence in West Virginia. As early as Nov. 2 they decided to obey the injunction, and late on Nov. 4 they, through R. W. Gardner, Commissioner of the Pittsburgh Coal Producers Association, notified Robert R. Gibbons, president of District No. 5, that they would not longer collect the check-off. As a result the district executive board decided at a special meeting to call a strike at midnight, Monday, Nov. 7, and even when Gibbons heard that the Federal Court of Appeals failed to sustain Judge Anderson he was not ready to withdraw his order. Would the Pittsburgh operators reverse themselves as readily as had the courts?

In central Pennsylvania the operators of District No. 2 met on Nov. 4 in Altoona and passed a resolution abolishing the check-off. This was as follows:

"In view of the decision of Judge Anderson in the case of the Borderland Coal Corporation against the United Mine Workers of America, and in view of the evidence adduced in that case of the vicious misuse of the funds collected through the check-off system, which evidence established that such system is against the public interest, it is the sense of this meeting that the operators in this association immediately discontinue the collection of the check-off."

Another resolution declared that this would not affect the wage scale or any working agreement other than the check-off. The miners might still have checkweighmen and deductions would be made on the payroll for them; not from all the employees but only from those who had coal to be weighed, namely the miners, scrapers and loaders.

Ohio is not a unit. The south and north of the state have little in common. The Ohio operators in the southern part of the state met and decided they could not agree on common action at once, so they adjurned to meet Nov. 7. On Nov. 4 the coal operators of eastern Ohio—or should we not



COAL FIELDS OF UNITED STATES SHOWING CHECK-OFF, NO CHECK-OFF AND NON-UNION FIELDS

Those fields which are marked in solid black are likely to suspend work if the check-off is declared illegal by the Federal Court of Appeals on further review. There will be strikes in any event if the districts which have suspended the check-off persist in their decision, but that is not thought likely.

UNION FIELDS COLLECTING CHECK-OFF

No. on Map	Field	Tons Produced in 1918	Approximate Number of Men Employed in 1918
2	Central Pennsylvania	61,629,000	72,500
3	Northern Pennsylvania	8,051,000	10,000
4	Pittsburgh	51,554,000	45,600
7	Cumberland-Piedmont	4,267,000	6,000
8	Fairmont	20,104,000	20,000
9	New River	7,447,000	8,000
11	Kanawha	8,000,000	9,000
12	Eastern Ohio	30,287,000	27,500
13	Southern Ohio	15,768,000	18,000
14	Michigan	1,465,000	2,500
19	Indiana	30,679,000	30,300
20	Illinois	89,291,000	85,900
21	Western Kentucky	10,883,000	12,400
22	Iowa	8,192,000	13,300
23	Missouri and Kansas	13,229,000	20,200
24	Arkansas and Oklahoma	7,040,000	12,400
27	Wyoming	9,438,000	7,500
28	Montana	4,532,000	4,600
		381,856,000	406,700

UNION FIELDS NOT COLLECTING CHECK-OFF

No. on Map	Field	Tons Produced in 1918	Approximate Number of Men Employed in 1918
1	Anthracite	98,800,000	147,000
15	Eastern Kentucky	20,700,000	26,900
26	Colorado	12,400,000	14,500
		131,900,000	188,400

NON-UNION FIELDS

No. on Map	Field	Tons Produced in 1918	Approximate Number of Men Employed in 1918
6	Connellsville, Westmoreland, Latrobe, Greensburg, Ligonier	53,400,000	35,900
5	Somerset	0,000,000	11,000
9	Winding Gulf	7,000,000	7,500
10	Pocahontas	23,100,000	15,100
11	Logan-Kenova Thacker	22,655,000	14,900
16	Virginia	10,300,000	11,000
18	Alabama	19,200,000	26,000
26	New Mexico	4,000,000	4,000
29	Utah	5,100,000	4,100
30	Washington	4,000,000	5,100
		105,255,000	135,600

rather say northern Ohio, for they operate toward the northern end of the field (the men who constitute the Pittsburgh Vein Operators' Association)—decided to abolish the check-off.

In the anthracite region there is no check-off and the excitement in which the other fields were thrown was not exhibited in that region. However, should there be a strike, these men, glutted with steady work and keen themselves for the check-off, would be apt to come out in sympathy with their bituminous confreres.

Perhaps it should be stated here that Judge Anderson after making his decision suspended its operation till the Borderland Coal Corporation, which applied for the process, could give bond in $1,000 for the indemnification of the defendants should the injunction be reversed. This bond was entered Nov. 2, when the process became of full force and effect.

In all there were about 28,000 men on strike in Indiana, Ohio and Illinois on Nov. 3. In the Hocking region six mines employing 2,000 men were idle. On that date at Centralia, Ill., several hundred men returned to work to await definite orders from the mine leaders, who here, as in all other sections and states, favored concerted action and were opposed to any attempt to strike till the operators of the state or section voted to discontinue the check-off. On Nov. 4 the Hocking men were going to work. Thus at the moment when the Federal Court in Chicago reversed the action of Judge Anderson, men were returning to work and other men were going out.

The maps and tables in this article exhibit the conditions obtaining in the field with relation to the check-off and the number of men likely to be affected if the dues and assessments thus known are declared to be in violation of the law. The check-off is collected in Illinois, Indiana, Ohio, Missouri, Kansas, Oklahoma, Arkansas, Texas, Wyoming and Montana, in Pennsylvania except in the anthracite, Westmoreland, Connellsville and Comerset fields; in West Virginia except in the Mingo, Logan, Pocahontas and part of the New River fields; in northwestern Kentucky and in the railroad mines in the State of Washington. There are exceptions in most of these fields but they are few.

Mine Workers to Test Constitutionality of Kansas Industrial Relations Court

A FORMER Iowa State Senator, John T. Clarkson, has been retained by the United Mine Workers of America to enter proceedings to test the constitutionality of the Kansas Industrial Relations Court law. He is well known as the counsel of the mine workers in Iowa. The manner of conducting the attack is left to him but a union mine worker probably will appear as plaintiff, alleging injury by reason of the application of the law. The litigation initiated by Alexander Howat and still pending is said not to raise the question of constitutonality.

On Nov. 5 the provisional officers of the union in Kansas, who have taken the places of Howat and Dorchy since their incarceration, warned the mine workers who were on strike against the imprisonment of these men that they must return to work before Nov. 15 or the charters of all the local unions where the strike continued would be suspended.

Commission Lets Colorado Fuel & Iron Co. Reduce Its Mine Workers' Wages

AFTER obtaining the consent of the representatives under the Employees' Representation Plan to a reduction in wages the Colorado Fuel & Iron Co. on Sept. 1 lowered its wages approximately 30 per cent in Huerfano and Las Animas counties so as to meet the competition of other steel manufacturers who were obtaining their fuel at a lower wage rate. The State Industrial Commission ordered the wage restored till it had made an investigation.

On Nov. 5 the commission suspended its temperary order, saying that an agreement had been made and that the reduction squared with that understanding. In making its award the commission did not enter into the fairness of the wage reduction. The members of the commission declared that the mine workers would not be violating the state industrial law if they went on strike against the decrease in pay, for the order is not mandatory but merely records the findings of the court. The decision specified that the reduced wage could be put in effect legally only at mines where this "agreement had been reached between the company and its employees," and listed eleven mines in the two counties mentioned as coming under the provisions.

The United Mine Workers of America through John P. McLennon, president of district 15, stated that union employees would strike if an attempt was made to reduce their wages. When the reduction was first attempted in September several mines struck for ten days, returning to work only when the commisson interposed its restraining order. Any reductions in other mines can be made only after a 30-day investigation by the court.

N. C. A. Denied Permanent Injunction in Removal Case; Temporary Stay Extended

JUSTICE HITZ of the Supreme Court of the District of Columbia has refused to grant the permanent injunction sought by the National Coal Association to restrain United States officials from requiring the presence of certain officials of the association in court at Indianapolis. The permanent injunction was refused on the ground that it would interfere with a criminal action. At the same time Justice Hitz dismissed the temporary injunction but took up immediately the request of the National Coal Association for an extension of that injunction and it was granted. As a result officials of the National Coal Association may not be served with a summons until the matter has been passed upon by the Court of Appeals. A ruling by that tribunal will not be forthcoming for several months.

DIRECTORS OF THE NATIONAL COAL ASSOCIATION will meet Nov. 18 at the Gibson Hotel in Cincinnati. More than the usual amount of business has accumulated, due to the fact that this meeting has been deferred because of President Bradley's illness. Prior to the meeting of the directors Mr. Bradley expects to confer with Herbert Hoover, Secretary of Commerce. Meetings of the railroad relations, government relations, and other committees are scheduled to be held in Cincinnati the day before the directors' meeting. A wide range of subjects of interest to the coal industry will be discussed and an important report submitted on the export situation.

IN RESPONSE TO A recent suggestion of the Secretary of Commerce the American Mining Congress has appointed a coal committee, one of three mining committees, to cooperate with the department in improvement of the mining industry. The coal committee consists of President J. G. Bradley of the National Coal Association; S. D. Warriner, of the Lehigh Coal & Navigation Co., Philadelphia; Thomas H. Watkins, of the Pennsylvania Coal & Coke Corporation, New York; Charles S. Keith, Central Coal & Coke Co., Kansas City, Mo., and Albert J. Nason, Nason Coal Co., Chicago. The mining committees will meet Secretary Hoover Nov. 14.

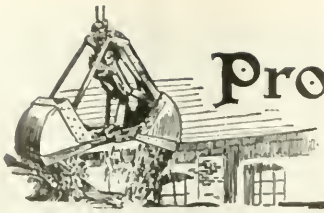
THE DEPARTMENT OF LABOR is gathering statistics concerning coal wages for use in adjusting wage agreements next spring. For a month it has had field agents at work, co-operation being extended by the operators in giving information covering average hourly earnings from a representative number of mines, union and non-union.

JUDGE ANDERSON WANTS to give the check-off system a check out.—*New York Sun.*

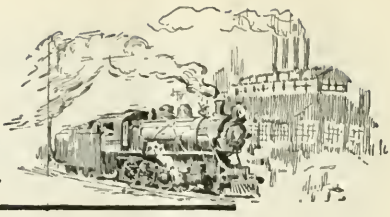
AS BUSINESS SEES IT, highways of prosperity can be reached only through buy-ways.—*Norfolk Virginia-Pilot.*

SUCCESS IS STILL OPERATED on the self-service plan.—*Kingston Whig.*

BETWEEN THE DEMANDS of the unions and the Union, employers are up against it.—*Columbia Record.*



Production and the Market



Weekly Review

THE market has settled down to the price basis prevailing before the flurry caused by the erstwhile rail-strike threat. Quotations are being made over a delivery period of thirty days and longer, indicating unexpected confidence in the stability of the market in the face of the check-off controversy. *Coal Age* index of spot bituminous prices stands at 91 as of Nov. 7—unchanged from Oct. 31.

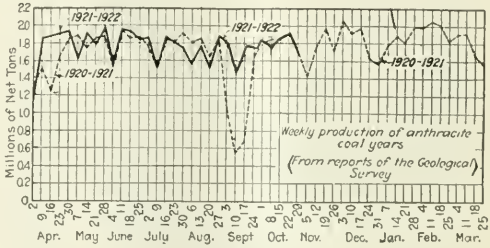
The recent railroad strike threat failed to affect the market materially, but it was the direct cause of considerable additional production of bituminous coal, much of which is now being delivered. The stocks accumulated as a matter of precaution when the rail threat loomed are acting as a buffer against the possibility of a shortage if the miners strike. A large volume of the more recent production is going into storage and were the miners' tie-up to materialize, industries generally would have three or four weeks' reserve which should be ample to tide them over any anticipated emergency. In the Midwest especially, large stocks of steam coals have been accumulating at the mines as a result of the prolonged sluggish market. The big buyer knows this and discounts the importance of placing heavy orders on the current market.

Sporadic Strikes of Short Duration

Judge Anderson's decision against the collection of the check-off was quickly followed last week by the decree of the Federal Court of Appeals in Chicago suspending this injunction, pending a hearing set for Nov. 16. Sporadic strikes in Indiana and Ohio, which followed Judge Anderson's injunction, were short-lived in the light of the second court action. The situation began to look serious when District No. 5—the Pittsburgh region—voted to strike on Nov. 7.

Anthracite production is holding well, stimulated by the seasonal demand for family sizes. Independent premiums are heavy, especially on stove coal, which is in the best call. Steam coals are not so active, but any trouble in the bituminous producing fields would have an immediate bolstering effect and enable operators to move stocks held at the mines.

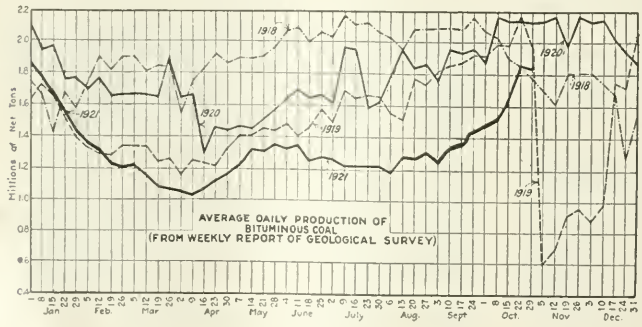
The coke market has turned soft as production has further outdistanced requirements. Furnacemen have withdrawn many of their inquiries, preferring to await the expected freight reductions, and this has left coke operators "holding the bag."


1921-1922
1921-1922
1920-1921
1920-1921
Millions of Net Tons
Weekly production of anthracite coal years
(From reports of the Geological Survey)
Apr. May June July Aug. Sept Oct. Nov. Dec. Jan. Feb. Mar.

Bituminous

Production declined 107,000 tons during the week ended Oct. 29, when 10,951,000 net tons were mined. The decline in output following the removal of the rail-strike threat shows how readily production responds to variations in demand. With transportation assured, the demand almost immediately slipped back and output declined accordingly. The decline continued into last week—Oct. 31-Nov. 5. Preliminary reports on Monday, Oct. 31, show a decline of 4,679 cars loaded, compared with the preceding Monday. Loadings were sharply reduced on Nov. 1 by the observance of a religious holiday, and the week's output was further affected by the strikes in Ohio and Indiana as a protest against the check-off injunction.

October production is estimated at 43,741,000 tons, according to the Geological Survey. This is an increase of 8,614,000 tons over the preceding month. Doubtless the demand was mainly stimulated by the possibility of a stoppage of transportation, rather than by an increase in consumption.



Estimates of Production

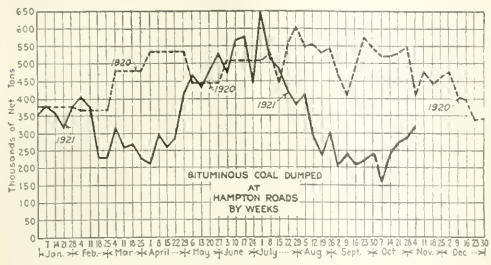
(Net Tons)

Week Ended	1921	1920
BITUMINOUS COAL		
Oct. 15 *(b)*	9,711,000	12,110,000
Oct. 22 *(b)*	11,058,000	12,232,000
Oct. 29 *(a)*	10,951,000	12,407,000
Daily average	1,825,000	2,068,000
Calendar year	338,214,000	448,788,000
Daily average, calendar year	1,324,000	1,754,000
ANTHRACITE		
Oct. 15	1,843,000	1,906,000
Oct. 22 *(b)*	1,942,000	1,969,000
Oct. 29 *(a)*	1,780,000	1,743,000
Calendar year	73,433,000	73,409,000
COKE		
Oct. 22	102,000	391,000
Oct. 29 *(a)*	102,000	422,000
Calendar year	4,496,000	17,688,000

(a) Subject to revision. *(b)* Revised from last report.

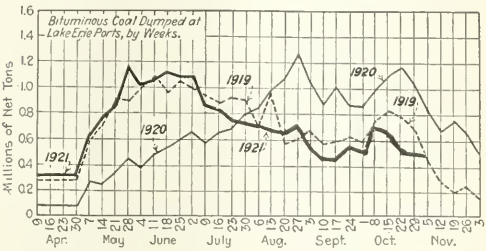
However, the month's output was lower than that in any recent year but 1914, when 37,600,000 tons were produced.

Retail bituminous stocks have been greatly increased during the past few weeks. The steam markets of Baltimore, Philadelphia and New York fail to reflect the possibility of any operating troubles. New England consumers are again apathetic and sales are dragging. Industries in that section are not manufacturing goods ahead of immediate orders booked and are basing their fuel requirements accordingly.



Hampton Roads shippers are feeling this reaction, as coastwise markets have comprised two-thirds of the recent pier activity. Prices have softened on marine freights. Total dumpings at the piers were 294,334 gross tons in the week ended Nov. 3, as compared with 252,694 in the preceding week. A decline in dumpings for this week is probable, brought about by the return of a sluggish coastwise market. British export quotations have again dropped, showing the futility of any hope for early American business abroad and export tonnage is mainly going to the West Indies and Southern ports.

While Secretary Hoover has expressed the opinion that he does not expect anything to come from the negotiations looking to the employment of Shipping Board ships in the export coal trade, operators still entertain some hope that a plan may yet be worked out. Even should the Shipping



Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	Oct. 3 1921	Oct. 24, 1921	Oct. 31, 1921	Nov. 5, 1921†
Pocahontas lump	Columbus	$4 75	$4.70	$4 80	**$4 70@$4 95**
Pocahontas mine run	Columbus	2.80	2.65	2.55	2.35@ 2.70
Pocahontas screenings	Columbus	2.10	1.60	1.75	1 50@ 2.00
Pocahontas lump	Chicago	4 75	4 75	4 75	4 50@ 5.00
Pocahontas mine run	Chicago	2.65	3.15	3.15	2.75@ 3.50
*Smokeless mine run	Boston	4 90	4 90	4 80	4 75@ 4.90
Clearfield mine run	Boston	1.95	1.95	1.95	1.75@ 2.15
Cambria mine run	Boston	2.35	2.45	2.45	2.10@ 2.75
Somerset mine run	Boston	1.80	1.90	1.90	1.60@ 2.15
Pool 1 (Navy Standard)	New York	3.25	3.40	3.25	*3.00@ 3.40*
Pool 1 (Navy Standard)	Philadelphia	3.10	3.15	3.15	3.00@ 3.30
Pool 1 (Navy Standard)	Baltimore	2.80	2.90	2.65	2.65
Pool 9 (Super. Low Vol.)	New York	2.45	2.60	2.65	*2.45@ 2.60*
Pool 9 (Super. Low Vol.)	Philadelphia	2.40	2.45	2.45	2.25@ 2.60
Pool 9 (Super. Low Vol.)	Baltimore	2.65	2.45	2.45	*2.35*
Pool 10 (H. Gr. Low Vol.)	New York	2.15	2.30	2.30	*2.00@ 2.25*
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2.05	2.15	2.15	2.00@ 2.25
Pool 10 (H. Gr. Low Vol.)	Baltimore	2.45	2 20	2 20	*2.00@ 2.15*
Pool 11 (Low Vol.)	New York	1.90	1.85	1.85	1.75@ 2.00
Pool 11 (Low Vol.)	Philsdelphia	1.85	1.85	1.85	1 75@ 2.00
Pool 11 (Low Vol.)	Baltimore	2.20	2.00	2.00	*1.85*
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.90	1.80	1.85	*1.50@ 1.80*
Pool 54-64 (Gas and St.)	Philadelphia	1.75	1.75	1.75	*1.65@ 1.80*
Pool 54-64 (Gas and St.)	Baltimore	1.90	1.70	1.75	*1.50@ 1.80*
Pittsburgh se'd gas	Pittsburgh	2.65	2.65	2.65	2.60@ 2.70
Pittsburgh mine run (St.)	Pittsburgh	2.20	2.15	2.15	2.10@ 2.20
Pittsburgh slack (Gas)	Pittsburgh	2.15	1.65	1.65	1.60@ 1.70
Kanawha lump	Columbus	3.25	3.50	3.30	*3.00@ 3.50*
Kanawha mine run	Columbus	2.00	2.15	2.15	*1.90@ 2.25*
Kanawha screenings	Columbus	1.20	1.15	1.25	*1.00@ 1.25*
Hocking lump	Columbus	3.25	3.30	3.25	3.00@ 3.50
Hocking mine run	Columbus	2.00	2.10	2.05	**2.00@ 2.20**
Hocking screenings	Columbus	1.10	1.10	1.10	.95@ 1.20
Pitts. No. 8 lump	Cleveland	3.25	3.25	3.25	3.00@ 3.50
Pitts. No. 8 mine run	Cleveland	$2.05	$2.20	$2.15	$2.10@ $2.20
Pitts. No. 8 screenings	Cleveland	1.55	1.70	1.55	**1 55@ 1 65**
Midwest					
Franklin, Ill. lump	Chicago	3.65	3.95	3 75	*.95@ 4.05*
Franklin, Ill. mine run	Chicago	2.75	3.00	2.75	**2.75@ 3 00**
Franklin, Ill. screenings	Chicago	1.70	1.90	1.60	1.00@ 2.25
Central, Ill. lump	Chicago	2.50	2.50	2.50	**3.00@ 4 00**
Central, Ill. mine run	Chicago	2.25	2.25	2 25	**2 25@ 2 75**
Central, Ill. screenings	Chicago	1.45	1.75	1.60	**1.50@ 2.25**
Ind. 4th Vein lump	Chicago	2.90	2.95	2.95	**3.00@ 4 05**
Ind. 4th Vein mine run	Chicago	2.55	2.55	2.35	**2.75@ 3 00**
Ind. 4th Vein screenings	Chicago	1.55	1.85	1.55	**1.00@ 2.50**
Ind. 5th Vein lump	Chicago	2.70	2.70	2.70	2.15@ 3.25
Ind. 5th Vein mine run	Chicago	2.50	2.50	2.35	**2 15@ 2 75**
Ind. 5th Vein screenings	Chicago	1.45	1.70	1.55	**1.00@ 2 50**
Standard lump	St. Louis	3.25	3.65	3.35	3.25@ 3.50
Standard mine run	St. Louis	1.85	2.00	1.95	1.90@ 2.00
Standard screenings	St. Louis	0.35	0.90	0.90	*0.50@ 1.00*
West. Ky. lump	Louisville	3.00	2.90	2.90	**3.00@ 3.50**
West Ky. mine run	Louisville	2.25	2.40	2.45	*2.00@ 2.40*
West Ky. screenings	Louisville	1.15	1.25	1.10	*0.40@ 1.25*
South and Southwest					
Big Seam lump	Birmingham	3.75	3.75	3.75	3.25@ 4.25
Big Seam mine run	Birmingham	2.15	2.15	2.15	*2.00@ 2.25*
Big Seam (washed)	Birmingham	2.30	2.30	2.30	2.15@ 2.40
S. E. Ky. lump	Louisville	3.55	3.90	4.00	*3.50@ 4.00*
S. E. Ky. mine run	Louisville	2.10	2.20	2.20	**2.25@ 2.40**
S. E. Ky. screenings	Louisville	1.25	1.35	1.30	1.25@ 1.40
Kansas lump	Kansas City	5.75	.....	5.75	.....
Kansas mine run	Kansas City	4.00	.....	4.00	.....
Kansas screenings	Kansas City	2.40	.....	2.40	.....

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	Oct. 24, 1921 Independent	Oct. 24, 1921 Company	Oct. 31 1921 Independent	Oct. 31 1921 Company	Nov. 5, 1921† Independent	Nov. 5, 1921† Company
Broken	New York	$2.61	.....	$7.60@$7.75	.....	$7.60@$7.75	.....	$7.60@$7.75
Broken	Philadelphia	2.66	$7.60@$8.20	7.75@ 7.85	$7.60@$8.20	7.75@ 7.85	$7.60@$8.20	7.75@ 7.85
*Broken	Chicago	5.63	13.40	12.80	13.40	12.80	13 40	12.80
Egg	New York	2.61	8.00@ 8.25	7.60@ 7.75	8.00@ 8.25	7.60@ 7.75	8.00@ 8.25	7.60@ 7.75
Egg	Philadelphia	2.66	8.10@ 8.35	7.75@ 7.85	8.10@ 8.35	7.75@ 7.85	8.10@ 8.35	7.75@ 7.85
*Egg	Chicago	5.63	13.40	12.80	13.40	12.80	13 40	12.80
Stove	New York	2.61	8 50@ 9.00	7.90@ 8.10	8.50@ 9.00	7.90@ 8.10	8 50@ 9.00	7.90@ 8.10
Stove	Philadelphia	2.66	8.50@ 8.75	8.00@ 8.35	8.50@ 8.75	8.00@ 8.35	8.50@ 8.75	8.00@ 8.35
*Stove	Chicago	5.63	13.40	12.90	13.40	12.90	13 40	12.90
Chestnut	New York	2.61	8 50@ 9 00	7.90@ 8.10	8.50@ 9.00	7.90@ 8 10	8.50@ 9.00	7.90@ 8.10
Chestnut	Philadelphia	2.66	8 25@ 8.75	8.05@ 8.25	8.25@ 8.75	8.05@ 8 25	8.25@ 8.75	8.05@ 8.25
*Chestnut	Chicago	5.63	13 40	12 80	13.40	12 80	13 40	12 80
Pea	New York	2.47	5 50@ 6 00	6.05@ 6.45	5.75@ 6.00	6.05@ 6.45	5 75@ 6.00	6.05@ 6.45
Pea	Philadelphia	2.38	5.00@ 5.50	6.15@ 6.25	5.00@ 5.50	6.15@ 6.25	5.00@ 5.50	6.15@ 6.25
*Pea	Chicago	5.63	12.40	11.15	12.40	11.15	12 40	11.15
Buckwheat No. 1	New York	2.47	3 25@ 3.50	3.50	3.25@ 3.50	3.50	*2.75@ 3.25*	3.50
Buckwheat No. 1	Philadelphia	2.38	2.75@ 3.25	3.50	2.75@ 3.50	3.50	2.75@ 3.50	3.50
Rice	New York	2.47	2.25@ 2.50	2.50	2.15@ 2 50	2.50	*2.15@ 2.40*	2.50
Rice	Philadelphia	2.38	1.75@ 2.00	2.50	1.75@ 2.25	2.50	1 75@ 2.25	2.50
Barley	New York	2.47	1.25@ 1.50	1.50	1.25@ 1.50	1.50	1.25@ 1.50	1.50
Barley	Philadelphia	2.38	1.00@ 1 25	1.50	1.10@ 1.25	1.50	1.10@ 1.25	1.50
Birdseye	New York	2.47	.....	2.50	.....	2.50	.....	2.50

*Prices and freight rates, net tons; quotations f.o.b. cars, Chicago.
†Advances over previous week shown in **heavy type**, declines in *italics*

Board consent to the use of its boats for $1 a month, the differences of price in favor of British competitors range 75c. to $2 per ton.

The Lake trade is in a seasonal windup and this is being hastened by the fact that storage space is now exceedingly limited on the Head-of-the-Lakes docks. Interior markets are not so active, which also is hampering the unloading of late cargoes.

September coal shipments through the Soo were 993,848 tons of bituminous and 281,130 tons of anthracite. Dumpings at the lower ports were 498,614 net tons in the week ended Nov. 7—481,650 cargo and 16,964 vessel fuel—as compared with 849,726 tons in the corresponding week in 1920. Cumulative movement for the season is now 21,960,074 tons; in 1920 it was 21,012,741.

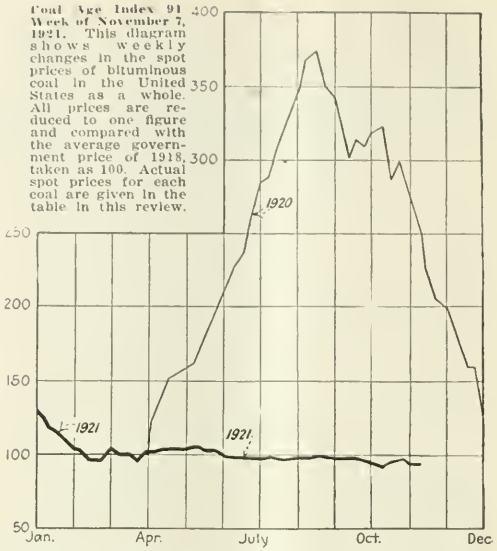
COKE

Production of beehive coke remained at 102,000 net tons during the week ended Oct. 29. Cumulative production for 1921 is 4,496,000 net tons as against 17,688,000 in 1920. The Connellsville market is quiet following the disappearance of inquiries, and prices have softened slightly. An early resumption of demand is anticipated as a reaction of the rail strike threat, which made for a sluggish coke market.

ANTHRACITE

Production of hard coal declined 162,000 net tons in the week ended Oct. 29. The output was 1,780,000 tons, according to the Geological Survey. The decrease is attributed to the observance of Mitchell Day, Oct. 29, and not to any lessened demand on producers.

Stove coal is short in some sections, particularly in the East, where it is the popular size. The steam grades are moving just slowly enough to keep independent quotations within the bounds of company schedules, but any interruption to bituminous mining would immediately react to the benefit of the anthracite steam sizes. Lake shipments are surprisingly heavy, considering the lateness of the season. During the week ended Nov. 2 there were 106,400 net tons dumped, as compared with 92,100 in the preceding week.


Coal Age Index 91
Week of November 7, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.
400
350
300
250
200
150
100
50
1920
1921
1921
Jan.
Apr.
July
Oct.
Dec.

Foreign Market And Export News

Hampton Roads Feels the Slump in New England Demand; Export Markets Inactive

Business has suffered a decided slump following the recall of the railroad strike, a number of orders for New England having been canceled. The tone of the market is very weak, with dealers in some instances making very liberal offers, but finding little demand.

The bunker business is showing signs of activity, although the greater portion of the tonnage sold is on contract, with very little doing in the spot market. The slackening of shipments to New England is keenly felt, and is resulting in softened rates in the coastwise trade.

At one time during the week the supply of low-volatile coals at the Hampton Roads piers was reduced to the lowest point it has reached during the year, several vessels having been delayed awaiting cargo. At the end of the week, however, all piers were well stocked, approximately 200,000 tons of coal being reported on hand.

A total of 1,058,000 tons moved through Hampton Roads during October, which was 1,000,000 tons below the record made for October of last year, and on a par with February and March of this year, the lowest months except September. Late Cardiff quotations have put a quietus on the chance of securing any early business abroad.

With foreign markets out of reach at least temporarily, American shippers are concentrating their attention on the bunker trade and points in the West Indies as well as South American ports. The bunker business is a little more active although spot prices are not proving very attractive. During the week ended Oct. 29 there were 74,369 net tons of foreign coal and 30,467 tons of bunker coal dumped at the Roads. This represents a material increase in foreign cargoes over recent weeks.

Coal Paragraphs from Foreign Lands

GERMANY — Ruhr production increased slightly during the week ended Oct. 22, according to a cable to *Coal Age*. The output was 1,803,000 metric tons, compared with 1,787,000 tons during the preceding week.

ITALY — British coal is carrying lower quotations on the Genoa market, according to a cable to *Coal Age*. Cardiff steam firsts are 41s. 9d. this week as compared with 42s. 9d. last week and 43s. 6d. during the first period in October.

Imports from England have reached a more normal level with the termination of the miners' strike in England, whereas the quantity received from America is constantly diminishing. During the first 15 days of September 265,362 tons were imported. England furnished 207,763 tons, and in addition 65,487 tons were received from Westphalia and 40,460 from Upper Silesia. Only 50,651 tons were received from the United States.

CZECHO-SLOVAKIA—Owing to the depreciation of the German mark, exporting of coal and lignite to Germany is seriously threatened. The quantity of lignite exported to Germany from the Bruex mines alone represents a value of 32 million marks per month, which now shows a decrease by 13 million marks. Attempts on the part of the exporters to increase the price even slightly have failed.

POLAND — Bituminous production in 1920 was 6,408,684 metric tons, compared with 6,083,687 in 1919 and 8,988,581 in 1913. The output, January-May 1921, was 2,838,453 tons. Lignite production in 1920 was 251,822 tons; in 1919 it was 178,949 and in 1913, 192,489.

RUSSIA — The Russian government and a group of trade union leaders from England and America have completed an agreement for operating the Komorovo coal mines in the Kuznesk basin, in the government Tomsk, Siberia. The Kuznesk basin has one of the largest coal reserves in the world.

AUSTRALIA — The New South Wales Ministry has imposed a charge of sixpence per ton for the use of cranes, hoists and elevators at the port of Newcastle, and bunker coal prices have in consequence been correspondingly increased. Rates are now as follows: Sydney, 32s.; Newcastle, 22s. 6d.; Port Kembla. 31s. 3d.; Melbourne, 40s. 6d. @43s. 6d., and Adelaide, 45s. 6d.@50s. 6d. Wellington (N. Z.) quotations are 47s. 9d.@51s. 10d.

BELGIUM—The industrial coal market is still weak although certain half-bituminous descriptions are in demand. Numerous resumptions in the glass industry are helping to reduce stocks.

French Market Featureless; Stocks Are Heavy

Saar Prices Cut for November—More British Pits Close—Export Markets Quiet, Despite Lowered Quotations—Further Government Aid Suggested

Saar coal prices for November have been reduced between 7 and 10 francs per ton by the French administration. On Oct. 1 a similar reduction was made.

The French market presents nothing of any interest to the American coal exporter. Demands are limited to hand-to-mouth dealings on account of the mild weather and the still unsettled industrial position.

Official figures of coal imports and production for August show an increase of 617,000 tons over the corresponding figures for July, which already marked an increase of 321,000 tons over June. This is chiefly due to the larger imports of British coals, (432,000 tons more than in July).

FRENCH PRODUCTION AND IMPORTS IN AUGUST

	July, Tons	August, Tons
French production	1,912,005	2,036,906
Saar imports	252,531	267,692
British imports	241,486	673,782
Belgian imports	227,640	287,045
German imports	596,089	614,267
American imports	106,618	63,641
Total	3,326,369	3,943,333

French coals in the above table include production of the Lorraine mines. Saar coals represent only tonnage supplied to France, the total production having been 637,455 tons.

Stocks of coals in various ports increased by about 90,000 tons, but stocks in the hands of the railways decreased by about 40,000 tons.

FRENCH COAL STOCKS, AUG. 31, 1921

	Tons
State Railways	272,500
Nord Railways	163,265
Est Railways	151,246
P.L.M. Railways	390,920
P. O. Railways	272,895
Midi Railways	55,900
Total railways	1,306,726
In various ports	689,584
Paris Gas Works	159,296

Figures of stocks at the mines are not yet available. Railway stocks on Aug. 31 were sufficient to last 45 days; port supplies were adequate for 34 days.

Closing of British Pits Alternative of Lower Production Costs; Exports Lag

An inquiry has been received on the Newcastle market from Utrecht Gasworks for the supply of 100,000 tons of best gas coals for shipment over next year.

There is a general feeling that the British coal industry is again being allowed to drift toward a crisis. For instance, in the exporting districts 200,000 miners are unemployed and the demand shows no sign of increasing. As the owners are not likely to surrender their profits in wages, the scale in November must be formulated on the economic state of the industry. This has stimulated the miners to appeal to the government to devote to the industry the balance of the subsidy granted in the June settlement, amounting to about three millions, sterling.

More collieries in Wales are closing down. The largest colliery in the Swansea district, the Graigola Merthyr, has closed for an indefinite period, and the shutting down of the Clydach pits involves 2,000 miners. Lanarkshire is also badly hit. By the beginning of November, 16 pits were closed down owing partly to lack of demand and the owners' losses.

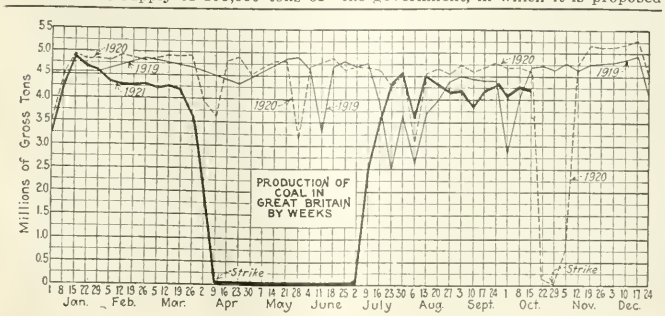
Owners of Scottish mines which recently closed have disclaimed all responsibility for the non-fulfillment of contracts on the ground of a protecting clause in the contract form. The shippers, however, state that the closing of the pits was due to factors over which the owners had no control, and threaten not only to hold the pits liable for any loss incurred in repurchasing coal to fill their contracts with Europe, but also for any demurrage charges involved through detention of their ships.

Wages of the Scottish miners have been decreased 4s. per day. On this basis the November wage is 9s. 8d., as compared with 21s. 6d. last February. Scotch miners are averaging four days weekly.

Various means are being suggested to revive the industry. Besides returning the £3,000,000 subsidy balance to the industry, it has been suggested that the mining industry be loaned £1,000,000 from public funds to be administered by the National Coal Board in an endeavor to carry on the work of the pits which are closing down. It has been estimated that by the wise application of this money the price of coal could be reduced by 10s. per ton.

The Miners' Federation is asking for government help to relieve distress and to put the industry on its feet again. A new scheme has been submitted to the government, in which it is proposed that the maximum price for industrial coal should be fixed at 30s. per ton, delivered, and that the government for a period should make up the difference to the coal owners and railway companies.

South Wales reports a slight increase in orders from the Far East, Port Said and South America. The Continental trade, however, remains poor.



Coal Paragraphs from Foreign Lands

	Tons
For Atlantic Islands:	
Nor. SS. Cibao, for Kingston	1,061
For Brazil:	
Am. SS. West Coru, for Buenos Aires	6,565
Br. SS. Highmead, for Buenos Aires	6,197
For Cuba:	
Nor. SS. Gro, for Havana	6,659
For Italy:	
Br. SS. Livingstonia, for Genoa	6,112
Br. S.S. Saxilby, for Genoa	5,859
For Peru:	
Nor. SS. Remus, for Callao	1,970
FROM PHILADELPHIA	
For Atlantic Islands:	
Br. SS. Cumberland Queen, for Martinique	624

Export Clearances, Week Ended Nov. 3

FROM HAMPTON ROADS

	Week Ended Oct. 27	Week Ended Nov. 3
N. & W. Piers, Lamberts Pt.:		
Cars on hand	1,663	1,588
Tons on hand	87,268	79,064
Tons dumped for week	125,119	139,061
Tonnage waiting	13,000	21,325
Virginian Ry. Piers, Sewalls Pt.:		
Cars on hand	925	1,363
Tons on hand	46,250	68,150
Tons dumped for week	93,888	111,781
Tonnage waiting	24,436	28,302
C. & O. Piers, Newport News:		
Cars on hand	838	947
Tons on hand	41,900	47,350
Tons dumped for week	33,687	43,492
Tonnage waiting	3,600	2,710

Pier and Bunker Prices, Gross Tons

(Foreign Bunker Quotations by Cable to Coal Age)

PIERS

	Oct. 29	Nov. 5†
Pool 9, New York	$5.90@$6.10	*$5.80@$5.90*
Pool 10, New York	5.60@ 5.80	*5.60@ 5.75*
Pool 9, Philadelphia	5.75@ 5.95	5.75@ 5.95
Pool 10, Philadelphia	5.50@ 5.75	5.50@ 5.75
Pool 71, Philadelphia	6.00@ 6.20	6.00@ 6 20
Pool 1, Hamp. Rds.	5.10@ 5.20	*4.75@ 5.00*
Pools 5-6-7 Hamp Rds.	4.25@ 4.40	*4.25*
Pool 2, Hamp. Rds		4.50@ 4.75

BUNKERS

Pool 9, New York	6.25@ 6.35	*6.15@ 6.25*
Pool 10, New York	6.00@ 6.15	*5.95@ 6.15*
Pool 9 Philadelphia	6.00@ 6.25	6.00@ 6.25
Pool 10, Philadelphia	5.75@ 6.00	5.75@ 6.00
Pool 1, Hamp Rds.	5.25@ 5.35	*5.15*
Pool 2, Hamp. Rds	5.00@ 5.15	*4.90*
Welsh, Gibraltar	47s. 6d. f.o.b.	47s. 6d. f.o.b.
Welsh, Rio de Janeiro	65s. f.o.b.	65s. f.o.b.
Welsh, Lisbon	57s. 6d. f.o.b.	57s. 6d f.o.b.
Welsh, La Plata	60s. f.o.b.	60s. f.o.b.
Welsh, Marseilles	1.25 fr.	1.20 fr. @ 1.30 fr.
Belgian, Antwerp	40s.	40s.
Alexandria		48s. f.o.b.
Bombay		35 rupees
Capetown		42s. 9d.

C.I.F. Prices, American Coal

(In Gross Tons)

	Oct. 29 Low Vol.	Oct. 29 High Vol.	Nov. 5† Low Vol.	Nov. 5† High Vol.
French Atlantic	$9.00	$8.85	$9.00	$8.85
West Italy	8.95	8.70	*8.90*	8.70
The Plate	9.75	9.60	*9.75*	9.60
Rio Janeiro	9.30	9.20	9.35	9.20

These quotations are purely nominal and as far as can be learned no business is being done in these markets

Current Quotations British Coals f.o.b. Port, Gross Tons

	Oct. 29	Nov. 5†
Cardiff		
Admiralty Large	28s. 6d.	*27s.@28s.*
Steam, Smalls	19s. 6d.	*18s.6d.@19s.6d*
Newcastle.		
Best Steams	24s. 6d.	*23s.@23s.6d.*
Best Gas	25s. 6d.	*24s.@24s.6d.*
Best Bunkers	24s. 6d.	*23s.@23s.6d.*

†Advance over previous week shown in **heavy type**, declines in *italics*.

Reports From the Market Centers

New England

BOSTON

Market Drags — Inquiry Slackened on Announcement That Strike Was Off— Coastwise Freights Weaker — Anthracite Domestic in Good Request.

Bituminous—The current market is in heavy shape. It would need a clairvoyant to forecast demand in December and January, but November inquiry is bound to be light. Practically all the shippers are diligently canvassing the whole consuming territory and no prospect is neglected. Prices are still at the low point reached some weeks ago. Every effort is being made to prevent any further reduction in spot figures, but unless buying improves soon there will probably be a slight recession.

While railroad strike talk seemed to make no appreciable increase in demand in New England, yet it is apparent now that it was a factor in sustaining inquiry. In any case, consumers are again apathetic and there is a marked falling off in the request for steam grades. Industries here see no real light ahead and are plugging along from hand to mouth, for the most part taking care not to accumulate goods beyond orders already in hand. That being the situation with most consumers, it is hard to see where any spurt in demand can come from.

Obviously, the smokeless shippers have felt the reaction, because the last few months they have been selling nearly two-thirds of the whole tonnage placed in this territory. A few factors who have cargo balances as yet undisposed of are striving very hard to get the best return possible, but $6.15@$6.25 continues the normal basis on cars, Providence or Boston, for inland delivery. Sales f.o.b. vessel at Hampton Roads have been reported down to $4.50@$4.60 for Pool 2, while $4.75@$4.90 continues the base market price for Navy acceptable coal.

Producers in the central Pennsylvania districts are also scouring the market for orders. Many of them have been able thus far to scrape along on three to four days a week, but even on contracts shipments have steadily dwindled of late and sales agents are at a loss to know which way to turn. One result is a further drop in receipts all-rail through the Hudson River gateways. Even the railroads are taking less fuel than was the case a month ago.

Sailing vessels, 3,000 tons and upwards, continue available at 85c., Hampton Roads to Boston or Portland, together with certain long-legged barges of from 2,000 to 3,000 tons, but it is reasonable to expect that an even lower rate will materialize with the lack of orders. Smaller barges of less draft are still quoted around $1@$1.15, same range of ports, but within a few days it has become so difficult to place them that offers are being solicited.

Anthracite—Domestic sizes continue in strong request, especially stove and chestnut. Shippers are bringing pressure to bear on retailers to take egg and pea, and to a degree this is successful.

Reserves here are in good shape, although continued seasonable weather would bring them down and create a sharper demand on the producer. Household trade is brisk in practically all the cities and most shippers are well supplied with orders for the present.

Tidewater—East

PHILADELPHIA

Anthracite Retail Trade Quiet — Some Price Cutting — Steam Demand Ordinary—Bituminous Unaffected by New Strike Threat—Best Demand for Good Coals.

Anthracite—The retail trade fails to revive from the slowing down as reported last week, despite the much cooler weather which has arrived. The good buying during October was due solely to the strike threat, and the real intent of the consumer evidently is to buy in small quantities.

Dealers generally are anxious for further shipments of nut. There has also been some demand for pea, but nothing like the trade has been accustomed at this time of the year. For some reason the coming of the first snowstorm is always looked forward to as being the beginning of the pea coal movement.

There is still a good deal of variation in retail prices and while most dealers consider $14.50 a regular price for stove and nut, the consumer who shows an inclination to shop around can buy these sizes in many places as low as $13.75. There is also a tendency to cut on egg, a price as low as $13.25 being recorded on this.

The steam situation is fair, with buckwheat in ordinary demand, although no good coals are being sold off. Rice is the one size that is slow.

Bituminous—The trade is calm and it looks as though nothing short of an earthquake could disturb it. Despite all the rumors of strike movements on account of the check-off decision the trade simply refuses to show any kind of a reaction. Consumers, particularly the largest ones, show the utmost indifference and are still confining purchases to immediate needs.

The price situation is somewhat puzzling to the shippers, as the fluctuations for the past two months, outside of a few days when the rail strike seemed almost possible, have varied but little. The feeling grows now that $3 seems to be near the average that can be expected all winter for good coal.

NEW YORK

Anthracite Steam Sizes May Be Strengthened—Domestic in Strong Demand—Bituminous Situation Quiet— Stocks Are Heavy — No Interest in Operators' Difficulties.

Anthracite—Any suspension of operations due to the check-off controversy will result in a heavy demand for the steam coals and cause a cleaning up of those sizes, which have been a burden for the past several months. Salesmen have been hard pushed to move these coals lately and while some buckwheat and rice brought company circular, most sales were reported as below those figures. Barley was in better shape.

Domestic continues strong with egg the easiest. Demand is growing, however, and operators do not look for any let-up if the temperatures remain seasonable. Consumers who have to buy in small quantities are now coming into the market and the retail trade is a trifle more brisk.

The railroad strike talk resulted in enough orders being placed with the producers to keep them busy for some time to come. Some producers who have large tonnages of egg on hand have, it is reported, undertaken to break it up.

Independents are having no trouble in moving their domestic coals and in some instances are reported as quoting $9.25 for stove and chestnut. A small lot of distressed egg coal was being offered this week on the basis of $7.40 at the mine.

Bituminous—Market conditions continue quiet. Even the check-off injunction did not cause any apprehension among local consumers.

Consumers are showing no apparent interest in the future. Their stock piles are sufficient to take care of immediate wants and although quotations show about the same level as last week they have no desire to add to their stocks. Many consumers requested advance shipments on their contracts during the railroad strike agitation and so far as possible they were accommodated. There was also heavy buying by those consumers who watch the spot market with the result that most users are over-stocked and will not enter the market again until forced to.

Local shippers have succeeded fairly well in preventing large movement to the docks unless there appeared a reasonable chance of disposing of the coal. By doing so they have prevented an accumulation here and the docks are in good condition.

Some good grades of coal already loaded in boats were being offered at alongside prices at slightly lower figures than were being quoted generally. These offers were few however.

BALTIMORE

Market More Stable—Strike Talk Fails to Strengthen Prices—Anthracite Retail Trade More Active.

Bituminous—With the railroad strike possibilities averted there now looms in the coal world the shadow of the check-off ruling and the consequent threat of a mine strike of national proportions. As with the rail strike threat, however, there has been no acceleration to trading so far from this new trouble. With the rail strike threat came a small spurt to the market, but there has since been a recession to the old standards.

The apparent lack of confidence in an early boost to the market, despite the strike clouds, is shown by quotations of high grade steam and gas coals for delivery over November and the first half of December. While mines now producing best coals are fairly well covered by contract on the more exclusive grades and the demand at this season is pretty sure to increase, the

fact that a number of operations now closed stand ready to plunge into the open field as soon as demand warrants even a partial resumption of operation, argues against much tighter conditions as to selling in the near future.

The export movement of soft coal from Baltimore for October reached a total of 37,385 tons cargo and 2,573 tons bunker. The trade is analyzing the collapse of the export business and the reasons thereof. Foreign exchange rates are blamed for the most part.

Anthracite—The ordinary conditions of winter's approach have undoubtedly been the principal cause of the stiffening of the market, although there is no doubt that the talk of railroad strike did to some extent stimulate retail orders. Yard reserves have been considerably depleted, although the run of coal to this city for October exceeded by about one third the delivery during September and August, when a decided deficiency was piled up.

Prices remain unchanged except that some dealers are now charging 25c. per ton more than the summer schedule for stove, apparently to take care of the fact that they are required to buy pea or egg in conjunction with the more popular size. Some of the delay in public buying is ascribed to the idea that the prosecution of retail dealers, on a charge of price fixing, is to bring lower rates.

BUFFALO

Demand for Bituminous Light—Check-Off Struggle Certain — Hard Coal Easier but Supply Is Light.

Bituminous—Demand has fallen off some, but it was so light all the time that shippers will go on much as before. Consumers had a big supply and were bound to buy sparingly for a while anyhow. Some of them will hardly be heard from in months, for they have laid in all they can carry.

There will be some improvement in buying when the April wage fixing time approaches. As to the threatened strike over the check-off injunction, the unions are not likely to give up without something of a struggle. However, there are a good many things they can do without making the fight a general strike.

Quotations are being shaded a little; $2.75 for Youghiogheny gas lump, $2.50 for Pittsburgh and No. 8 steam lump, $2.25 for Allegheny Valley and all mine run and $1.50@$1.75 for slack.

Anthracite—The demand is not quite so good since the settlement of the rail trouble, though that was not expected to affect it much. As the supply has fallen off too, it is not easy to say what the real change is. Some of the big retail trestles have been out of certain sizes, especially stove, some days at a time lately and have refused to sell to any but regular customers.

The fact that independent anthracite does not command much of a premium shows that the actual shortage is not heavy and it may happen that the waiting at the trestles for loads will not last long.

Lake—Shipments have fallen off lately, on account of sending the coal into some other market. Loadings for the week ended Nov. 2 were 106,400 net tons, of which 36,000 tons cleared for Milwaukee, 35,500 for Duluth and Superior, 21,300 for Chicago, 6,000 for Green Bay, 5,900 for Sault, Ont., and 1,700 tons for Racine.

Coke—Jobbers report an almost entire absence of demand. The furnaces have contracts for a certain amount and it appears that they are not using much more than that at present.

Canada

TORONTO

Consumers Still Behind with Orders for Winter—Increased Shipments from Mines—Bituminous Weaker.

Dealers are not nearly so busy as is usually the case at this season as many consumers are still backward in laying in their winter supplies. Receipts of coal from the mines show an increase as a number of dealers, fearing an interruption of traffic by the threatened railroad strike, sent in heavy orders which are now coming forward. As a consequence, the market may be temporarily overstocked in some lines. Bituminous is little in demand and prices have a decided downward tendency.

Quotations are as follows:

Retail:	
Anthracite, egg, stove, nut and grate	$15.50
Pea	14.00
Bituminous steam	10.25@10.75
Bituminous lump	12.00
Cannel	16.00
Wholesale, f.o.b. cars at destination:	
¾-in. lump	7.15@ 8.25
Slack	6.00@ 6.75

Northwest

MINNEAPOLIS

Market Dormant with Warm Weather —Buying Reduced to Minimum After Rail Trouble Passes — Small Coals Weaker.

The calling off of the railroad strike took the last argument which has been at all effective in the matter of selling coal. When the announcement came out in the daily press, it was followed instantly by a letting up of orders. Large steam users who had been taking in considerably more than their customary allotment, immediately cut down to the old amount or less.

As long as mild weather prevails, there will be but little interest in coal buying by either steam or domestic users. Both of them are determined to buy no sooner and certainly no more coal than they can possibly get along with.

Buckwheat coal has been dropped $1 a ton because of the accumulation at the docks, due to moving regular sizes. Soft coal screenings have also been accumulating and have had no regular market price.

Coal men are becoming cautious about any further predictions of what may happen on their commodity. This is the first season in five years that the approach of fall did not give serious ground for fearing a coal shortage. And yet thanks to exceptional effort put forth in one way or another, no real shortage ever hit the Northwest in those five years. So the trade is really penalized for its good work in averting what threatened to be a serious shortage.

The situation is still a deadlock so far as urging buying upon either steam user or consumer. In some instances it is a case of financial matters. The delay in buying means that much more time before the bill will have to be paid, a matter worth considering in these days of dull collections.

MILWAUKEE

Market Quiet and Uneventful — State Investigates Freight Rates — Receipts Heavy and Docks Congested.

To attempt to describe the condition of the coal market thus far in November would only mean a repetition of a story which has been retold for weeks past. The first cold snap will lift the "jinx" of procrastination on the part of consumers; then, it is expected, serious congestion of delivery service will ensue.

Meanwhile dock companies are kept busy in developing storage room on already heavily laden docks, and in shifting about coal which persists in heating. Deliveries of both anthracite and soft coal continue very light for the season.

An investigation of coal and coke freight rates in Wisconsin, with a view of making a material reduction, has been ordered by the State Railroad Commission at the instance of Governor Blaine. The time for the first hearing has not been set as yet. The governor holds that high freight rates on fuel are placing a burden on the public generally in the form of excessive charges by public utilities.

Up to and including Oct. 31, 104 cargoes of anthracite and 282 cargoes of soft coal had been received over Milwaukee docks, the aggregate being 848,045 and 2,341,884 tons respectively. During the same period last year receipts of anthracite were 701,363 tons, and soft coal 1,921,417 tons. The total gain over 1920, with a little over a month of navigation ahead, is 559,109 tons. A fair run of late cargoes is expected.

DULUTH

Market Subsides After Rail Strike Flurry—Docks Nearly Full—Small Coals at Bargains to Avoid Fires.

A spell of warm weather, coupled with the announcement that the railroad strike is over has slowed shipments from Duluth docks considerably. It is thought that orders will not pick up until cold weather sets in again and that then the railroads will be unable to supply the demand for cars.

As a result of the decrease in outward shipments the docks are filling up rapidly and several have, of necessity, held up the unloading of boats for several days to wait for outward shipments to clear needed spaces. It is estimated that at present 5,700,000 tons are stored on the docks, which is within 300,000 tons of the total maximum capacity.

Shipments from lower ports will soon be discontinued as but few ore cargoes remained on the docks here for downward shipment. When these are exhausted grain alone will remain to take the bottoms back to Lake Erie, and this trade will require but a small proportion of the available vessels.

Prices are generally firm, the only disposition to cut being in screenings which are in danger of conflagration. Screenings and buckwheat are quoted down as low as $3@$6 from regular prices of $4@$8.50.

Hocking and Youghiogheny lump are at $7, run of pile at $6.75, Pocahontas lump at $10 and run of mine at $7. Anthracite egg is $12.75, stove and nut,

$13, pea, $11, and buckwheat, $6@$8.50, with very slow sales.

Fires are now burning on the Inland and Clarkson docks at Duluth-Superior harbor. Heavy stocks of coal are making fire fighting difficult, but a general conflagration is not threatened.

Inland West

DETROIT

Steam and Domestic Users Continue to Delay Purchases—Receipts Are Small—Anthracite Stocks Large.

Offerings of high grade bituminous fail to arouse the interest of steam or domestic users. Wholesalers and jobbers are very much pleased that the danger of any railway trouble has been avoided. With uninterrupted transportation facilities there will be a better opportunity for supplementing the present apparently inadequate fuel supply when consumers finally decide the time has arrived for making purchases.

The buyers' policy of delay is made easier of continuance by the present diminished consumption rate of many of the factories and industrial plants. Because of this condition small purchases from time to time, when bargains are available, provide sufficient coal to satisfy current requirements.

Household consumers are lapsing into a less active interest in the market, their attitude reflecting a week of higher temperatures. The retailers, however, have made progress in distribution, although their stocks are not down to a level where renewal orders are frequent.

Pittsburgh No. 8 1¼-in. lump is quoted at the mines at $2.40, ¾-in. lump is $2.35, mine-run, $2.15, slack, $1.65. West Virginia 4-in. splint lump is $3.25; 2-in. lump is $3; egg, $2.50; mine-run, $2; nut and slack, $1.25. Ohio lump is $3@$3.25; egg, $2.40; mine-run, $1.90; nut and slack, $1.15@$1.25. Smokeless lump and egg is $4.75; mine-run, $2.65; slack, $1.60.

CHICAGO

Buyers Indifferent in Face of Impending Strike—Steam Prices Up—Retail Trade Quiet.

Taking into consideration the seriousness of the situation with the United Mine Workers, coal buyers are unbelievably indifferent. The operators, as soon as they saw that trouble was brewing, raised the price of their steam coals to a level which would enable them to make a little profit for the first time this year. The buyers, however, are not purchasing at the new quotations, while operators, on the other hand, are occupying themselves for the time being by filling old orders.

The indifference on the part of the big buyers is, perhaps, brought about by the fact that they are fully aware that some of the big mines in southern Illinois have very large storage piles of screenings on hand. In the event of a strike, this coal could be loaded and sent up to Chicago. There are so many storage piles in the state that the buyers believe they can purchase what they need at low prices, as these screenings have been held on hand all summer and the operators are anxious to get rid of them.

No price changes have taken place on domestic coals, either Eastern or Western. Retail dealers tell us the public are not buying at all and have taken the news of the impending strike with absolute indifference. Some retailers are advancing their prices a little. This indifference is hard to understand, because the retail coal dealers in Chicago have nowhere near as much coal on hand as they ought to have. This is also true of the steam plants.

ST. LOUIS

Dealers Carry Unusally Heavy Stocks — Warm Weather Cuts Demand — Steam Business Dead.

Retailers are today carrying approximately 300,000 tons of coal in storage, which is twice as much as has ever been carried, as far as can be learned. This is pretty well scattered over all the coals used.

Anticipating the railroad strike, dealers bought heavily, with the result that some of them will have coal arriving for the next two weeks. They are unloading it in the alleys and in lots adjacent to the railroad, wherever space can be secured.

Mild weather is causing the dealers to take an unusually heavy loss. The storage of 300,000 tons will carry a minimum cost of $1 a ton, which means that $300,000 has been spent to protect the public against a strike that failed to take place. This expense must be absorbed in the selling price, which instead of getting stronger has a tendency to weaken under this enormous surplus stock.

Steam is unusually quiet, plants having stocked up in anticipation of the strike. This surplus is now being drawn on, to the exclusion of new orders.

The country demand for domestic has almost ceased, and the same condition prevails on country steam business. A little coal is, however, moving to Omaha, Kansas City and Chicago from the Standard districts, but prices are below cost.

COLUMBUS

Indianapolis Injunction Proceedings Watched With Interest—Buying Movement Anticipated—Retail Demand Increasing.

Judge Anderson's injunction was followed by the walkout of more than 1,000 miners in the Hocking Valley. Just how widespread the trouble will be is a matter of conjecture but operators view the developments with considerable concern.

Domestic demand has been the best feature, as colder weather has stimulated the buying. Retail stocks are not large and some dealers have been buying rather liberally. Consumers are looking after their winter's supply of fuel with more interest and retailers have been fairly busy making deliveries. Unemployment on the part of wage earners is a serious handicap as dealers are disposed to ask for cash.

Retail prices are steady at former levels. Hocking lump retails around $6@$6.50 while West Virginia splints sell $7.25@$7.75, depending on preparation. Anthracite is fairly steady, around $15, while Pocahontas is quoted $9@$9.50.

There is a considerable tonnage moving to the Northwest as shown by the records of loadings at the lower docks. The tonnage, however, is gradually being reduced and the Lake trade is expected to close rather suddenly.

There was little steam demand following the flurry caused by the threatened railroad strike. The buying because of the injunction mix-up has not yet developed strongly. It is believed that some large users will be concerned about their fuel supply to a point where they will accumulate some stocks. Screenings have again become weaker all along the line.

CINCINNATI

Market Inactive—Prices Recede—Much Tonnage on Rails—Retail Trade Quiet.

Trade conditions have rarely been so muddled and snarled as they are in Cincinnati at the present time. A large tonnage purchased on the C. & O. and held for orders in various yards by speculators acts as a drug on the market, while orders are scarce and inquiries few because of the heavy sales that were made in anticipation of a strike of the railway workers. Judge Anderson's decision on the check-off and the threats of labor trouble at the mines have so far failed to put any strength in the situation and prices have reverted to a basis that existed a month ago.

The end of the Lake season is bringing a readjustment of selling plans among the smokeless dealers, but prices remain fairly stationary, lump selling $4.25@$4.50; egg $4@$4.25; nut $3@$3.50; mine-run $2.25@$2.75, and slack $1.10 and up.

In addition to an overstock of all-rail coal the river interests, in anticipation of the railway trouble, loaded barges heavily and this coal must take an outlet from Huntington to Louisville. Kentucky lump was quoted at $3.25@$3.50, the latter being the top for block. West Virginia was $3 with some sales at $2.75. Run of mine was still quoted $1.65@$1.85 with some spot sales at $1.50 and under. Kentucky slack was selling 80c. and up, with the low on West Virginia around $1.10.

The first of the month saw little or no change in the retail market with the same prices that have been in effect since mid-August. Smokeless lump is $9.50@$10.25; mine-run $7.50 and slack $6.25. Bituminous lump is $7.25@$7.75; mine-run $6.25@$6.50 and slack $4.50@$5.50.

CLEVELAND

Strike Prospects Loom as Market Factor—Stocks Sufficient to Act as Temporary Buffer—October Lake Movement Larger.

The coal strike which has already commenced to spread into the Ohio fields from Indiana looms as the overshadowing market factor in this district. The moment operators of the mines in the Ohio regions decided at a conference in Cleveland last week to abide by the letter of Judge Anderson's decision and withhold the check-off, a strike was certain. Nothing can avert it but a reversal of the Anderson ruling.

Confronted with the possibility of drastic curtailment of output, this district, curiously enough, finds itself in better shape with respect to stocks of coal than it was before the middle of October. With the calling of the railroad strike the demand for coal became brisker, industries accumulating substantial stock piles. This supply is far below normal but it is above what has been seen in recent months. Designed for the railroad strike, it may serve as a buffer for an unexpected coal strike.

Leading factors in the trade estimate that there are sufficient supplies of coal on hand in various places in this district to last for from three to four weeks.

The effect of the prospective coal strike is just beginning to be felt but its influence will grow rapidly if the walk-out is not stopped. Within two weeks, it is estimated, supplies will be doled out to purchasers and prices naturally will move upward.

With the calling off of the railroad strike the demand for both retail and industrial coal slumped considerably. The spell of warm weather has helped to retard the retail demand. General appreciation of the situation on the part of the public is causing a quickening of demand again and retail prices are certain to rise within a few days if the situation remains unchanged. Dealers have well filled yards, but a cold snap coupled with the shutting off of new supplies would soon result in barren yards.

The movement of coal up the Lake during October amounted to 2,750,000 tons, compared with 4,693,000 tons in October, 1920, and 2,295,000 tons in September. As was expected, the move ment bulged somewhat last month due to the ending of the lower freight rate for Lake coal on Oct. 31. There is expected to be 1,000,000 tons taken up the Lake in November, compared with about 3,500,000 in November, 1920. The grand total for the current season will reach 22,000,000 against 23,667,000 last year.

Bituminous coal receipts at Cleveland for the week ended Oct. 29 for industries and retail dealers again registered a high mark, being the largest quantity during any week since the latter part of January. Total receipts amounted to 1,741 cars, divided: Industrial, 1,159 cars; retail, 572 cars.

South

BIRMINGHAM

Little Activity in Either Steam or Domestic Markets—Industrial Demand Weak—Prices Firm—Production Slightly Increased.

General conditions continue very unsatisfactory. There is little demand for steam grades, and no orders are being booked except for small tonnages for early delivery. Steam users are confining their orders to a supply for immediate requirements only.

Rehabilitation in industrial lines has been slow and has not yet reached the stage where it will be reflected in any greatly increased need for coal. Users are no doubt holding off and stinting themselves as much as possible in the hope of getting more equitable freight rates later on, saving in their fuel costs in this way. However, there appears to be small prospect of relief from this direction any time soon.

Quotations have changed very little in the past few weeks and the range is shown in the Weekly Review.

Domestic coal is now proving a drag on the market as the weather continues warm and unseasonable. Wagon mines in the Birmingham district are doing the bulk of business in the city, and regular dealers are experiencing very dull times. Shipments from the mines, in a large measure are going to outside territory, to the larger cities and towns in Alabama and adjoining states served by this field.

Practically all the coal-carrying lines in this district are short on equipment and the mines are already experiencing delays due to car shortage. As yet the output has not been seriously hampered by this shortage of equipment.

LOUISVILLE

Slow Business Follows Rail Flurry—Miners' Threat May Be a Market Factor—Prices Weaker.

If it isn't the railroads it is the miners or Federal agencies trying to control prices, but there is always some fly in the ointment which prevents the coal trade from moving along smoothly and steadily. For some time there was a forced demand in view of the threatened rail strike. When this was settled the market became lifeless on steam grades, and not especially active on prepared. Now with the miners threatening to strike, and many out already in Indiana, it is believed that the market may again react, but as a whole the trade feels that it would be much better if there were not so many spasmodic buying periods.

Some of the jobbers claim that business is about as dull as at any period during the year, due to the fact that they stocked up small steam consumers, retailers, etc., prior to the threatened rail strike, and are unable to develop new business at this time.

Colder weather is resulting in a slightly better demand on the retailers. Most of them, however, have fair stocks on hand and are not buying much to fill in.

Retailers are maintaining prices very well on prepared, asking $8@$8.25 for lump from eastern Kentucky and West Virginia and $6.75@$7 for western Kentucky lump. Steam is being sold at most any price, as there is keen competition for small steam plant business.

Producers claim that indications are for a slow and draggy period until after the first of the year at least. Many mines are down entirely, finding it unprofitable to operate with steam demand so poor.

West

DENVER

Production Nearing Normal—Market Improves.

Tonnage for the week ended Oct. 15 was 240,000 tons of a possible full-time output of 324,000 tons and, for the first time since the middle of last January, equalled the weekly output of the corresponding period in 1920. The output in the middle of January was 265,000 tons for the week, showing that Colorado is rapidly getting back to normal production as winter begins.

Louisville lignite lump is bringing $5.75 at the mine and $9.75@$10 retail. Sales are improving. Slack is finding a better market, selling for $1.80@$2.15 delivered, based on a wholesale price of $1.00@$1.25. Weld County lignite lump is steady at $4 at the mine and $7.50@$8 retail.

Bituminous lump is bringing $6 at the mine in both the southern Colorado and the Routt County fields, southern Colorado coal retailing for $10.75 and Routt County $11.50@$11.75. Nut coal is 50c. cheaper.

Colorado was prepared to meet the exigencies that might have arisen if the railroad strike had become a reality. Governor Shoup had appointed a personal advisory committee, among whom was David W. Brown, president of the Rocky Mountain Fuel Co.

News From the Coal Fields

Southern Appalachian

CONNELLSVILLE

Market Has Turned Soft—Production Outdistances Requirements—Coal Prices Decline.

The Connellsville coke market has become altogether inactive, and prices have weakened somewhat. Throughout the trade it is plain that merchant ovens have been blown in somewhat more rapidly in the past few weeks than required by such increase in the number of active blast furnaces as has occurred. One thing that misled operators was the inquiring of a number of furnace men for coke prices, when as a matter of fact they have not since blown in.

The postponement was due either to it being found more difficult than was expected to sell pig iron, or to a desire to await freight rate reductions on coke and limestone. Incidentally, there has been a distinct decrease in the demand for foundry coke.

Production of pig iron in the country as a whole increased 22 per cent from September to October, but the Connellsville region did not get the full benefit of the increase, for a number of furnaces have blown in on byproduct coke obtained from steel works with surplus coking capacity at present. Should the steel industry have occasion to operate at 75 or 80 per cent, the coke would no longer be available and the furnaces would have to revert to Connellsville.

Another factor is a decrease in the demand for Connellsville coal, which hitherto has brought better prices than when converted into coke.

The market is quotable as follows, with a weak undertone: Spot furnace, $3.25@$3.35; contract furnace, $3.35@$3.40; spot foundry, $4.25@$4.75.

The *Courier* reports production in the week ended Oct. 29 at 21,520 tons by the furnace ovens, and 43,680 tons by the merchant ovens, a total of 65,200 tons, an increase of 2,690 tons.

PITTSBURGH

Operators Discontinue Check-Off—Market Turned Inactive—Slack Prices Lower.

After careful but prompt deliberation following Judge Anderson's injunction against continuance of the check-off, the Pittsburgh District coal operators formally notified District No. 5, United Mine Workers, that they would no longer observe the check-off. The next pay day is Nov. 12.

At this writing the question has been shelved until Nov. 16. On that date there will be a further hearing by the Chicago court and in the meantime it is expected that operations will continue.

While the matter was considered from all possible angles, the operators regard the question as a very simple one, that an injunction has to be obeyed, whether or not there is prospect of its being reversed by a higher court, and that a feature in a contract cannot properly be carried out if it is illegal, other parts of the contract not being affected. The operators simply notified the miners that they would hereafter refuse to observe Rule 26 in the local scale, pertaining to District No. 5.

It is no secret that, irrespective of the recent injunction, the majority of Pittsburgh operators have for some time past been strongly opposed to continuing the check-off in the new scale, to prevail after March 31 next.

The market has turned altogether inactive and there has been practically no new business done in the past week. Such production as occurs is almost wholly against contracts or other term arrangements. Prices for mine run and screened are not quotably changed but have again become practically nominal. Slack, produced in filling contracts for screened coal, has become a drug on the market and has been offered down to $1.25 in some cases.

We quote steam and gas coal: Slack, $1.30@$1.50; mine run, $2.10@$2.20; ¾-in., $2.60@$2.70; domestic, 1¼-in., $2.90@$3.25, all per net ton at mine, Pittsburgh district.

CENTRAL PENNSYLVANIA

October Production Gains — Demand Slumps After Rail Scare—Prices Temporarily Firm.

October production showed a very substantial gain over September. There were 67,400 cars loaded in October against 55,764 in September. This represents a production of 3,740,000 tons as against 3,196,200 for September.

The field is now producing 75 per cent of capacity under normal conditions. October proved to be the second best month in the year, being exceeded only by February when the output was 3,800,000 tons.

When the railroad strike failed to materialize, the market in the Johnstown District suffered a slump from the increased activity which developed during the ten days previous to the calling off of the strike.

The car shortage which developed on the Baltimore & Ohio disappeared because the shipments from that field fell off. Prices which took a slight jump have not receded with the declining demand, but it is only a question of time as to when these prices will drop again.

UNIONTOWN

Spot Furnace Offerings Increase—Prices Weaken—Inquiries Withdrawn—Car Shortage Disappears.

The coke market, which for the past two months has been steady, has taken on a decidedly different outlook and is inclined to be spotty. This was brought about for the most part by the strike talk by the railroaders, which discouraged buying by consumers.

The sudden withdrawal of inquiries affected the market, considering that the operators had been receiving increased demands for their products daily. As a rule, operators have kept production within the lines of demand, but the action of the buying interests in withdrawing their inquiries was not foreseen and this week has found more offerings in the open market than usual.

Sales have been recorded at $3@$3.25 but there has not yet been sufficient tonnage passed to definitely establish a market at the lower level. A number of operators, however, feel that since the strike has been decided the market will recover rapidly. Instead of seeking a lower level it is predicted that upon recovery from the present situation, the coke market will again commence its upward trend. The reaction in the furnace market is not reflected in the foundry trade, quotations being $4.24 @$4.50.

The car shortage of last week seems to have disappeared, full requirements being placed this week. Last week the car placement left much to be desired, mixed equipment being given a number of plants.

ANTHRACITE

Production Heavy—Glen Alden Mines Resume—Bituminous Strike Would Move Steam Stocks.

Production continues to be heavy. A religious holiday last week interfered with the work. The week before production was reduced due to the observance of Mitchell Day.

The Glen Alden Coal Co. resumed operations at the six collieries that have been closed down since Aug. 27th. This will bring the production of coal in the anthracite region to a higher figure than it has been for some time.

The fire in the Hollenback Mine of the Lehigh and Wilkes-Barre Coal Co. has so damaged this operation that it will be months before it can fully resume operations.

If there is a bituminous strike the market for steam sizes will be greatly increased and the present large stock reduced. Family sized coals continue in active demand.

EASTERN OHIO

Demand Low, Following Rail Settlement—Car Shortage Affects Output—Lake Trade Closing.

Still further gains in industrial activity have been noted during the week. In the coal trade stimulation continued and a maximum weekly tonnage output would again have been registered had not an appreciable car shortage developed. The output for the week ended Oct. 29 was 412,000 tons or approximately 66 per cent of the total rated capacity of the field. The tonnage mined was 43,000 tons less than the previous week. The car shortage was most serious on the B. & O., namely about 25 per cent. Car shortage on the other lines was less than 10 per cent.

Production figures for the year indicate that the aggregate output amounts to 14,839,000 tons as against the potential capacity of 26,900,000 tons, or 56 per cent of capacity. The quantity of coal going to the carriers for fuel was reduced somewhat during the week, but notwithstanding this the railroads are taking between 30 and 35 per cent of the output at the present rate of production. Association mines worked 50 per cent of possible work-time and tonnage mined was well above 60 per cent of rated capacity.

Since the settlement of the railroad controversy, operators say that inquiries from manufacturing plants and other consumers of coal have diminished and coincident with this situation, there has been a slight softening in spot prices. It is now conservatively estimated that industries and public utilities have a four to six weeks' stock of fuel on hand and also that retail yards are pretty well supplied for immediate needs.

In the Lake trade the usual cleanup is being made; there is a letting up in receipts and the stock on hand at lower docks is being reduced. Receipts are averaging around 1,500 cars daily. Last week the fleet loaded 571,902 tons which was a big decrease compared with the same week last season when the dock dumped 1,076,497 tons. Shipments for the season up to Oct. 24 were 20,197,000 tons as compared with 1920, 18,549,344 tons; 1919, 20,528,813 tons, and 1918, 25,108,114 tons.

UPPER POTOMAC

Idleness Still General — Competition Too Keen—Contracts and R.R. Fuel the Mainstay.

The last week of October brought no change in the situation in this territory, and general dullness still reigned. The competition of lower prices kept many mines inactive, hence spot business was extremely scarce even for those in operation. Contract orders plus a small volume of railroad fuel were the mainstay of production.

FAIRMONT AND PANHANDLE

Production Drops—R.R. Fuel Loading Is Heavier — Western Markets More Active.

Fairmont

Production slumped a trifle during the last week of October. Only a portion of the mines in the northern part of the state were in operation. However, the mines actually running were producing more heavily than earlier in the month. Lake shipments were light, but the movement to Curtis Bay picked up slightly. Prices were unchanged.

Northern Panhandle

Railroad fuel constituted the bulk of production, but such an output was confined to comparatively few mines. Commercial loadings were light, with the exception of domestic coals. Railroad coal buying was on the open market. Much of the product was moving West and very little coal was being consigned to the Lake.

Middle Appalachian

LOW-VOLATILE FIELDS

Car Shortage Loss Heaviest of Year—Production Slumps with Failure of Rail Strike Threat—Western Markets the Best.

New River and the Gulf

During the early part of the week ended Oct. 29, there was a larger production than usual in the New River field. The output dropped fully 50 per cent after it became apparent that there would be no railroad tie-up. Aside from such a condition the spot demand for domestic, coupled with contract orders, was all that tended to keep up the output. Export business was still largely lacking.

Car shortage was an important factor of lost time in the Winding Gulf region, making it plain that trouble might be anticipated from this source later on. Production, which was about 55 per cent of capacity, had been increased because of the impending railroad trouble, hence a drop in tonnage mined was in order after the settlement of the strike threat.

Pocahontas and Tug River

Car shortage losses jumped to about 80,000 tons in the Pocahontas region, the biggest loss of the year in that respect. It is becoming increasingly apparent that as conditions continue to improve operators will be handicapped by the inability to secure sufficient equipment. Domestic coal found a ready market but slack failed to improve its position.

Tug River production hovered around 100,000 tons, with a very large movement to Western markets. There would have been a larger output, however, had more cars been available. Better takings by the steel mills stimulated production, although prices were unchanged.

HIGH-VOLATILE FIELDS

Market Dullness Returns—Car Supply Becoming Uneven—Domestic the Only Mainstay.

Kanawha

There was a sudden drop in production as soon as it became apparent that there would be no railroad strike, although at no time had such a prospect caused any unprecedented increase in demand. The spot market was as dull as ever during the week ended Oct. 29, the only call being for domestic lump. Very little coal was being moved to Tidewater, and as the month drew to a close Lake shipments dwindled. Western markets took the bulk of production.

Logan and Thacker

Logan production was also affected by the announcement that there would be no rail strike. A part of the heavy tonnage recently produced was for railroad fuel purposes, although Lake shipments were also heavy. Lump was in fairly strong demand, prices ranging around $3.50. The Tidewater movement was not improved.

Williamson mines were working about two days out of the week with a car shortage affecting production to some extent. The greater part of the output was moving West, much of it on contract, and there was very little improvement in the spot market.

Virginia

Production reached more than 60 per cent of capacity during the week, that being the best figure for the year. Even prior to the railroad strike agitation inquiries were becoming more common. However, consumers seemed unwilling to pay what was regarded as a fair price.

Northeastern Kentucky

The output reached 50 per cent of capacity during the week, domestic demand leading the market, although steam coal was also in a better position. Failure of the railroad trouble to materialize made little difference in operating conditions, as there had not been much increase in production in anticipation of such trouble.

Middle West

MIDWEST REVIEW

Check-Off Injunction Causes Market to React—Steam Prices Advance—Non-Union Producers Refuse to Quote Futures.

Operators and wholesalers who are closely in touch with the labor situation are decidedly worried, as it is thought that trouble of some sort will eventualize in the check-off controversy. In coal circles it is believed that a strike is inevitable. Outside of the coal trade, the general public appears to consider the strike talk purely propaganda, cleverly arranged in order to stimulate sales.

Operators are wondering, in the face of these conditions, what to do in regard to the prices on their coal. Some producers have not increased the prepared or domestic prices at all, but have raised their quotations on steam coals. Domestic coal has been selling at a fair price all summer and fall, whereas steam has been going at figures considerably below cost. Some operators are refusing to make any quotations whatever, preferring to sit tight and work on their old orders until the situation gets more definite.

There surely has been plenty of excitement in the coal trade during the past few weeks. It was no more than a few days ago, shortly after the railroads dispelled any chance of a strike from that quarter, that the market on steam coals slumped very sharply. It is only two or three weeks ago when screenings from Indiana and Illinois were being sold 70c@$1.25. At the height of the agitation over the railroad situation, the price went up to $1.75 and in some isolated cases to $2. When the threatened strike was smoothed over and settled, steam coals took a sharp and quick slump, some falling as low as $1.25. Now comes the talk of the strike of the United Mine Workers, and prices on steam coal have promptly reacted. We heard of several large operating companies with big tonnages of southern Illinois coal, who have put the price of their screenings up to $2.85. Whether they will have an opportunity to sell at this price remains to be seen.

In the meantime, coal wholesalers are fully awake to the situation and have been attempting to buy coal in large quantities from the non-union fields. Non-union operators, however, realize what is in the air and in a great many cases have refused to book orders except on a basis of price current at time of shipment.

One or two of the larger railroads serving the Middle West are going to be caught short. One railroad has just stepped into the market and bought twenty-five cars per day for the next month or so. For this coal they have to pay a premium of fifteen cents a ton over the last price they paid. Other roads have but little coal on hand, in fact, one of the largest of them has only a supply of twelve days to two weeks.

Out in the country the threatened strike has had no effect whatever. Retail dealers look at their bins, find them full and appear not to care whether a strike comes or not. The attitude of the dealer is the same as that of the steam buyer. They all think they have considerable coal on hand and are willing to take a chance before buying more at any material advance in price. In all due fairness it must be said that the operators and wholesalers are planning on keeping their prices at reasonable levels, as it is considered that a runaway market would be the worst possible thing that could happen to the coal industry at this time. The advance which has taken place in steam coals is merely normal, as the operators who have advanced their prices are taking advantage of the situation only to bring their steam prices to where it can be sold at a small profit.

WESTERN KENTUCKY

Demand Fair for Prepared, but Screenings Very Draggy — Prices Weak — Operating Conditions Undisturbed.

With the removal of immediate demand during the period of buying in preparation for a rail strike the steam market has been much weaker, but now that many mines are down in Indiana over the miners' trouble, and the country is stirred up over the matter, it is beginning to look as though there may be another period of forced buying.

Recent reports indicate thousands out of work in Indiana as a result of strikes over the check-off matter. So far Kentucky has not been affected, and it is hardly believed that there will be any disturbances in the field.

Demand is still good for prepared coal, the weather being colder, but screenings are weak, and mine run is not showing much activity. Some western Kentucky screenings are selling as low as 40c. a ton, while the top on nut and slack is about $1.25. Mine run is holding fairly well at $2 and upward to $2.40, while prepared is firm at $3@$3.50.

Car supply is good, labor is plentiful, and it is merely a matter of securing business enough to give the mines a semblance of real activity.

SOUTHERN ILLINOIS

Decided Slump in Domestic — Steam Dragging — Car Shortage Felt — Railroad Tonnage Light—Prices Tend to Weaken.

The situation in the Carterville field is entirely changed from what it was a week ago. The steam market has retained greater strength than the domestic, but it does not, of course, measure up to where it should be under normal conditions. There seems to be no great surplus of steam sizes on account of the dropping in the domestic demand.

Railroad tonnage has eased up and there is a car shortage in this field accounted for by the reason that several thousand cars are tied up with storage coal, which accumulated in anticipation of the railroad strike. Mines are working about three days a week.

In the Duquoin and Jackson fields somewhat similar conditions prevail. Working time in the Duquoin field does not show up as good as in Carterville and railroad tonnage seems lighter.

In the Mt. Olive field the demand has eased up some and domestic tonnage has been curtailed. A good tonnage is moving to Chicago, Omaha and Kansas City, both steam and domestic. Steam, however, is mostly on contract. Steam ranges $1@$1.25 for screenings. Mines average from three to four days a week.

In the Standard district things have toned down some, but here and there a few operators are trying to maintain war-time schedules. Operators

of Coulterville are asking $4 for domestic sizes because they apparently are oversold. The average, however, ranges $3.25@$3.50.

Railroad tonnage dropped off considerably. No-bills show everything from lump down to screenings as having no market. A few mines are still idle on account of their inability to produce coal at the prevailing price.

West

WASHINGTON

Production Increasing on Non-Union Basis—Domestic Market Active.

Production by the Pacific Coast Coal Co., the largest operator in this district, employing approximately 1,000 men, will probably exceed 35,000 tons for October. A gain in production has been noted each week following the reopening of the commercial mines of this state last August, when the operators severed all relations with the United Mine Workers. The best indication of the success of the undertaking is seen in the rapid increase in production, the total hoist at the mines in October more than doubling the total for September.

The domestic market continues active, with coal moving in increasing quantities at the reduced price announced several weeks ago. But little difficulty has been experienced with the strikers beyond the annoyance of union pickets and the constant haggling of the non-union men, the operators report. The coal companies are now endeavoring to secure court orders evicting the strikers from the houses owned by the operators, which have been occupied by them since last March when the strike went into effect.

UTAH

Domestic Markets Rally — Production Increases—Outlook Improves.

For the first time in many months, dealers in the larger cities report that orders are being received faster than they can take care of them. Production continues to increase and both dealer and operator are in a better frame of mind than they have been for a long time.

Dealers estimate that 32 per cent of the householders of Salt Lake City have put in their winter's coal supply and that there are now 165,000 tons in the yards. The rate of consumption during November and December is 1,500 tons a day.

News Items From Field and Trade

COLORADO

A coal land contest is on between the United States general land office in Denver and the State of Colorado over the proper classification of a section of school land near Durango. The State maintains the original government survey of this tract failed to show the presence of coal or other mineral in this land and that, therefore, the government forfeited its right of reservation of mineral deposits when title was transferred to the state.

ILLINOIS

The Western Electric Coal & Gas Co., in which Congressman Copley of Aurora is largely interested, has acquired option on some three thousand acres of land in Summerset and Lezan township in Jackson County, which is supposed to be underlaid with Big Muddy coal.

The Mt. Olive and Staunton Coal Co., of St. Louis, has excavated a large pit 30 feet deep, 400 feet wide and 400 feet long, south of Edwardsville which is being used as a storage pit for screenings. As fast as screenings are unloaded water is pumped in to cover them. It is estimated that between 40,000 and 50,000 tons of coal can be stored in this pit. The project is in anticipation of a strike next spring when this coal can be trucked on the hard roads to St. Louis, or loaded in nearby railroad cars.

The executive offices of the **Union Fuel Co.** are now located in the Reisch Building, Springfield. The consolidation of the executive and operating offices at Springfield will give greater efficiency of operation and enable the company to better serve its customers.

The Wisconsin Steel Works, South Chicago, has commenced the construction of a coal storage dock of from 75,000 to 100,000 tons capacity to serve its byproduct coke ovens.

The Freeman Coal Co., operating in Williamson County, purchased the Sunnyside mine at Herrin, which was owned by the **Chicago, Wilmington & Franklin Coal Co.** of Chicago. The mine has been shut down since last May and it is said that the new owners expect to put the property into operation at once. Included in the deal was 1,100 acres of undeveloped coal lands immediately joining the mine property. Mine B at Herrin, operated by the Chicago, Wilmington & Franklin Coal Co., was shut down immediately preceding the sale of the Sunnyside mine, throwing 400 miners out of work indefinitely. No date was set for the mine to resume.

It is reported that the Wabash railroad like many others are preparing to store 200,000 tons or more.

Harold D. Wright, formerly president of the Lincoln-Latham Mining Co., of Springfield, is now with the Republic Coal & Coke Co., of Chicago as vice-president of that corporation.

Robert M. Medill, director of the Department of Mines and Minerals of the State of Illinois, has been appointed chairman of Sub-Committee No. 4 of the Mine Rescue Standardization Committee. The Bureau of Mines, through the various committees is expected shortly to start practical work toward obtaining international standards governing the methods of using mine-rescue apparatus.

John S. Reiner, president of the Reiner Coal Co., Chicago, has returned to Chicago after an inspection trip through southern Illinois, looking at several properties which his company is contemplating taking over.

M. F. Smith, of Lincoln, has accepted a position as superintendent of a new mine now being sunk at Edwardsville. He was formerly with the Lincoln-Latham Mining Co., at Lincoln.

The Illinois Central R. R. has petitioned the Illinois Commerce Commission for permission to construct two industrial tracks in Franklin and Williamson counties. One of the tracks will run from the Christopher Branch to the Royalton Mines, a distance of four miles. The other will run from the same branch to the Lake Creek Mine, a distance of seven miles.

Following is the itinerary of the **Illinois Mining Examining Board** for the month of November:—Harrisburg, Nov. 1; Johnston City, Nov. 2; Benton, Nov. 3; Duquoin, Nov. 4; Centralia, Nov. 5; Collinsville, Nov. 7; Gillespie, Nov. 8; Nokomis, Nov. 9; Springfield, Nov. 14; Danville, Nov. 15; Canton, Nov. 16; and Peoria, Nov. 17.

Among the many mines in the state which are now reopening largely on account of the improved marketing conditions are: **Peabody Coal Co.**, at Stonington, **Springfield District Coal Mining Co.**, at Woodside and **Peabody Coal Co., No. 19**, at West Frankfort.

INDIANA

Phil Penna, secretary of the Indiana Bituminous Coal Operators' Association, attended the annual American Mining Congress convention in Chicago.

The Willis Coal Co. has been organized at Petersburg, with a capital stock of $20,000 for the purpose of mining coal. The organizers are A. O. Byers, John A. Byers, Cleveland Willis and Frank J. Berger.

A special train carrying twenty-five or more Chicago retail coal dealers and several officials of the Chicago, Milwaukee and St. Paul recently made a tour over the Terre Haute division, inspecting the coal fields surrounding Terre Haute tributary to the Terre Haute division of the road. The purpose of the trip was to promote the sale of Indiana coal in the Northern States. A year or two ago the Chicago, Milwaukee and St. Paul leased for ninety-nine years the "Walsh Road" as it was called, properly designated as the Chicago, Terre Haute and Southeastern. St. Paul officials expect to make a large coal carrier out of the Terre Haute division.

KENTUCKY

John Hoffman, president of the Kentucky Fuel Co. of Cincinnati, recently made a visit to the company's mines in Bell County, Ky., to get first hand information on the labor situation.

K. C. Meguire of the Harlan Coal Co. was in Pineville recently in connection with his suit against the Conant Coal Co.

E. K. Wilson, M. F. H. Wilson and C. K. Crawford have affirmed ownership of the **Diamond Jet Coal Co.**

The Boreing Land & Mining Co., Rowland, has changed its place of business to Stanford.

The Long Branch Coal Co., of South Dakota, has been authorized to do business in Kentucky, with headquarters at Ashland, having applied to the Secetrary of State for permission to operate as an outside corporation.

Henry LaViers, general manager of the Northeast Kentucky Coal Co., with headquarters at Paintsville, accompanied the Ashland Chamber of Commerce part of the way on its recent trip through the Big Sandy field.

Alex. R. Watson, of the C. L. & W. Coal Co. spent a few days in Kentucky recently on business.

The Rockcastle River Coal Co. has filed a petition of voluntary bankruptcy in the United States District Court, setting its liabilities at $22,976.41 and assets at $30,000.

The constitutionality of the act passed by the 1920 general assembly requiring corporations to furnish washrooms for employees is in question in the case of the commonwealth against the **Beaver Dam Coal Co.**, appealed to the Court of Appeals from the Ohio Circuit Court. The company was indicted for failing to comply with the law and the lower court sustained a demurrer to the indictment.

Schedules of the **Sun Coal Co.** filed in the court of Judge George DuRelle, referee in bankruptcy, show the company has assets of $119,000 and liabilities of $30,460. The liabilities consist entirely of secured claims of a number of creditors. The company lists among its asset $50,000 as the value of coal lands in Clay County; $48,000 worth of bills, promissory notes and securities; $12,500 worth of machinery and tools, and $9,000 in debts due on open accounts.

MINNESOTA

W. W. Broughton, president of the Pittsburgh Coal Co., visited Duluth recently to inspect the company's coal docks.

A fire in screenings on the dock of the **Clarkson Coal and Dock Co.** has caused considerable trouble. It is thought that the fire will be under control shortly.

The Superior Coal & Dock Co. and the **Maynard Coal Co.** have filed a mortgage in Duluth for $600,000 to the Central Union Trust Co. to obtain an issue of first mortgage gold bonds to cover the incidental expenditures necessary to the rebuilding of the company's dock.

MISSOURI

A contract was recently closed at a session of the penal institutions board at Jefferson City, whereby the penitentiary will shift from coal to oil as fuel for all purposes. Members of the board estimate that the change will save $75 a day in the fuel bill. The change will be made as soon as the necessary oil burning equipment can be installed.

E. J. Knickerbocker, who for the past six years has been sales manager for Central Coal & Coke Co., of Kansas City, has engaged in the wholesale coal business on his own account with offices in the Waldheim Building, Kansas City. Mr Knickerbocker formerly was associated with the Monon Coal Co. at Chicago and prior to that put in many years of service as coal traffic R.R. In his new business he will handle coals from Franklin and Williamson counties and the Springfield district of Illinois as well as some coals from other Western fields.

The District office of the **Fort Dearborn Coal Co.,** located in the Dwight Building at Kansas City, has been discontinued. The territory will be under the jurisdiction of the main office at Chicago.

NEW YORK

Clarence White, who for some time was attached to the bituminous department of W. A. Marshall & Co., of 25 Beaver St., New York City, assumed the duties of manager of bituminous sales for Whitney & Kemmerer, at 143 Liberty St. on Nov. 1. Mr. White succeeds **C. A. Bill,** who recently became manager of sales for George D. Harris & Co.

Geo. M. Carpenter, Jr., president of the New York Coal Export Co., Inc., has returned after a month's trip in Europe spent in surveying the foreign conditions of the export coal trade.

The Penn-Empire Coal, Inc., of Pittsburgh, has opened a Buffalo office with A. E. Yalyowitch, manager of the Buffalo Traffic Bureau, as local representative.

J. A. Hill, president of the Knickerbocker Fuel Co., has sailed for Europe. Mr. Hill was fuel administrator for the American forces abroad during the war.

The receivers of the **Tidewater Coal Exchange, Inc.,** upon dissolution, wish to advise that the exchange has left on hand a limited quantity of Classification of Mines No. 1, issued March 15, 1921, and Supplement No. 3 thereto, issued June 18, 1921, copies of which will be mailed to those interested, so long as the supply lasts, for the regular charge of 25c. per copy. The supply of Supplement No. 3 is very limited and can only be supplied with the classifications furnished on the orders first received.

OHIO

Roy Cox, an executive of the Kanawha Valley Coal Co., was in Cincinnati recently. Mr. Cox has his office at Charleston, W. Va.

Harry W. Eastwood, who has had charge of the steel mill and crane division of the Cutler-Hammer Mfg. Co., Cleveland branch, has been made branch manager, taking the place of Lynn B. Timmerman, who leaves to enter the automobile business in Lima.

Recovery of $314,730.74 for Pocahontas coal requisitioned by the Government from April, 1920, to February, 1921, is sought in a suit filed by the **Houston Coal Co.** in the federal court at Cincinnati. It is alleged in connection with the bringing of the suit that the Government fixed a price of $4 a ton when the same grade of coal was being sold to other customers for more.

All of the bids recently opened by the **Columbus Board of Purchase** for 11,000 tons of nut, pea and slack for various city departments have been rejected. The announcement is made that coal will be purchased on the open market for the time being.

Chapman R. Hinsch has taken charge of the Cincinnati office of the Interstate Coal and Dock Co. with **D. J. Henderschott** as his assistant. Mr. Hinsch was formerly in the wholesale coal business and Mr. Henderschott was with the Manhasset Coal Co., a West Virginia organization. This is in line with the reorganization of the company which has been going on under the receivership that was entered by the New York courts some two months ago.

Announcement has just been made of the appointment of **Edward G. Mathiott** as general sales manager of the Valley Camp Coal Co., the Elm Grove Mining Co., and the J. A. Paisley Coal Co., headquarters Cleveland, the general offices of these companies being located in the Kirby Bldg., Cleveland. Mr. Mathiott is well known in railroad and coal circles throughout the Middle West and before his affiliation with the Paisley coal interests several years ago, he was connected with the coal department of the New York Central at Cleveland and the Pittsburgh & Lake Erie at Pittsburgh. The Valley Camp Coal Co. and subsidiaries are large operators in Eastern Ohio and West Va., embracing an annual capacity of some six million tons.

PENNSYLVANIA

J. C. Townley, formerly district manager of the Pittsburgh office of the Cement Gun Co., Inc., has sailed for Holland, where he will take up his duties as general manager of the International Cement-Gun Co., recently organized to handle the foreign business for the Cement-Gun Co., Inc. The address of the company is 50 Maria Plaats, Utrecht, Holland.

Campbell, Pencock & Kinzer, operating mines at Wehrum, Heshbon, Clayboro and other points in Indiana County, will abandon one of the operations at Heshbon, and will move the equipment to Osceola, Clearfield County, where a tract of 500 to 600 acres recently acquired by the company will be developed on an extensive scale. The company expects to develop this tract to a capacity of 750 tons per day. The general offices of the corporation are in Philadelphia with a branch in New York.

The Southern Coal & Iron Corporation has taken over, under lease, with the option to purchase, the 600-ton electrically equipped Simpson Breaker, the Ainsley anthracite mines and the Tipperary anthracite mines, all located in the Scranton district. The corporation intends to put these properties into immediate operation, under the direction of Murray B. Courtright, of Courtright, Dimick & Co., coal operators, of Philadelphia and New York.

W. C. Dobbie, in charge of operations of the Jamison Coal & Coke Co. in West Virginia was a recent visitor in Pittsburgh.

The Bureau of Mines is prepared at its Pittsburgh experiment Station to conduct tests of motors and their electrical accessories, such as are used in gaseous mines to operate conveyors, coal-cutting machines, electric drills, pumps, coal-loading apparatus ,and similar equipment, for the purpose of determining the permissibility of such motors and their accessories and approving them as permissible for use in gaseous mines or dust-laden atmospheres.

Copies of Schedule 2-B, "Procedure for establishing a list of permissible electric motors," may be obtained by addressing the Director of the Bureau of Mines, Washington, D. C.

The properties of the **McTurk Coal Co.,** near Girardville, are now being operated by the **Madeira-Hill Coal Co.**

J. M. Humphrey, president of the Lehigh Valley Coal Co., announces that **A. C. Stahl,** heretofore acting mining engineer for the Lehigh Valley and for Coxe Brothers & Co., Inc., has been appointed mining engineer.

A charter has been issued for the **Fersol Smokeless Coal Co.,** of Connellsville. The company has a capital stock of $50,000 and O. S. Ferren, Connellsville, is treasurer. He, with H. B. Brown and W. R. Long, of Connellsville, incorporated the company.

The Meyersdale Smokeless Coal Co. has notified the State Department at Harrisburg of an increase in its capitalization from $10,000 to $188,000. Robert Williams, Somerset County, is president.

UTAH

The Great Western Coal Mines, the **Gordon Creek Coal,** the **Equitable Coal** and the **Salina Coal** companies have received permission from the Utah State Securities Commission to sell their stock. The Great Western company has a capital of $3,000,000. The Gordon Creek company has a capital of $100,000. The Equitable asked for authority to dispose of 5,000 shares of its stock at a par value of $10, the total shares of the company being 50,000. The Salina company received permission to sell $50,000 worth of the company's $500,000 bond issue in Utah on conditions set forth in the bond which makes it subject to redemption at 105 per cent of the principal amount with accrued interest after Jan. 1, 1922 or any interest date prior to its maturity on the first day of July, 1931.

WASHINGTON, D. C.

The suit of **W. C. Atwater & Co.,** of New York, to recover $73,064 under a Navy coal contract has been argued in the Court of Claims. The company alleges that the Navy required it to furnish 19,990 tons in 1916 at $2.80 a ton, in excess of 200,000 tons which were contracted for, and that this extra 19,990 tons should be paid for at the rate of $6.50 a ton. The Government argued that the contract required the company to deliver any quantity of coal needed for the navy from July 1, 1916, to June 30, 1917. The coal in question was steaming coal, and was delivered at Hampton Roads.

Secretary of War Weeks has directed that the wet storage of coal for the Navy at the Panama Canal Zone shall be discontinued. He directs the canal authorities to seriously consider the practicability of the operation of the Cristobal and Balboa plants on an 8-hour day basis making the price of coal the same at Balboa as at Cristobal. northbound ships being permitted to transit the canal and coal at the northern terminus, Cristobal, and southbound ships proceeding through the canal and coaling at the Pacific terminus, Balboa.

The House Committee on Public Lands has reported a bill for agricultural entries on coal lands in Alaska. It provides that the right to mine and remove coal shall be subject to laws applicable to Alaska. It limits surface disposition of coal lands in Alaska to homestead claims initiated by actual settlers. It provides that any person qualified to acquire coal deposits or the right to mine and remove the coal shall have the right at all times to enter upon the lands entered or patented for the purpose of prospecting for coal on approval of a bond to the Interior Department as security for payment of damages to crops and improvements on the land. Persons acquiring from the United States coal deposits on such land or the right to mine or remove the same may reenter and occupy so much of the surface as may be required for purposes reasonably incident to mining and removing the coal, and m. and remove the coal upon payment of damages caused thereby to the owner. The bill does not authorize the exploration upon or entry of any coal deposits withdrawn from exploration and purchase.

WEST VIRGINIA

J. K. Dering, president of the J. K. Dering Coal Co. of Chicago, was recently in Charleston.

C. L. Menager, cashier of the Smokeless Fuel Co. of Charleston, was a visitor in Eastern cities recently.

In a party of coal men who enjoyed a hunting trip in the mountains of West Virginia recently were **Quin Morton** of the Wood-Morton Fuel Co.; **G. H. Caperton,** president of the Smokeless Coal Association and also of the New River Coal Co.; **Harry M. Hall of the Ft. Dearborn Coal Co.,** and others.

Capitalized at $200,000 the **Nagola Coal Co.** has been organized, with headquarters in Huntington. Among those actively identified are: A. D. Cronin, Detroit; G. R. Williams, Thomas E. Jeffries, L. T. Pope, B. L. Douglas, all of Huntington.

By the end of September the casualty rate in West Virginia had been reduced to twenty-five a month. As is usually the case, nearly half of the deaths in West Virginia mines during September were due to falling roof coal, etc., the deaths from such a cause amounting to eleven. There were five mine car accidents, two motor car accidents, two deaths from explosives, one death from electrical shock and one death in a shaft, so that only three deaths occurred outside the mines.

A joint meeting of the stockholders and directors of the **Mineral County Coal Co.** was held recently. The new organization consists of the following officers and directors: H. L. Arnold, president; Emory Tyler, vice-president; Miss Margaret Gilmore, secretary and treasurer; H. C. Hodges, attorney in fact. On the board of directors are R. W. Thrush, R. E. Wiseman, Henry F. Burgess, Oscar Cosner, Mrs. Beulah Wells, H. L. Arnold and Emory Tyler.

It is understood that **R. B. Isner,** general manager of sales of the Boone County Coal Corporation, with headquarters at Sharples, has resigned to accept a similar post with

the Old Dominion Coal Corporation at Charleston.

Charter of incorporation has been issued to the **Pigeon Creek Mining Co.**, of Burch, Mingo County. The capital stock is $100,000 and the incorporators are K. S. McClanahan, William McClanahan, of Burch, C. R. McNutt, J. R. Hatcher and W. J. Elliott, of Princeton, Mercer County.

The Beard Smokeless Coal Co. has been taken over by its creditors. The headquarters are at McVey. This company has been operating on a lease of 500 acres and had an investment of approximately $150,000. It is generally believed in Winding Gulf coal circles that the stockholders will have no difficulty in so reorganizing and getting the company back on its feet.

In preparation for the time when it may not be possible to secure an adequate car supply, the **Gulf Smokeless Coal Co.** has under construction a storage bin, adjoining the tipple of the plants at Tams. Construction work is about completed and the company will be able to use it in the near future.

Further development of the Pond Creek territory is presaged by the organization of the **Bailey Pond Creek Coal Co.**, the headquarters of which will be at Williamson, this company having a capitalization of $125,000. Active in organizing the new company were L. B. Saunders, W. J. Bailey, M. P. St. Clair, Fred Bailey and R. G. Bailey, all of Williamson.

John Reydon and associates who recently purchased the old plant and property of the **Potomac Coal Co.**, near Frostburg, have begun the work of preparing the mine to be reopened, having a large force of men at work.

F. C. Colcord, in charge of the operation of the Colcord Coal Co. at Montcoal, was a recent visitor in Charleston.

Recent issues of coal mining charters are as follows: **Coban Hill Coal Co.**, Tunnelton, capital, $250,000, by H. C. Miller and others; **Fielder Coal & Coke Co.**, Morgantown, capital, $250,000, by Stanley H. Fielder and associates; **Maine Collieries Co.**, Morgantown, capital, $1,000,000, by M. L. Taylor and others; **Equitable Coal Co.**, Morgantown, capital, $150,000, by C. M. Lyons and associates; **Mineral County Coal Co.**, Keyser, capital, $250,000, by H. C. Hedges and others; **Bear Mountain Gas Coal Co.**, Flemington, capital, $200,000, by West Virginia and Pennsylvania operators.

Percival Johnson, president of the Pulaski Iron Co., with headquarters at Philadelphia, was inspecting the properties of his company in the Pocahontas field and the iron properties of the company in Pulaski, Va. recently.

BRITISH COLUMBIA

BRITISH COLUMBIA COAL PRODUCTION IN SEPTEMBER, 1921

Vancouver Island District

Mine	Tons
Canadian Western Fuel Co.	68,470
Canadian Collieries (D) Ltd.:	
Comox	37,952
South Wellington	7,802
Extension	19,016
Nanoose Wellington Collieries	5,733
Granby Consolidated M. S. & P. Co.	22,374
Old Wellington (King & Foster)	604
Total	161,951

Nicola-Princeton Collieries	
Middlesboro Collieries	5,311
Fleming Coal Co.	3,444
Coalmont Collieries	7,604
Princeton Coal & Land Co.	1,666
Total	18,025

Crow's Nest Pass District

Crow's Nest Pass Coal Co.:	
Coal Creek	37,459
Michel	25,259
Corbin Coal & Coke Co.	6,226
Total	68,944
Grand total	248,920

Production in the province shows little variation when figures for September are compared with those of the previous month. In the Crow's Nest Pass there were smaller tonnages produced at Coal Creek Collieries and at Corbin, while at Michel there was an increase. On Vancouver Island the output was kept at practically the same mark, while in the Nicola-Princeton Field there was some decline. Production for August was 252,677 tons, while in September it was 248,920 tons.

ONTARIO

The plant and equipment of the **Anthracite Briquette Co.**, Ashbridge's Bay, Toronto, has been purchased by the **Financial Underwriters, Ltd.**, of that city. The company was owned by A. E. Gooderham and associates. Under the new management a briquette made by the Dutch oil process similar to Nukol, will be produced. In all probability the newly acquired plant shortly will be added to the assets of the **Nukol Fuel Co.**

Traffic News

Hearing in the case of the **Consolidation Coal Co.**, scheduled for Washington Nov. 14 has been postponed to a date to be hereafter fixed.

In a brief submitted to the I. C. C. by the **Dayton Malleable Iron Co.**, in its pending case, it is contended that the combinations of local rates between mines on the Kelly's Creek and Northwestern R.R. and Ironton, Ohio, are unreasonable because they exceed by more than 5c. a ton the rates from points on the C. & O. in the Kanawha District.

The Interstate Commerce Commission has suspended until March 27 proposed reductions of 28½c. per ton on bituminous coal, lump and slack, from mines on the **Missouri, Kansas and Texas Ry.**, in Missouri, Kansas, Arkansas and Oklahoma to Kansas City, Mo., and contiguous points.

The Louisville & Nashville R.R., on Nov. 25, will put into effect through rates now being published from Louisville & Nashville western Kentucky mines to points on the Grand Rapids & Indiana, Pan Handle Monon and Pennsylvania roads in Central Freight Assocation territory.

The I. C. C. has suspended until Dec. 19 the proposal of the B. & O. to eliminate the application of the present rates on coal from Western Maryland Ry. mines to points on the B. & O. and its connections over the route through Cherry Run, W. Va., and Westport, Md., making applicable instead combination of locals via these routes, and establish instead in connection with the present through rates, specific routing via Cumberland and Bellington, W. Va.

The Ashland Coal and Iron Ry. Co. of Kentucky has asked the commission for authority to issue a four-months' note or notes for $180,000 to discharge an open account with the Ashland Iron and Mining Co.

In the complaint of the **Washington Steel and Ordnance Co.**, the commission decides that the rates on bituminous coal from the New River, W. Va. fields to the plant of the Company at Uniontown, D. C., are not unreasonable.

In the complaint of the **Hydraulic Press Brick Co.**, an I. C. C. examiner recommends that rates on bituminous coal from certain mines in the Clinton and Brazil districts in Indiana to Bristol, Ind., during Federal control were not unreasonable.

Hearing in the case involving coal rates from Wyoming mines to stations in Utah scheduled by the commission at Salt Lake City Nov. 21 has been postponed to a date to be announced later.

The Western Pacific R.R. will reduce the rate on bunker coal from Utah mines to San Francisco and Oakland to $6 per ton. The present rate is $7.25 per ton. This reduction will not affect coal for domestic use.

Association Activities

Southern Coal Merchants' Association

A new association known as the "Southeastern Coal Merchants' Association," was formed recently. Prominent coal merchants from the states of Alabama, Florida, Georgia, North Carolina, South Carolina and Tennessee met at Atlanta, and organized the new association, with the following officers: J. A. Yarbrough, Charlotte, N. C., president; C. M. Farrar, Augusta, Ga.; W. T. C. Berlin, Memphis, Tenn.; J. W. Mallory, Anniston, Ala.; B. Bilas, Ashville, N. C., and H. R. Tuger, Greenville, S. C., vice-presidents; and J. W. Hancock, Marietta, Ga., treasurer.

By a unanimous vote President Yarbrough was directed to make application immediately for membership in the national association.

A committee consisting of Fred E. Gore, Southern manager of the Blue Diamond Coal Sales Co.; Grover Meinert of the Meinert Coal Co., Atlanta, and James S. McCarthy, field secretary of the national association, was appointed to assist the president and board of directors in the selection of a secretary.

Pocahontas Operators' Association

The association during the latter part of October was engaged in making preparation for another hearing in the freight rate case of the Southern Ohio Coal Exchange to be held at Atlantic City. Members of the association are deeply interested in this case, owing to the effect it will have on rates from the Pocahontas field into certain Western states.

Kanawha Coal Operators' Association

There was a 100 per cent attendance at the annual meeting of the association held in Charleston on Oct. 20. Directors were elected, officers to be selected later by the newly elected directors. On the roster of directors elected are the following: C. A. Cabell, general manager of the Carbon Fuel Co. of Charleston; C. C. Dickinson, of the Dry Branch Fuel Co. and other Dickinson interests at Malden; W. M. Wylie, general manager of the Boone County Coal Corporation, Sharples; John Snure, of the Kelley's Creek Colliery Co., Ward; F. O. Harris, Cannelton Coal Co. of Cannelton; H. L. Warner, of the Kanawha & Hocking Valley Coal & Coke Co., Cleveland; Lute Hornickel, of the Anchor Coal Co., Highcoal; A. B. Rawn, vice president of the Solvay Collieries Co. of Huntington.

The business meeting at which directors were elected was followed by a luncheon at the Kanawha Hotel, addresses being made by a number of the well known operators of the Kanawha Valley.

Obituary

James Redding, aged 56, owner and operator of the Dysart Coal Co., mine at Dysart, Pa., died recently at his home in Altoona. He was interested in mining for twenty years.

Henry A. Bastien, secretary of the Egyptian Iron Works, of Murphyshoro, Ill., died recently.

P. J. Elliott, formerly a newspaper man of Columbus and later associated with Dan Cannon in the Cannon-Elliott Coal Co., a retail concern, died recently.

Coming Meetings

West Virginia Coal Mining Institute will hold its next meeting Dec. 6 and 7 at either Charleston or Huntington, W. Va. Secretary, R. E. Sherwood, Charleston, W. Va.

New England Wholesale Coal Association will hold its annual meeting Jan. 10, 1922, at Boston, Mass. Secretary, R. S. Townsend, 27 Kilby St., Boston, Mass.

Southern Appalachian Coal Operators' Association will hold its next meeting Jan. 27, 1922 at Knoxville, Ten. Secretary, J. E. McCoy, Knoxville, Tenn.

Pike County Coal Operators will hold their annual meeting Jan. 6, 1922, at Pikeville, Ky. Secretary, F. E. Miller, Pikeville, Ky.

The Coal Mining Institute of America will hold its annual meeting at Pittsburgh, Pa. Dec. 7, 8 and 9. Secretary H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

The Illinois Mining Institute will hold its fall meeting in the City Hall, Springfield, Ill., Saturday, Nov. 19. Secretary Martin Bolt, Springfield, Ill.

American Society of Mechanical Engineers will hold its annual meeting, Dec. 5-9 at the Engineering Societies' Building, 29 West 39th Street, New York City. Secretary Calvin W. Rice, 29 West 39th Street, New York City.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors*.

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One Explanation of Increased Coal Prices

EVERY attempt to answer the public's demand for knowledge as to who is getting the difference between the present and pre-war prices of household coal should be encouraged. It is the delivered price of coal that impresses the everyday consumer, and he will respond to a reasonable appeal to his sense of fair play.

The New York Trust Co. recently published the results of a study of present and pre-war costs of household anthracite in New York City. From mines to consumer's curb in Manhattan the price of the stove size of hard coal is shown to have increased from 1913 to 1921 by $6.64 per net ton, or 100 per cent. Of this gain, mine labor is reported as taking $2.70 per net ton, and railroad freight and lighterage in New York harbor $1.47. The retailer's gross margin—that is, the difference between cost on cars at his yard and the price he charges delivered at the householder's curb—has increased $1.08, which amount, it may be argued, is largely represented by increased costs of doing business. The operator's gross margin, which includes Federal taxes, interest on investment and profit, is reported to have increased 28c.

It is brought out in this study that wholesale—that is, mine—prices have increased 134 per cent, compared with a gain of 100 per cent in retail prices. There is no special significance to be attached to this point. The final price has increased in proportion to the weighted average of its components, and mining costs have gained the most. Furthermore this study by the New York Trust Co. is but one sample of the retail end of the business. It is, we believe, an honest attempt to answer a pressing question, the answer to which is easy for any particular ton of coal, but difficult for all coal, because of the little appreciated diversity of factors involved.

Will the Public React to a Coal Strike As to the Threatened Rail Tie-up?

THERE is now assembled at Washington a conference to settle or attempt to settle the largest question before the peoples of the whole world—the reduction of taxation through limitation of armaments. Reduced to simplest terms the conferees are meeting to find a way to substitute reason for force in settling international disputes. It is as if players of chess having kings, queens, rooks and pawns, each in number corresponding to wealth, were meeting to reduce the game from a question of resources to one of science and reason, by limiting the number of pieces with which the game is played to that which is fair to all. It is the hope and prayer of the peoples of the world that this conference will succeed where that in Paris failed. The destructiveness of force has been made evident; hope lies in the constructiveness of reason.

We hate warfare but we are not afraid of it. Three weeks ago this country faced the prospects of a nation-wide railroad strike—a form of warfare. The country squared itself for a fight, deploring the necessity, if necessity it had become, but determined to see it through, if need there should be. The temper of the public was belligerent, but when the issue was settled, at least for the time being, a great sigh of relief arose from coast to coast.

Who won? The labor unions? No, because they have only postponed a further reduction in wages—the immediate cause of the strike threat. The railway managers? No, because they welcomed a trial of force at this time. The public won; won because the outcome is the upholding of the law of the land, which puts public welfare above class desire. The issue on which the public made itself heard was not the adequacy of wages, but strict compliance with the procedure set up by law for the determination of wages. The world is sick of strife and warfare and its costs in life and treasure.

There is another industrial dispute of national proportions looming up on the horizon. The organized coal miners of the country are meeting the pressure of a vast public demand that their wages come down in order that people may have cheaper fuel. There is no denying the pressure of economic forces everywhere pushing prices of everything lower and the value of the dollar higher. The miners cannot hope to maintain the level of wages they exacted when prices and profits in coal were higher than are now economically justified. Perhaps they recognize this and only hope to save themselves from too drastic a cut next April, when their contracts expire. There is no reason to expect that they will gracefully accede to a reduction, much less offer to accept one.

Will a resort to force be necessary next spring? Is a strike inevitable? We do not believe it is, but there must be a reversal of form in every camp—miner, operator and public—if it is to be averted. But will public opinion play as large a part in a controversy between coal-mine operators and miners in the spring of 1922 as it did in the winter of 1919 or as it did last month in the railroad dispute? It is one thing for consumers, practically unprepared, to face a suspension of coal production at the approach of winter or the stoppage of transportation at any time, and another thing to contemplate a cessation of coal production at the beginning of warm weather and with bins and storage piles heaped up with coal.

In the pre-war days of biennial negotiations and suspension of mining in April and May, there seldom was cause for national concern, because the lack of production was always discounted in advance by ample storage of coal. It was seldom the case that the total coal produced in those years was less than it would have been had there been no strike. The year 1916 was an example of this. In anticipation of a stoppage in April con-

sumers had taken large quantities of coal in advance. There was no suspension that year but mining operations were almost as slack as if there had been one—because of no market.

On the other hand, conditions may be quite different in the spring of 1922. For reasons now unforeseen or because of holding back in anticipation of lower freight rates, consumers may not protect themselves with ample storage before March 31, 1922. Business and industry may be improving so rapidly at that time as to upset all calculations as to coal requirements. Next spring may be the one spring when a strike or suspension would prove to be a matter for national concern. Where such is true, the public becomes judge, jury and executioner. It may be worth while to consider in advance some way to forestall such a contingency.

The Slogan Wins

PUTTING the issue in simple words is good campaign psychology, whether it be a mayoralty campaign in Greater New York or an advertising campaign for the coal industry. The pull of the slogan "Hylan for Five-Cent Fare" was demonstrated by the astounding vote that gentleman received last week. Five cents for a ride on a street car or subway as distinguished from 8c. or 10c. for the same service was a subject for decision not above the comprehension of the majority of voters. It had an appeal as convincing as Mark Hanna's slogan on the "Full Dinner Pail," even though it does not appear really to have been the issue at all.

Voters in vast multitudes will rally around a popular issue. Such an issue a year ago was the high price of coal, not the coal the Steel Corporation or the American Wooden Mills burn but the coal the voter buys and puts in his cellar or in his back yard. It is as simple to cry aloud for lower coal prices and berate the operators as profiteers as for the Tammany candidate for Mayor of New York to emblazon "Five Cent Fare" on his banner and assert that he alone stands between the "interests" and the public.

A real task in publicity is to take to the public a real, constructive, simple story on coal. Such a story cannot be so simple as a pronunciamento that prices can't come down because things are as they are. The railroads, for instance, have been saying that they could and would meet the demand for lower freight rates when their principal item of cost—labor—was lowered. They have staunchly met the threat of strike of the railway workers' unions by continuing to say that they will press for wage reductions so that freights may come down. They are meeting the issues with the slogan "Wages down, freights down." And the public, informed and on guard, is with them so long as they proceed in an orderly fashion.

The railroads are in a fortunate position respecting the publicity on their profits. They merely turn to the record of the Federal Government to substantiate their statements that they are not profiteering. If the price of coal to the consumer can be reduced only by reducing wages, then the consumer asks and is entitled to know how far and how soon wages can be reduced. Everyone but a few individual coal operators and the miners have been saying for months that not later than next April coal mine wages must come down. But so far there has been no slogan, no united effort, except that of the United Mine Workers, to offset the insistent pressure of public opinion against coal.

The biggest issue that now confronts the coal industry is labor, and there is no organization among the operators qualified to have or express a national opinion on the subject. Apparently incapable of having a national policy on labor, is it any wonder there is no sign of a national effort to prepare the miners and the public, and themselves as well, for what readjustment and deflation can and must be had before the coal industry and the business of the country dependent on coal for fuel and power can settle down for the long pull?

Superpower Project Is Sound

MANY there are who look upon the superpower plan as a fantastic dream of theorists—something that sounds well but, of course, will not be realized. We believe the idea is sound. As a complete enterprise, as pictured in the report just issued by the Geological Survey, it may not be attained, but the fundamental conclusions are worthy of study by the coal industry. The whole conception is founded on more efficient production and distribution of power in an area where in prosperous times power is at a premium. There is nothing save the atrophy of industry on our Atlantic seaboard that can prevent the fulfillment of the essentials of the superpower dream, and nothing will so limit industrial expansion here as lack of the cheap power this system will supply.

It is the conclusion of the engineers who made the survey that producing power is a business in itself and that users large and small will turn to central station power at an accelerated rate. Some 19,000 miles of railroad in the zone examined are held to be susceptible of economical operation by electricity to be supplied largely by power companies. The question that should concern the coal industry is whether the power companies will in turn own the mines from which the needed coal is to come or will leave the supplying of coal to the coal men, as, in turn, a business in itself. Beyond question the tendency now is for large consumers of power to own and operate their own mines. The newer large central stations are developing new mines as they go along.

Of importance too for the seller of coal is the anticipated increase within the next decade in the dimensions of the power plants. Whereas in 1919 the average size of the electric utility plants within the Boston-Washington zone was 7,900 kw. by 1930 this size will have been increased to 29,900 kw. It is noted in the report that the average size of new steam electric plants to be installed will be 218,000 kw. as against the present 10,000 kw. In other words, with the buying power concentrated in fewer hands, the competition in selling coal for central power plants will be many times keener than now. A situation similar to that in the Chicago territory will develop in the East, in which a few large consumers can make or break the market in ordinary times because their huge requirements represent such a large portion of the offerings of steam coal in that market.

It is the opinion of the engineers making the report that the superpower system should confine its activities to the production of power and the storage of coal. Ownership of coal mines, coal cars, and coal delivery routes were each considered and are opposed. The possibilities of stabilizing the Eastern steam coal market offered in prospect by this system are great.

A Sawmill for Mine Posts at an Anthracite Mine

Lengths Needed Vary, so Logs Must Be Cut at Plant

Wood Preservative Which Makes Putrescible Matter Stable, Strengthens Timber, Making It Fire Resistant

Consists of Oxides of Copper and of Zinc, Ammonia and Carbolic Acid—Solution of Copper Oxide in Ammonia Dissolves Albumin, Cellulose and Pectines, Making New Bodies Which Cement Wood and Render Inconstant Substances Stable

By F. G. Zinsser*

OF THE MANY preservatives that have been used for prolonging the life of timbers the most important are chloride of mercury, sulphate of copper, chloride of zinc, creosote and a combination of the last two.

The impregnation of dried wood with a cold solution of bichloride of mercury produces excellent results. The bichloride is extremely antiseptic and has the advantage of small bulk. It is sold in solid form, and the difficulties of transportation are therefore entirely eliminated. In spite of all this and the fact that a complete and permanent preservation can be obtained with 2 or 3 per cent of this salt, the cost is prohibitive, and the poisonous character of the mercury salts makes their use extremely dangerous.

Sulphate of copper is used in 1 or 2 per cent water solution. It is inexpensive, and for this reason as well as for its good qualities it has been used in many European countries. As it is not caustic it does not injure the wood and leaves it clean and odorless. Being an astringent, the wood into which it is injected becomes more tenacious. Because the oxide of copper, which protects the vegetable fiber, is volatilized only at a high temperature, this treatment makes the timber less combustible. Nitrogenous matter impregnated with sulphate of copper becomes rotproof, because a metallic substance hostile to parasites has combined with the albumens, which are then no longer likely to rot. Copper sulphate has kept ties and posts, when placed under conditions which retain this antiseptic in the wood, in a perfect state of preservation forty-four years after they were placed.

Unfortunately, sulphate of copper seriously affects iron. Nails and spikes coming in contact with it are corroded through the formation of sulphate of iron. For that reason vacuum and pressure injections can be made only in copper impregnating apparatus, and this is too expensive to be used economically.

However, sulphate of copper in the presence of rain water and earthy alkalies in the soil is dissolved. Posts impregnated with it and placed in the ground lose their copper entirely under the action of these solvents, and in five or six years become quite rotten, according to Leduc, Director of Belgian Telegraphs, in the *Revue Universelle des Mines*, 1897. When the copper has disappeared the pores of the wood are open to the attacks of a legion of microbes.

When wood is treated with zinc chloride in a water solution it is either immersed in open vessels or impregnated by a vacuum-pressure treatment. This preservative has great antiseptic qualities, and the compound formed with the albuminous substances of the wood strongly resists rotting. Unfortunately, like copper sulphate, it does *not* resist the action of solvents, and is decomposed in the presence of lime in the soil.

*President, Zinsser & Co., Hastings-on-Hudson, N. Y.

As it is hygroscopic—absorbing water from the air—it can be used only in places that are permanently dry. Like wood treated with copper sulphate, when freed of the preservative the pores of the wood are left open and favor putrefaction, with resultant disintegration.

Pine ties impregnated with zinc chloride lost 80 to 85 per cent of the original salt three years after impregnation, and beech ties from 90 to 95 per cent. Zinc chloride is an acid salt, and when it combines with the albuminous substances in the wood it sets free hydrochloric acid, which, according to Hutin and Boutigny, damages the vegetable fiber. The acid also attacks iron, and this in railroad ties and in much other equipment is highly undesirable.

Creosote Long Known as Stable Preservative

the fatty and oily substances, such as paraffin, inert most desirable as a preservative. It shows great stability, and for that reason has had extensive use for this purpose. It is a thick fluid, which must be raised to a temperature of 178 deg. F. for diffusion through wood, and a large quantity of it must be used if the best results are to be obtained. In 1876 the Western Railroad Co. of France reduced the quantity used on its ties about one-third, but found that after three years rot began to appear, and that after five years the ties had to be removed. The loss of creosote from creosoted ties on the roads of the company just mentioned is shown in the table given below:

Date	Pounds	Date	Pounds
August, 1904	45 29	October, 1907	18 84
October, 1904	37 69	October, 1908	17 85
October, 1905	28 76	October, 1909	17.08
October, 1906	22 44		

After all, oil is an emollient which softens the vegetable fiber and lowers its physical resistance, and while the fatty and oily substances, such as paraffin, inert in themselves, will remain, the antiseptic elements—carbolic acid, aniline and the like—being soluble in water, are apt to be removed.

Carbolic Acid Soon Washes Out of Wood

Blocks of wood impregnated with carbolic acid, which would seem to promise long life because that acid is the most effective matter contained in the coal-tar oils, do not show the resistance expected of them. The coal-tar oils themselves, containing some carbolic acid, are found to be better preservatives, as the insoluble fatty matters tend to act as a waterproofing, and the rain is less able to remove them. When creosote is applied to paving, however, it has been found that it does *not* prevent the moistening of the wood sufficiently to prevent expansion and consequent heaving. Wood treated with creosote is sticky, heavy and difficult to handle, has an irritating odor, and it is asserted that the creosote increases inflammability.

From 15.6 to 18.7 lb. of creosote per cubic foot of timber is recommended abroad for satisfactory results. The cost is therefore high considering the additional expense of manipulation, and to this must also be added the freight where the creosote has to be carried long distances. This is important, as the creosote is used without dilution, and every pound used must be transported.

According to Henri Monseur, the inventor of the wood preservative Ac-zol, this substance retains all the important properties of the older preservatives and eliminates their objectionable features. As he frankly says, he is not offering anything new in the way of antiseptics, but makes use of the well-known qualities of carbolic acid, which is the active principle of creosote oil, and the efficient action of both zinc and copper. He compounded these in such a manner that though readily soluble during the treating process, they become permanently fixed in the wood after impregnation is complete and the wood dried. He makes use of the fact that an ammoniacal copper solution softens wood fiber, and that after the ammonia, which acts simply as a carrier, has evaporated, the combination of copper and wood fiber becomes hard again. That is how artificial silk is made.

This preservative, as the name implies, is made up of ammonia, copper, zinc and phenol, the latter being the chemical name for carbolic acid. Softened in the manner described above, the wood absorbs the solutions readily, and after the ammonia is evaporated, the salts of zinc and copper with carbolic acid, being neither corrosive nor conductors of electricity, are firmly and permanently imbedded in the wood. The antiseptic qualities of these salts are well known. None of the vegetable parasites, worms or wood borers can live in their presence.

Preservative Adds Strength to Wood Fibers

It should be added that the carbolic acid, being present in combination with these metals, does not impart any odor to the wood. The preservative actually increases the strength of the wood as the copper and zinc salts combine with the vegetable matter, such as albumin, tannin and pectines, and form a sort of binder, which hardens to a cement, closely uniting the wood fiber.

Ac-zolated wood placed in mines in 1910 and 1912 is still in position in 1921. After nine years of service it is in perfect preservation, and in all probability will last for a long time to come, whereas untreated timbers in the same position were totally unfit after six or seven months. This is the statement of G. Deltenre, managing director of the collieries of l'Arbre St. Michel at Mons lez Liége, one of the largest collieries in Belgium.

Wood consists of two parts, the sapwood and duramen. The sap, or imperfect new wood, contains channels surrounded by living cells composed of cellulose, pectine and albuminous substances. The decomposition of these is rapid as soon as the life of the plant ceases. The duramen is the center of the tree and is formed of completely lignified tissue in which living substances are replaced by incrustations of mineral bodies drawn from the soil, such as lime, magnesia, iron, silica, etc., and also contains tannins. This part of the tree is extremely resistant to decay. The Ac-zolating process does the work that nature has not had time to accomplish in the sapwood by changing its chemical composition.

The first engineers to use Ac-zol were Lambiotte and Grad, director general and chief engineer respectively of the Elizabeth and Courcelles-Nord collieries in Belgium. At the Elizabeth colliery, Auvelais, Belgium, several timbers were placed in the return airway on Sept. 20, 1910, some treated with Ac-zol and some untreated. On Jan. 10, 1911, two of these, one treated and the other untreated, were taken out. The latter was rotted to such an extent that it could no longer offer effectual resistance. Four rings of each of these two timbers were sent to the State Testing Station at Malines and were submitted to a crushing test. The average crushing strength of the untreated was less than half of the treated timber. Only the center of the untreated material, about 1.6 in., remained fibrous.

Regarding the timber placed Sept. 20, 1910, I have no further information, but J. O. Grad, now works director of the Courcelles-Nord colliery, in March, 1918, declared that Ac-zolated timber placed Oct. 15, 1910, in a return airshaft in the Allaye mine at a depth of 458 ft. was still in good condition and likely to serve for many more years.

On Feb. 6, 1918, according to Carlo Fremin, chief engineer of the D'Aiseau-Presle collieries, the timber placed in a return airway in the Roselies shaft workings in July, 1913, was still in place and likely to give several years of service, despite the fact that unimpregnated timbers placed in May, 1914, had been renewed each year since that date.

Dr. A. Berge, professor at the University of Brussels, reduced three kinds of treated wood to sawdust and treated the dust with water saturated with carbon dioxide and alkalies. The wood treated with 2 per cent of copper sulphate lost 77 per cent of its copper. The one treated with 2 per cent of copper sulphate and 3 per cent of ammonia lost 41 per cent of that metal and that treated by Ac-zol lost only 3½ per cent.

Experiments on Wood in an Activated Soil

He then took pieces of wood and placed them in wet ground charged with a solution of invert sugar and brewers' yeast. After forty-eight hours at 86 deg. F. the Ac-zolated wood lost 4½ per cent of its copper and wood impregnated with 2 per cent of sulphate of copper, 81 per cent. As Ac-zol does not contain either sulphates, chlorides or nitrates, it does not attack iron.

Wood was immersed in Ac-zol for twenty-four hours by Durieux, general overseer in the research service and experimental station for rivers and forests of the Belgian government. It was then desiccated and buried for nine months with manure, when it was again dried and weighed. The Ac-zolated wood lost 9.11 per cent, whereas natural wood lost 38.26 per cent and that treated with a 2 per cent solution of copper sulphate lost 22.61 per cent of its weight. These are averages of many experiments made on samples of alder, fir, birch, oak and pine.

At the Malines State Experimental Station in Belgium five sets of tests were made for the resistance to compression. The average results were for creosoted wood, 4,125 lb.; wood treated with sulphate of copper, 7,538 lb., and Ac-zolated wood, 8,164 lb. per square inch. Under tension the results were: Creosoted wood, 5,021 lb.; wood impregnated with copper sulphate, 5,547 lb.; Ac-zolated wood, 8,150 lb. per square inch. Four compression tests were made on behalf of the management of the Elizabeth colliery by the same authorities on treated and untreated timber. Natural wood showed a strength of 6,614 lb. and Ac-zolated wood, 12,829 lb. per square inch.

The salts of the heavy metals contained in Ac-zol render the wood fire resistant, and so long as these salts have not been volatilized by high temperatures, their presence diminishes the fire danger. Ac-zol is transported in a highly concentrated form. Six or eight parts of this solution with 94 or 92 parts of water is the proper concentration for treatment, which can be made either by immersion, a vacuum-pressure treatment or by application with a brush. Where small quantities of wood are to be impregnated and where means for vacuum and pressure treatment are lacking, a simple cold immersion is sufficient and insures a very satisfactory penetration where heavy oils would not penetrate, even when applied hot, except in a superficial manner. However, even with Ac-zol the vacuum and pressure method is always preferable. This system is much easier for the injection of Ac-zol and much more rapid than with creosote, the first being applied cold whereas coal-tar oils without the aid of heat are not sufficiently liquid to penetrate.

It may be added that the wood impregnated with Ac-zol can not only be tinted with any color but after being dried can be painted. Its increased strength

PILES OF WOOD TO BE USED IN THE MARVINE MINE OF THE HUDSON COAL CO. FOR POSTING ROOF

This picture is not only expressive of the large part timber plays in the development of an anthracite mine but also shows the long conveyors which are used at the Marvine breaker for transporting the coal from the headhouses for treatment. These lines carry the coal over the railroad and are 1,100 ft. long.

makes it especially valuable wherever the timber is subject to great weight. Where stocks of timber have to be carried, the wood is often found to have lost 40 per cent of its resistant power before it is put in the mine. When Ac-zolated, it can be kept in stock without deterioration and as the replacement of timber is less frequent, stocks can be diminished, saving appreciably in invested capital and the area devoted to its stocking. Furthermore, timber can be purchased when it is cheapest, be brought to the mine when it is best transported, and still be in condition for replacement when needed.

Who's Who In Coal Mining

H. G. Williams

THOUGH he is consulting manager for the Utah Fuel Co., H. G. Williams no longer spends all his time in Utah, yet any stranger interested in coal mining, coming into the state, would soon learn that he was the dean of the coal operators of Utah and one of the outstanding figures in the Rocky Mountain region.

Mr. Williams was born in 1856 at Merton, Wis., where he received a general education. Later he entered the University of Chicago. In his junior year at this institution he was forced to stop his studies on account of poor health.

Starting as a transit man for the Atchison, Topeka & Santa Fé R.R., he constantly rose to higher positions with a progress that was both rapid and sure. In 1880, one year after he was employed as a transit man by the Santa Fé, he was given charge of a division out of Atchison, Kan. After holding this position he resigned and became superintendent of the Capitol Iron Works at Topeka, Kan., for two years, when he was called back (in 1883) to the Santa Fé railway and made engineer and sales agent for the coal companies in Kansas belonging to that railroad.

In 1884 he was mining engineer for the Raton Coal & Coke Co. In 1886 he was raised to chief engineer, and his authority was extended to the San Pedro Coal & Coke Co. in New Mexico and the Trinidad Coal & Coke Co. in Colorado. In 1887 he added the engineering work of the Canyon City Coal Co. in Colorado to his other tasks, these companies all being controlled by the Atchison, Topeka & Santa Fé Ry.

In 1888 he was made chief engineer for all the coal properties of the railroad company, including, in addition to the above, the Cherokee & Pittsburgh Coal & Mining Co., and the Osage Carbon Co. of Kansas. In 1890, after the change in control of the Atchison, Topeka & Santa Fé Ry., Mr. Williams resigned and took the position of chief engineer with the Pueblo Smelting & Refining Co., Pueblo, Col. This position he resigned in 1891 to become assistant superintendent and engineer for the Pleasant Valley Coal Co. in Utah, which is now part of the Utah Fuel Co.

In 1892 he returned to the position of chief engineer with the Pueblo Smelting & Refining Co. and two years later rose to the position of assistant general manager. In 1896 he was again called to Utah by the Pleasant Valley Coal Co. to become its superintendent and chief engineer, with headquarters at Castle Gate. From that time until the present Mr. Williams has been identified with the same company, rising to the position of general superintendent in 1900, to general manager of both the Pleasant Valley Coal Co. and the Utah Fuel Co. in 1901. After holding the position for fourteen years, he resigned in 1915 and became consulting manager, which position he still holds. He was succeeded as general manager by A. H. Cowie.

Utah has produced a number of coal operators whose successful accomplishments have made them known to the coal industry all over the United States, and due to the fact that the Utah Fuel Co. (including the Pleasant Valley Co.) was for many years the outstanding coal producer of the state most of these men have worked for Mr. Williams or been associated with him. Mr. Williams is a man of forceful character, but possesses a kindly and sympathetic disposition and a keen sense of humor, which give him the great gift of holding his friends.

H. G. WILLIAMS
Consulting Manager, Utah Fuel Co.

Mr. Williams has always zealously guarded the safety of his men and either initiated or assisted in the adoption of the methods which are used in the coal mines of the state to protect the miners. This includes the sprinkling system, which is used in all the mines of the state and which provides a sprinkling line to every working place, also the electric shot-firing system from the outside of the mine, which is in use at the majority of the state's mines. Utah now has probably the most modern set of safety regulations of any coal-mining state in the Union, and when these were being discussed in 1920 Mr. Williams, although resting in California, made a careful study of them and submitted valuable suggestions which were embodied in the final draft.

ABOUT THE ONLY KIND of strike now popular in this country is the averted one.—*Chicago Daily News.*

IT IS REVEALED THAT there are some volunteers in the army of the unemployed.—*Pittsburgh Gazette Times.*

How and How Often Should Mine Electrical Equipment Be Inspected and What Repair Is Necessary?

Economical Maintenance Should Be Assured by Light and Heavy Inspecting, Overhauling and Repairing, the Intervals Between Inspections Depending on Local Conditions—Rub Down and Blow Out Locomotives Every Evening

By H. H. Johnston*
East Pittsburgh, Pa.

Mine equipment will never operate satisfactorily nor will its failure in service be prevented if its various parts are not carefully and systematically inspected periodically. The work of maintaining electrical equipment usually is divided into several classes, the number of which depends, particularly in the mining field, upon the nature of the equipment and the thoroughness of the inspections made.

Some operators divide the work of maintaining equipment into four classes: (1) Light inspection, (2) heavy inspection, (3) overhauling, and (4) repairing. The first three usually are done regularly on a periodic basis, or in accordance with the number of trips made or the tonnage hauled. How often the inspections should be made and what work should be done depends largely on local conditions, and must be determined by trial under the circumstances actually existing.

Almost every mine operator has his own individual way of inspecting, maintaining and handling his equipment, but, because of local conditions, better facilities or greater familiarity with the equipment, some are more successful than others in keeping down the cost of operation.

It has been found, particularly by operators of large mines, that records of inspection covering the number of pieces, cost of each piece, and the time required in repairing or replacing it are of much value.

So far as light inspections of mine locomotives are concerned, before attempting to inspect any part of the electrical or mechanical equipment the trolley wheel should be withdrawn from the wire. Care should be taken to so place the locomotive as to render impossible any interference with the operation of other equipment. Safety should always be made the primary consideration.

Under light inspections will come the observations in general of all mechanical equipment, including the condition of the bumpers, safety lugs, side frames, springs and spring details, condition of trolley wheel, trolley-spring tension, condition of motor commutator, brushes, brush tension, commutator cover, gear cases, motor-bearing lubrication, axle-bearing lubrication, the journal box and its lubrication, and the observation of the controller parts, including the condition of the main drum, main-drum contacts, and the tension on and condition of the main- and reversing-drum contact fingers. During these observations note should be made of any apparent defects which might cause the locomotive to be put out of commission even temporarily prior to the next inspection.

The time allowed between light inspections will depend much upon local conditions, and each mine operator usually must determine their frequency by experience. Without reference to exact local conditions but calculated on the basis of mileage traversed, one such inspection should be made for every 500 to 1,000 miles of travel. Oiling bearings does not usually come under light inspection, and good practice has dictated that these parts be lubricated before starting each day's work.

Many operators require their locomotives to be rubbed down with waste and "blown out" with an air hose every evening after the day's run has been completed. This is good practice and will do much toward keeping the equipment in proper condition.

One heavy inspection should be made for every five to six light inspections, as conditions prevailing in the particular mine may seem to require. In general, such an inspection should be made about every three months if the locomotives are regularly in service. All apparatus should be thoroughly cleaned and lubricated and all necessary repairs made in addition to the work ordinarily performed at the light inspection.

Overhaul Equipment Every Three Years

Some operators make a practice of giving their locomotive equipment a complete overhauling at least once every three years, or at about every sixth or eighth regular heavy inspection. In addition to the work done during each heavy-inspection period, the overhaul should consist of the removal of various assembled parts composing the individual pieces of apparatus on the locomotive. The drum of the controller should be taken off to permit a thorough cleaning and inspection and the condition of the cable and insulation should be noted. All cable and insulating material that underwent treatment during manufacture should be retreated according to the practice recommended by the manufacturer or previously found satisfactory by the operator.

The motors and all parts of the armature, field coils, brushes and bearings should be carefully overhauled. The resistors, fuse boxes, overload relays, trolleys and cable should be thoroughly inspected and put in good working condition. All mechanical details of the machine, including bumpers, side frames, springs,

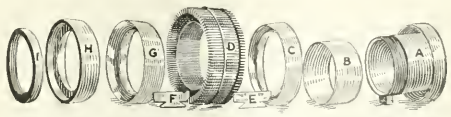


FIG. 1. PARTS OF WHICH COMMUTATOR IS COMPOSED

A, Metal bushing; B, insulating bushing or sleeve; C, rear mica V-ring; D, assembled copper and mica segments; E, mica strip or segment; F, copper segment or bar; G, front mica V-ring; H, metal V-ring; I, ring nut.

*General engineering department, Westinghouse Electric & Manufacturing Co.

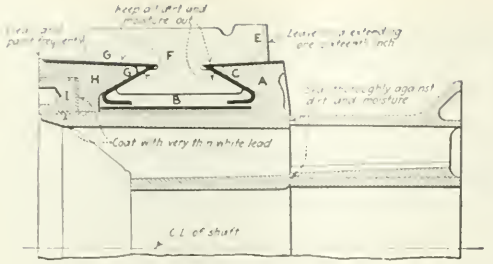


FIG. 2. SECTION OF COMMUTATOR WITH PARTS ASSEMBLED

The letters on these various parts are the same as those in Fig. 1, and the relative position of the parts when in place is shown. The drawing designates the points where all dirt and moisture must be excluded if good results are to be obtained.

spring details, brakes, brake rigging, motor supports and main journals should be inspected and repaired or renewed if necessary.

With a view to bringing the details of upkeep before operators the following has been written, giving methods and practices that have been found efficacious.

Commutators usually consist of a metal bushing with a fixed V-ring dovetailing with the rear "V" in the commutator section, an insulating bushing or sleeve, a rear mica V-ring, the assembled copper and mica segments, a front mica V-ring, a metal V-ring, and a ring nut or holding bolts. In building up these parts to form the assembled commutator, care is necessary if the machinery is to be operated satisfactory. Even with the best of care, specific individual attention must be given to practically all of these parts.

The main operations necessary in the care of commutators are: Smoothing of the commutator face, undercutting, disconnecting leads from commutator necks, and the replacement of parts both when commutator and windings are left on the shafts and when they are removed therefrom.

All Armature Leads Need Not Be Removed

When only a small number of commutator bars are to be replaced it is not always necessary to remove all the armature leads from the commutator necks or to take the commutator off the shaft. To disconnect the necessary leads it is current practice to stand the armature on end with the commutator up and mark each part that is to be disconnected or removed. Upon removal of the ring nut or holding bolts, the V-ring and mica V-ring can be taken out. If the commutator bars are tight, tapping with a wooden or rawhide mallet usually will cause them to loosen. A steel hammer should never be used for this operation. Each new bar that replaces an old one must be filed to shape and brought down to the thickness of the old bar, if it or the old ones next to it are not to become loose. The space where the new bars are to fit should be planed out and the bars tapped into place with the aid of a rawhide mallet.

All detached parts of the commutator must be kept clean and dry. When the parts are ready for returning to place, the mica V-ring should be sandpapered. The metal V-ring and the "V" in the commutator bar should be cleaned, the "V" in the bar being shellacked. Care should be taken to have both the shellac and the brush used in applying it free from dirt and moisture. Then either the V-ring nut is put on or the bolts are drawn up fairly tight after the mica and the metal V-rings have been slipped back into their original positions.

The use of a thin coat of white lead on the threads of the V-ring nut or those of the bolts will make it easier to remove the ring nut or bolts the next time this becomes necessary. The commutator is then heated to 110 deg. C. (230 deg. F.) in an oven where the air is dry. The ring nut or fastening bolts are then drawn up tight while the commutator is at this temperature.

The next operation is to turn the commutator in a lathe to give it once again a smooth surface. It is customary after these repairs to make a voltage test between commutator segments, also between the commutator bars and ground. With 250- and 500-volt motors, 110 volts alternating current should be used for the test between bars and 1,000 volts alternating current for the test between bars and ground.

When many commutator bars or a rear mica V-ring have to be replaced it is usually best to remove the commutator from the shaft. The method of taking down and rebuilding will be the same as that described above, care being taken to heat the commutator thoroughly and thereby soften the new mica so that the V-ring or bolts can be drawn up tightly. In doing this, and when the commutator is assembled, it should be put in an oven and heated to a temperature of 125 to 140 deg. C. (257 to 284 deg. F.). While at this temperature the commutator is placed in a press and a suitable pressure (20 to 25 tons for a 50-hp. motor) exerted upon it. The ring nut is then drawn up tightly while the commutator is still under pressure.

Temporarily Band Segments Before Shipment

Where complete sets of commutator segments are shipped out by the manufacturer, they usually are temporarily banded together, the mica and copper segments being in their proper positions. The complete set should be assembled in the commutator as a unit, the temporary band being removed just prior to the final tightening. After this, the test between commutator bars usually is made with 300-volt alternating current, while that to ground is made with 2,000-volt alternating current.

Any flat spots, high or low bars, ridges, burned places, etc., that may develop should be smoothed. When these are not too bad the motor need not always be removed from the locomotive. A block of wood one face of which has been cut to the radius of the commutator and lined with sandpaper or emery comes in handy for smoothing a rough spot. If the commutator face is extremely rough, the armature should be removed from the motor frame, placed in a lathe and turned. Holes that may be left by defective mica or pits in the side of the bars can be filled with a commutator cement supplied by dealers.

The commutator should be re-undercut before the copper segments have worn down flush with the mica insulation. The groove left will serve as a guide to the saw and make the work of undercutting much easier. If commutation trouble is frequent, it is good practice to use a V-shaped hand tool to round the edges of the grooves between bars to about $\frac{1}{32}$-in. radius. This can be done while the motors are in place on the locomotive. Care should be taken to remove all particles of mica, copper or dirt from the grooves after undercutting.

The band over the front V-ring of a commutator should be wiped off each month. If after cleaning this band is painted with an air-drying varnish the next cleaning will be accomplished with greater ease. It has been found that painting once every six months is sufficient.

Precautions Which, Taken, Will Render the Magneto a Reliable Igniter for Miners' Safety Lamps

Simple in Construction and Reliable in Operation, the Magneto Has Found a Place in Many Mines—In Order to Obtain Satisfactory Results the Device Should Never Be Needlessly Operated When Disconnected from Its Load

By R. Fokes
Walton-on-Thames, England

ADAPTABILITY of the magneto to various purposes in and about the mine has resulted during recent years in a marked increase in the use of this form of electrical generator. As a rule it has been applied to shotfiring and safety-lamp relighting, both of which operations previously had been effected by means of either dry cells or accumulators. Dry cells, which have been used only in connection with shotfiring, are expensive, cannot be recharged and give comparatively limited service. Accumulators, on the other hand, may be recharged, but have many disadvantages that render their employment not a question of choice but of necessity.

The magneto, with its comparatively small bulk, light weight and ever-ready supply of energy, is at present the most convenient form of portable current-generator available for relighting safety lamps. The principles underlying the operation of magnetos are not understood by many who use them in mining, however, and while they are highly reliable pieces of apparatus, it will be obvious that some knowledge of their construction and operation as well as of the causes of indifferent or interrupted service greatly assists in obtaining the best results.

Description of Construction of Magneto

A magneto consists essentially of a strong permanent magnet, between the poles of which rotates a shuttle-type of armature wound with a primary winding (*P*) and a secondary winding (*S*, Fig. 1). One end of the primary winding is connected to the slip ring, from which current is conveyed by means of a carbon brush to the terminal (*T*) of the external circuit. The other end of the primary winding is connected to the frame of the armature, as is also one end of the secondary winding, the other end being led to the contact maker and to the frame of the magneto. Thus when the contact maker is closed the secondary winding is short-circuited. This winding also has permanently connected across it a small condenser (*C*), as indicated. The general arrangement of the armature between the poles is shown in Fig. 2. Of course, the design may be varied at will, but the essentials remain the same.

In operation the magneto is, of course, only a modified form of transformer with a contact maker across the secondary winding. The voltage generated depends on the rate at which the lines of magnetic force are cut by the primary and secondary windings. The ordinary dynamo must be rotated at a constant, and in most cases a comparatively high, speed in order to obtain a sufficiently great electromotive force. The magneto, on the other hand, is called upon to operate efficiently over a wide range of speeds. As a result the general design is such as to make the actual speed of the armature of comparatively small importance. This is accomplished by means of the contact maker or make-and-break mechanism. This will be more fully described later; for the moment, consideration will be given to the effects of making and breaking the circuit of a magneto as the armature rotates.

Referring to Fig. 2, the lines of force from the permanent magnet are shown threading themselves through the iron core of the armature, which is assumed to be stationary. Assuming that the secondary winding is short-circuited through closure of the contact maker, any movement such as that in the direction indicated in Fig. 3 causes both the primary and secondary windings to cut the magnetic field. The primary circuit is normally interrupted by an air gap such as that existing between the lighting pin and wick of a miners' safety lamp. The secondary, with the armature in the position shown, is short-circuited by the contact maker and its movement through the magnetic field induces in it a heavy current in such a direction that it magnetizes the armature core so that a south pole appears in the portion nearest the north pole of the permanent magnet and a north pole is produced in the armature core near the south pole of the magnet. Now, like poles repel and unlike poles attract. Therefore, as shown in Fig. 3, the magnetic field produced by the armature current not only strengthens but distorts and twists the field of the permanent magnet in the direction of rotation. It is at this instant that the contact maker is adjusted to open, with the result that not only does the magnetic field produced by the armature current vanish but the field of the permanent magnet immediately resumes a more normal position, as indicated in Fig. 4.

This disappearance of the armature field and sudden readjustment of the permanent field together induce in the primary winding a high voltage capable of leaping a considerable gap and producing an intensely hot spark. The condenser in the secondary circuit serves to amplify the effect of interruption and simultaneously minimize burning at the contact maker. As the armature makes another half turn the circuit is again closed and the operation repeated, so that a make-and-break occurs twice during each revolution.

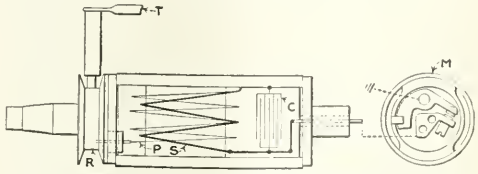


FIG. 1. ARMATURE CONNECTIONS AND ARRANGEMENT OF CONTACT MAKER FOR HIGH TENSION MAGNETO

P is the primary winding and *S* the secondary. *T* is the terminal of the external circuit. A small condenser *C* is provided. A carbon brush runs on the slip ring *R*. One end of the primary is connected to the frame of the armature and the other to the slip ring. When the contact maker is closed the secondary winding is short-circuited.

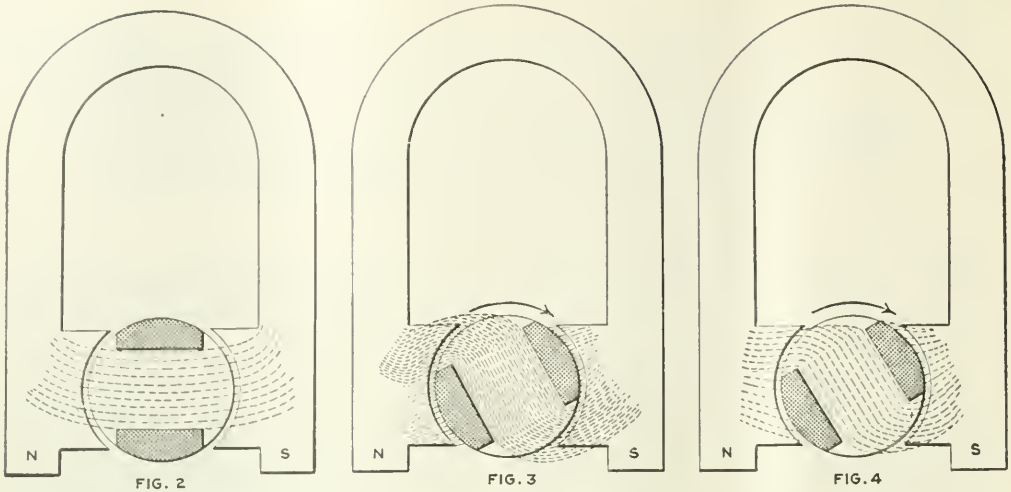


FIG. 2 FIG. 3 FIG. 4

FIGS. 2, 3 AND 4. SHOW HOW THE FLUX OF MAGNETIC FORCE CHANGES WITH REVOLUTION OF ARMATURE

The flux of force is straight through the armature in the position shown in Fig. 2. In Fig. 3 the primary circuit being interrupted by an air gap and the secondary being short-circuited through the contact maker, the magnetic field produced by the armature current strengthens and distorts the field of the permanent magnet. Just at this instant the contact maker opens and the magnetic field produced by the armature current vanishes and the field weakens as shown by the line spacings in Fig. 4.

The contact maker may take any one of a number of forms, but the arrangement shown in Fig. 1 and enlarged in Fig. 5 is the one most generally employed and is, on the whole, the most reliable. It is mounted on the end of the magneto-armature spindle and rotates with it. One of the contacts (*C*) is fixed while the other is movable, taking the form of an arm bent through an angle of 90 deg. and pivoted at *P*, carrying at one end a platinum point and at the other a fiber block (*F*) which as the armature rotates bears against the two raised portions or cams (*B*) fitted to the stationary cover surrounding the contact maker. This cover is arranged so that it may be rotated slightly on its seat, in order to adjust the position at which the making and breaking of the circuit occurs relative to that of the armature and the magnet poles. The position of the contact maker indicated in Fig. 5 shows the fiber block (*F*) rubbing on the fixed portion (*B*) and temporarily separating the contacts (*C*).

As already stated, a magneto is a highly reliable piece of apparatus, but there are certain qualifications which must not be overlooked if satisfactory results are to be obtained under ordinary mining conditions.

Mechanism for Obtaining Maximum Spark

As has been pointed out already, the cover of the contact maker carrying the cams (*B*) for interrupting the circuit may be moved around on its seat. The makers as a rule restrict this movement to a small arc within which the best position may be found by experiment. This most effective position is likely to vary slightly under working conditions, and from time to time it is advisable to make a readjustment in order to obtain the maximum sparking effect. The fiber block (*F*, in Fig. 5) tends to wear away somewhat on its forward or rubbing side, which delays the opening of the contact (*C*). Thus, apart from other influences, this wear will from time to time necessitate a slight readjustment of the relative position of the cover carrying the cams (*B*).

The arm carrying the fiber block (*F*) has a slight movement around the pivot (*P*) equal to the small amount the fiber block is raised by the cams (*B*). Normally, although not shown in the illustration, the arm is fitted with a spring which tends to keep contacts (*C*) closed and is depended on to rapidly close the contacts during the periods when *F* is clear of *B*. Any tightness at *P* will render the spring incapable of functioning properly, and this will interfere with the normal operation of the magneto. It should be noted that the contact arm is insulated from its spindle (*P*) by means of a fiber bushing. Under mining conditions, especially in damp atmospheres, this fiber has a tendency to swell and to prevent free movement of the arm. This sometimes makes the contact arm so stiff that its spring cannot reclose the contacts once they are pushed open. The remedy, of course, is to ease the bushing until the arm moves freely.

As the contact maker is continually making and breaking a comparatively heavy current, the contacts must be kept amply tipped with platinum. These tips should be at least $\frac{1}{8}$ in. in diameter and their faces should be dressed to make as perfect a contact as possible. The condenser minimizes the effect of sparking and should this become intense while the platinum contacts remain in good condition, it must be concluded that the condenser has broken down. This element seldom gives trouble, however, and sparking usually will be found to be the result of either badly-faced contacts or of the platinum having been burned away.

Many places where magnetos are called upon to work underground are more or less damp. However, as far as the armature of a magneto is concerned it is well impregnated during manufacture and is practically unaffected by moisture. If leakage occurs it is almost invariably at the terminal (*T*, Fig. 1), which is fitted at its lower end with a carbon brush running on the slip ring (*R*). This brush usually is carried in an ebonite block that fits into the frame of the magneto case, the brush projecting through to the ring. It is at this

point that any trouble arising from dampness always occurs, resulting in the ebonite insulation breaking down to the frame of the magneto. The only remedy is to keep spare ebonite blocks on hand, because once charring commences on the surface of a block it is useless to attempt to use it any longer. Oil is as detrimental to the insulation as dampness, as it collects dust and soon forms a conducting path along which leakage can take place. In this connection oiling of the magneto journal should be restricted to two or three drops every few months. This with ball bearings is quite sufficient.

The quickest way to break down the insulation of a magneto is to run it disconnected from its work, consequently this practice should be studiously avoided. Normally the magneto is connected with the lamp it is intended to light, and the lighting pin is adjusted to about $\frac{1}{8}$ in. or less from the lamp wick. As a result the voltage necessary to bridge this gap is restricted and the magneto windings as well as the wiring are subjected to a lower potential than would be the case if the gap were, say, twice as wide. If the magneto is run disconnected from its work it is, as it were, connected to a spark gap of infinite dimensions and will in consequence be subjected to an extreme voltage that will arc across from the high-tension elements to the frame, charring the insulation and doing permanent injury.

Although a magneto admirably fulfills the purpose for which it was intended, namely, the lighting of miners' lamps, its current-generating capacity is somewhat inferior to that of the older system involving the use of a spark coil and accumulator. With the latter the position of the lighting pin relative to the lamp wick was not of much importance provided it was within sparking distance. On the other hand the energy available from a magneto is limited, and to obtain quick ignition a little more care is necessary in adjusting the lighting pin. Setting this over the center of the lamp wick calls for the expenditure of a considerable amount of energy to obtain ignition in a given time. This is because of the heat dissipation within the body of the wick. For this reason better results are obtained by adjusting the lighting pin relative to the wick, as shown in Fig. 6. Under these conditions the spark strikes the corner of the wick and ignition occurs almost immediately. The point of the lighting pin should not be more than $\frac{1}{8}$ in. from the wick.

One highly desirable feature of a magneto is that it can be operated without damage while the armature is short-circuited. Advantage is taken of this fact in some types of relighters in order to guard against the danger of gas ignition in fiery mines by workers operating the magneto with the lamplighter insecurely fastened. This precaution is easily met by arranging the connections in such a manner that until a lamp is inserted for lighting and the apparatus is securely closed the magneto remains short-circuited. This feature should characterize any dependable form of underground magneto-operated lamp lighter.

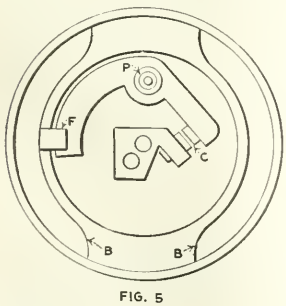


FIG. 5

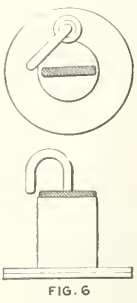


FIG. 6

FIGS. 5 AND 6. MAGNETO CONTACT MAKER AND LAMP WITH LIGHTING PIN

C is the contact maker and *F* the fiber block. *B* and *B* are the cams and *P* a pivot. The pivot should not be too light or it will prevent the spring which acts on the contact maker from closing the contact when the fiber block is free of the cams.

Peculiar Excellence of Kentucky Coals*

By Howard N. Eavenson†
Pittsburgh, Pa.

For some years past it has been increasingly evident that the consuming public has learned to appreciate the superior qualities of the coals produced in the eastern part of Kentucky and southern West Virginia, and to look more and more to this section for its supply of the best fuel. This is particularly true of high-volatile coals used in byproduct coking and in gas making. Many large corporations using such fuels have acquired their own sources of supply in this territory.

These coals come into direct competition with those from southwestern Pennsylvania, and a comparison of their qualities may be of interest alike to producers and their prospective customers. In making such a comparison, however, only the high-volatile coals can be considered, as the low-volatile fuels of Pennsylvania, Maryland and West Virginia have no counterpart in Kentucky.

The best Kentucky coals for the purposes mentioned are located in Harlan, Letcher, Pike, Floyd, Knott, Leslie and Perry counties, and comprise the Elkhorn, Freeburn, Thacker, Alma, Harlan, High Splint, Benham or Roda, Hazard and Fire-Clay beds. The best high-volatile West Virginia coals are those of Logan, Boone, Mingo, Wyoming, Kanawha, Raleigh and Fayette counties, and comprise the Coalburg, Chilton, Cedar Grove or Thacker, Alma, No. 2 Gas and Eagle beds.

TABLE 1. RANGE OF EASTERN HIGH-VOLATILE HIGH-GRADE COALS

Kentucky Coals, 24 Samples	Average	Maximum	Minimum
Ash, per cent	4.78	9.32	1.56
Sulphur, per cent	0.75	1.78	0.44
Phosphorus, per cent	0.006	0.027	0.001
Byproduct yield per net ton:			
Tar, gal.	7.8	10.2	5.4
Benzol, free, gal.	2.6	3.2	2.3
Ammonium sulphate, lb.	28.1	34.1	22.4
Surplus gas, cu.ft.	5,068	5,520	4,740
Yield of coke, per cent.	69.5	75.0	67.0
Fusing point of ash, deg. F.	2,654	2,940	2,430
West Virginia Coals, 31 Samples:			
Ash, per cent.	5.29	9.09	2.59
Sulphur, per cent.	0.99	2.76	0.63
Phosphorus, per cent.	0.006	0.019	0.002
Byproduct yield, per net ton:			
Tar, gal.	8.0	10.6	5.8
Benzol, free, gal.	2.6	3.3	2.1
Ammonium sulphate, lb.	24.5	31.0	21.2
Surplus gas, cu.ft.	5,069	5,340	4,770
Yield of coke, per cent.	72.8	76.8	68.2
Fusing point of ash, deg. F.	2,743	2,970	2,610
Pennsylvania Coals, 20 Samples:			
Ash, per cent.	7.27	10.44	5.32
Sulphur, per cent.	1.18	2.14	0.77
Phosphorus, per cent.	0.012	0.018	0.005
Byproduct yield per net ton:			
Tar, gal.	7.8	10.1	5.8
Benzol, gal.	2.2		
Ammonium sulphate, lb.	25.1	29.8	22.8
Surplus gas, cu.ft.	5,497	5,654	5,304
Yield coke, per cent.	67.5	70.0	64.2
Fusing point of ash.	2,366	2,390	2,350

*Abstract from a paper entitled "Some Peculiar Values of Eastern Kentucky Coals and the Proper Methods to Realize on Them," read before the October meeting of the Kentucky Mining Institute.

†Consulting Engineer, Howard N. Eavenson & Associates.

The leading high-volatile Pennsylvania coals are those in Allegheny, Greene, Fayette, Westmoreland, Washington and Indiana counties, and comprise the Pittsburgh, Upper and Lower Freeport and Upper and Lower Kittanning seams.

The analyses shown in Table I are taken from a number at hand as being representative. Some of these are from samples from producing mines. Others are from outcrop openings. The average results are given, as well as the maximum and minimum figures obtained, so that the limits that may be expected will be known.

The surplus gas in each case is given as one-half of the total yield. In modern byproduct plants the amount of surplus gas usually exceeds this proportion.

Before making any decision about the relative merits of the coals under consideration, careful studies should be made of the individual mines. Treated broadly, however, these figures will be as shown in Table II.

TABLE II. RELATIVE RANKS OF COALS IN ABOVE QUALITIES

	Ash	Ash Fusing Point	Phosphorus	Tar	Ammonium Sulphate	Yield Benzol	Gas	Coke
Kentucky	1	2	1	2	1	1	2	2
West Virginia	2	1	2	1	3	1	2	1
Pennsylvania	3	3	3	2	2	2	1	3

Freight rates usually are the determining factor in the choice between coals of nearly equal quality. In this respect the Pennsylvania coals have a great advantage because of their proximity to the larger markets. There are many points west and north of the Ohio River, however, to which the rates from the various territories are approximately equal, and a study of the relative values of these different products is interesting. The values of the byproducts obtainable given in Table III represent a fair average for the territory north and west of the Ohio River.

TABLE III. VALUES OF BYPRODUCTS OF COAL NORTH AND WEST OF OHIO RIVER

Gas	$0.20 per 1,000 cu.ft.
Tar	.04 per gal.
Benzol	.20 per gal.
Ammonium sulphate	.025 per lb.
Coke	8.05 per net ton
Ash	—.01 per unit

The value of coke is based on a net cost of coal at the mine of $2.50 per net ton, an average freight rate of $3.05 per ton, and 1.45 tons of coal per ton of coke. The value of ash per unit is based on the above figure plus a reasonable charge for its handling and disposition.

From these figures Table IV was computed:

TABLE IV. VALUES OF COALS FOR BYPRODUCT PURPOSES

Item	Kentucky	West Virginia	Pennsylvania
Gas	$1.01	$1.01	$1.10
Tar	.31	.32	.31
Benzol	.52	.52	.44
Ammonium sulphate	.70	.61	.63
Coke yield	5.60	5.86	5.44
Ash content	—.04	—.05	—.07
	$8.10	$8.27	$7.85

In the above figures no account is taken of the lower sulphur and phosphorus content of the southern Appalachian coals, nor of the fusing points of their ash. At many places the low sulphur would allow the admixture of some of the washed Illinois coals, which, on account of the lower freight rates, would be cheaper, and still yield a good metallurgical coke. The importance of the fusing point of coal ash is just beginning to be realized, as the clinkering and resultant higher operating cost of the coals possessing an ash of low fusing temperature is quite noticeable. It is, therefore, highly probable that many coke plants in the near future will give a decided preference to the coals having ash possessing high fusing points, even if otherwise they are not quite so good.

In addition to the qualities considered above, the eastern Kentucky and to a lesser extent the West Virginia coals usually mine with a large percentage of lump. This is a decided advantage in gas making and also enables these coals to enter the domestic market successfully. Taking all of these facts into consideration, it can easily be seen that the coals of eastern Kentucky are surpassed by none and equalled by few in this country.

Possible to Clarify Black Washery Water And Save Coal by Electrical Action

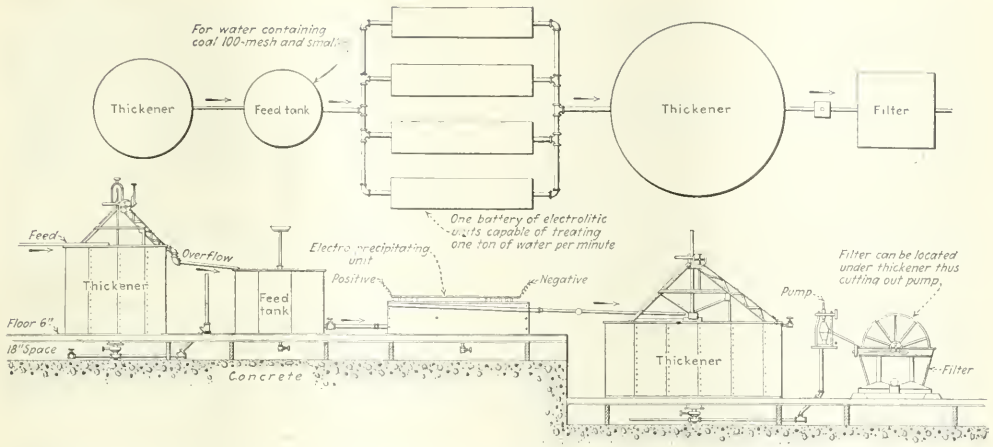
THAT water leaving breakers and washeries throughout the anthracite region is laden with fine particles of coal has long been well known. While this fine material contains a definite and readily determinable fuel value it has been difficult if not impossible in the past to reclaim it. The amount of such material carried away and lost yearly is so large as to be almost unbelievable.

About 310 breakers are in operation in the anthracite region. Assuming that each plant uses on the average 1,500 gallons of water per minute (many of them use twice this amount), this gives 465,000 gallons of wash water per minute, or 930,000 tons of water per day of eight hours. As this water carries on the average 20.18 grams of fine coal ranging from 150- to 2,000-mesh per liter, equivalent to 40 lb. per ton, the total loss of this material throughout the entire region amounts to 18,600 tons per day. In addition to this extremely small coal, which is an almost ideal fuel for burning in the powdered state, each ton of water thus used carries about 100 lb. of coarser material readily utilizable for briquetting, or, in other words, 18,600 tons of fines will be recovered in addition to 46,500 tons of coarser coal, thus making a total daily recovery of 65,100 tons of valuable coal, practically all of which now flows down stream as waste matter. All that is necessary in order to render both these products available for the purposes mentioned is recovery and drying.

Tests have recently been completed under the supervision of the Pennsylvania Department of Health that demonstrate that this huge loss can be avoided and the fine material recovered from the wash water before it leaves the collieries. Furthermore the water clarified may be used over and over again if desired, or it may be discharged to any stream or watercourse as clear as ordinary drinking water, as practically all solids have been thrown out of suspension.

This process of clarification is electrolytic and almost entirely automatic. Three men can operate a plant capable of treating 6,000 gallons of water per minute. The cost of current employed in precipitating the solids does not exceed 20c. per ton of coal recovered. An idea of the simplicity of the plant necessary may be gained from the accompanying illustration, which shows a one-battery installation.

The operation of such a plant is as follows: The colliery discharge is first passed through a thickener that removes the coarser particles. The overflow from this machine, carrying the fines, is then passed continuously through the electrolytic precipitation units and thence to a second thickener, which discharges the fines in a thickened pulp ready for filtering and drying. Overflow from the second thickener is clarified water,



PLAN AND ELEVATION OF APPARATUS FOR CLEANING COAL-LADEN WATERS ELECTROLYTICALLY

By removing the coal from washery waters three results are attained: clean water for breaker use, avoidance of suits for injury to property and coal for steam raising. This method of clarification has been applied with success to other mineral substances than coal. The cost of the current for the recovery of the coal is 20c. per ton. Even if the coal were worthless when recovered the installation would justify itself in the obtaining of clear water that can be re-used or wasted to natural streams.

the clarification being 100 per cent complete if this machine is covered so as to prevent absorption of foreign matter from the air.

This process if applied generally would accomplish several things, the more important of which may be summarized as follows: An entirely new product (powdered coal) would be recovered, the national fuel supply would be conserved because of the saving effected in a product now going to waste, the cost of the material thus reclaimed would be comparatively slight, so that manufacturers using this fuel could turn out a cheaper finished product; the present black streams common to the coal regions would be superseded by streams of clear water and coal operators could thus escape all liability for pollution of natural watercourses, which in the past and even yet is the cause of much difficulty.

The tests above referred to were conducted at the Old Forge plant of the Pennsylvania Coal Co. The results obtained were significant and show a clear portent for the future.

The tests were made Aug. 16, 1921, in the presence of Messrs. Daniels and Long, assistant engineer and chemist, respectively, of the Department of Health. These officials took their own samples and C. A. Emerson, Jr., chief engineer, makes the following report based on their observations and examinations:

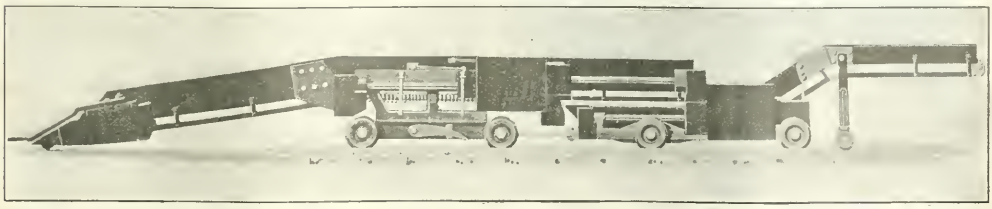
Time of run	7 minutes
Average voltage	5.7 volts
Average current	16 amperes
Volume treated	47 liters, or 12.42 gallons
Suspended matter	20.18 grams per liter, or 168 pounds per thousand gallons
Current consumption	0.8 kw. per thousand gallons, or 9.5 kw. per ton of solids
Supernatant water	Clear, that is, practically all the suspended matter was removed.

Self-Propelling Coal Loader Designed with Only 28-in. Clearance Above Rail

THE loader illustrated is built to work in a 9-ft. mine entry and will operate on a curve of 9-ft. radius. Its simplicity and standardization of construction are strongly urged in its favor. The shovel mechanism is positive in getting coal on the conveyors, which are of the roller type, specially patented. They bring the coal from the face and dump it into mine cars with minimum breakage.

The mechanism is identical with that used on steam shovels, cranes, dredge boats, gun mounts and steam winches, and should therefore be in accord with correct principles. The operation of the machine is simplified by having three motors all of the same size, each motor being thus interchangeable. None of them is reversible. All reversing is done by positive mechanical means.

Four levers control the whole machine. The loading boom can be swung in a radius of 180 deg.; the shovel can be raised and lowered and the boom sent forward



COAL LOADER WITH LOADING BOOM ADJUSTABLE AT ANY POINT IN A SEMICIRCLE

The machine is designed with three motors all of the same size and interchangeable. Roller-type conveyors carry the coal from the face to the car. Being low it can be used in thin coal.

or backward 42 in., concerted action of all motions being effected at one time. These levers can be operated from either side of the machine, making it suitable for operation in low coal.

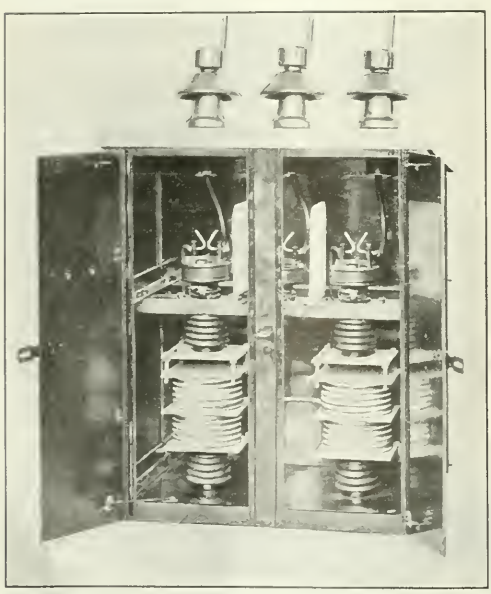
Every gear, worm and screw is of a standard size; every bearing is standard; all castings and machine parts are made of the best manganese and nickel steel throughout, making it difficult to break or injure the machine at any point.

The machine is at no point more than 28 in. above the rail and it will carry 10 in. of coal without exceeding that clearance. Where the roof of the mine is 3 ft. above the top of the rail, this machine will handle lumps of coal 16 in. in diameter and at the same time have a roof clearance of 2 in. Each conveyor is adjustable to suit the height of the mine car being filled. The machine is self-propelled, traveling under its own power at a speed of 200 to 300 ft. per minute along the track from one working place to another.

The first machine will be tested by the New River Co. at Mount Hope, W. Va. This device, known as the Auto Moto Coal Loader, was designed by L. C. Pritchard and his associates for the Auto Moto Manufacturing Co., of Charleston, W. Va., under the supervision of Harry F. Randolph, a consulting engineer of Pittsburgh, Pa.

By Putting Oxide-Film Lightning Arrester In Case, Short Spark Gaps Can Be Used

ELECTRICAL apparatus is designed and built so that it furnishes in itself protection from damage under ordinary operating conditions. But against one serious hazard, namely, lightning, some external means of protection is necessary, though too often none is provided. Sufficient insulating strength cannot be built into the apparatus to guard it from this danger.



LIGHTNING ARRESTER PROTECTED FROM WEATHER

An arrester should be placed outside the station or otherwise the lightning when it strikes will enter the building. On the other hand, there is reason in placing it inside the building, for it has to be protected from the elements. Otherwise it must have excessively wide spark gaps which rain, snow and sleet cannot bridge. By using a steel box, as above, both requirements are fully met.

To meet such conditions the General Electric Co. has developed a new type of oxide lightning arrester, suitable for outdoor use and intended to furnish protection to lines whereon the potential ranges from 1,000 to 7,500 volts. It is especially adapted for protecting isolated low-voltage transformer installations, generating stations or substations where lack of attendance or insufficiency of space make other types of arresters impractical.

The new arrester consists of a stack of oxide cells totally inclosed in a steel case which also contains the spark gaps. This allows the same settings of the gap to be used outdoors as would be employed indoors, insuring high sensitiveness. These arresters are made for platform mountings, the sizes and weights being such that installation is easy. They require no charging, all the attention needed being inspection after electrical storms and a semi-annual test to make sure that they are in good shape.

Hammer-Weld Pipe Stronger, More Efficient And Less Costly to Put in Place

HAMMER welding has been adapted to the manufacture of large pipe. Its simplicity, its strength, its freedom from corrosion and its smoothness make the lap weld superior to the riveted joint. Hammer-welded pipe is made by bending a steel plate into tubular form with the edges overlapping and then welding the overlapped edges by hammer-forging them on an anvil block supported on a horn inside the pipe.

This process is particularly well adapted to the manufacture of sizes from 24 to 96 in. in diameter, which indeed exceed in general those which are used for water and steam lines around coal mines. The National Tube Co., of Pittsburgh, Pa., which makes this pipe, uses open-hearth steel and obtains the tubular or cylindrical form by bending the plate, either hot or cold—depending on its thickness—in much the same manner as plates are bent for boiler shells. The plates in this case, however, are curled over till the edges overlap.

The rough tube thus obtained is taken to the welding machine, where a short section of the overlapped edges is heated to a welding temperature by water-gas burners, placed opposite, inside and outside the pipe. After reaching the right temperature the heated portion of the seam is hammer-forged on an anvil supported by a long counterbalanced beam, after which the contiguous portion is heated and welded. These alternate heatings and weldings are continued along the entire length of the pipe. After this the pipe is annealed so as to remove strains and refine the grain of the metal. The pipe is then straightened, inspected, and the ends trimmed. After being tested hydrostatically by pressure varying from 150 to 2,000 lb. per square inch, according to size and wall-thickness and the service for which it is intended, a protective coating is applied, if this is desired by the user. The wall-thicknesses vary from ¼ in. to 1½ in.

Cast-iron pipe gives a velocity of flow about 10 per cent less than hammer-weld steel pipe and pipe with projecting rivet heads about 18 per cent less than hammer-welded pipe. The saving in using the pipe just described is that with decreased resistance smaller diameters can be employed, as the greater speed of flow

permits of thinner steel walls. The use of a weld having greater strength than any riveted seam permits higher working stresses, which again reduces wall-thickness. There is no excess weight due to overlapping of material and to rivets except in certain types of girth joints. After erection there is no trouble from leaking seams with resulting corrosion and damage to foundations. Where tunnels are to be made for the pipe they can be made smaller. Expansion joints are simpler than with riveted pipe and the protective coating is more easily applied and less of it is required as there are no rough riveted joints to be covered.

A lap-welded smooth interior-coated pipe need only be 85 per cent as large in cross section as a riveted pipe to furnish the same quantity of water under the same conditions. The head lost by friction will be only 70 per cent as great as is the friction head for a riveted pipe which will deliver the same quantity of water. Other classes of pipe have friction losses greater than lap-welded pipe but, in general, less than riveted pipe.

The joints may be made without flanging the pipe ends, but where the pipe cannot be laid straight bell-and-spigot joints may be made, either with or without reinforcement. Bolted rings may be put around the bell-and-spigot joint, the whole so disposed as to bring pressure to bear on the lead jointing material. Regular or tapered bump joints may be used either with single or double riveting. Furthermore, for light pipe walls, the ends may be flanged and joined together, being held by bolted rings. Angle rings may be riveted to the pipe ends, the rings being held together by bolts, or flanges may be welded on the pipe ends, the flanges of adjacent pipe being held together by bolts, with or without loose flange rings. Expansion joints and spherical bump joints are other alternatives where expansion or an angle in the pipe is desired.

Scientific Method Yields High Degree of Precision with Large Capacity Scales

THE accuracy that can be obtained from large weighing scales is not generally known among engineers and others concerned in the subject. Technologic Paper No. 199 of the Bureau of Standards, by C. A. Briggs and E. D. Gordon, outlines a scientific and systematic procedure for the accurate test of large capacity compound lever scales by a method which has been developed and used by the Bureau of Standards largely in connection with its work in testing railroad master track scales and grain hopper scales, but the plan can be adapted to the test of almost any compound lever scale.

A pointer and graduated scale are arranged for reading the position of the beam; and the errors of the scale are determined from observations made upon the beam while it swings freely. The method of recording data and of determining the results is very similar to that which has been in use in laboratories for precision weighings on fine equal-arm balances. The method of taking and recording the data also tends to eliminate the personal equation, to point out where mistakes are made, when such occur, and gives a complete record of the test which will present understandable and detailed information to anyone who has occasion to make a critical study of the test.

The method is not suggested for use in the regular routine testing of ordinary compound lever scales, where precision results are not required. The method given here requires the observance of certain details consistent with realizing precision and requires training and ability to a greater extent in those making the test than is required in the ordinary case.

The procedure of the test is explained with the aid of a record form and computation sheet which was developed in connection with the successful application of the method in the field. In the interest of a uniform and efficient method the scheme outlined is recommended to those who have occasion to carry out tests on large scales where accuracy of a high order is required.

Automatic Doors and Switches Will Reduce Power Consumption Greatly

THE power exerted in starting a trip until it gets up to normal speed is at its peak 500 amperes or over. A fair average from start to normal speed would be somewhat over 240 amperes for a period of two minutes or more, depending on the length and weight of the trip. Using 250-volt direct current, the energy consumed would be 60 kw. for a period of two minutes. Stopping for doors and switches consequently is an important source of power loss. If thirty trips a day stopped at a door or switch, that arrest of motion would involve a waste of 60 kw.-hr.

Where many such doors are to be passed the waste will be proportionately greater. Placing boys at such places is a dangerous way of rectifying the difficulty, for no reliance can be placed on them. So also is the practice of having brakemen run ahead of the motor to throw the switches or open the door. An automatic door can be built and maintained at a charge equivalent to 15c. a day and an automatic switch is relatively inexpensive. During the war the street car companies tried to reduce the frequency of stops with the idea of saving power. A like economy should appeal with equal force to the mine manager.

HOW STRONG IS A ROPE?—At the Bureau of Standards laboratories in the Department of Commerce, tests have been made that have resulted in answering that question with a formula.

For three-strand regular lay manila rope from ½ to 4½ in. in diameter, the following computation will give the breaking load of the rope: The average breaking load in pounds equals 5,000 multiplied by the diameter of the rope in inches, multiplied by the diameter of the rope increased by one. This will give, of course, the average maximum weight that the rope will hold, but the working load or the load that a contractor or safe-hauler may apply with proper safety and precaution would be considerably less than the load given by the formula.

Other data on rope are contained in Technological Paper of the Bureau of Standards No. 198, by A. H. Stang and L. R. Strickenberg, which has just been issued.

IT IS ESTIMATED that there is enough coal in discovered fields to keep miners striking for 3,276 years.—*Fresno Republican.*

THE THING THAT TROUBLES the country is not only the unemployment of the idle but the idleness of the employed. —*Chicago American Lumberman.*

WEST VIRGINIA WILL NOW HAVE to get busy and mine and sell a little coal in order to lay in a supply of winter ammunition.—*Brookyn Eagle.*

Problems of Operating Men

Edited by James T. Beard

Why Shoot Coal Off the Solid

Solid Shooting Applied Locally—Safety the First Consideration—Machine Mining vs. Solid Shooting—Question of Relative Economy and Cost of Equipment

AFTER reading the several opinions regarding the shooting of coal off the solid, expressed in the letters that appeared in *Coal Age*, Oct. 20, p. 645, I feel prompted to ask if there are not adequate reasons for the continuance of this practice when local conditions make it safe.

Most all men, in expressing their views on different subjects, are largely guided by their observance of local conditions and results. That being the case, it goes without saying that such opinions are worthy of consideration locally. It is not assumed that they would necessarily apply to conditions in other localities that would render the same practice unsafe.

In Alabama a great deal of coal is still being shot off the solid and the same is true in other states. In considering this practice there is no question but that safety is of the first importance. It is our experience that where a proper regard is had for all rules, solid shooting is safe. The records here and in other states confirm this belief.

Mines Shooting Coal Off Solid Exempt from Explosion

Unfortunately, the State of Alabama has had its share of mine disasters. The fact is significant, however, that of the eight mine explosions in the state, costing five or more lives during the past ten years, not one of them occurred in a mine where solid shooting was practiced. Most all of these disasters occurred in machine mines.

The common or accepted view, no doubt, is that either machine or hand-mining methods are more safe than the practice of shooting coal off the solid. In this locality, "solid shooting" means nothing more or less than shooting coal that has not been undercut or mined.

Now, it is not my claim that solid shooting, without due regard to the recognized rules to make this practice safe, should be followed. My opinion is that the results of solid shooting in Alabama, in respect to safety, are due largely to the close supervision given to the work, by mine and state officials.

On first thought the question of solid shooting would seem easy to analyze; but, after due consideration, one is impressed that there are other matters to be considered in that connection. For instance, a writer from West Virginia (p. 645) deduces from the fact that solid shooting is prohibited by the law of that state except by permission of the mine inspector, that there are conditions under which "it is nearly impossible to mine the coal economically with a pick," and suggests "it could be mined by machine."

In respect to economy of mining, I want to say that the cost-sheet of many machine mines will show a higher expenditure per ton of coal mined than is the case in mines where solid shooting is practiced. Machine mining entails many items of expense not known in solid shooting.

Machine Mining vs. Shooting Coal Off the Solid

I have in mind two operations—one in which machine production prevails and the other where solid shooting is the practice. The differential between these two mines is 14c. per ton. The machinemen and their helpers are paid 13c. per ton, for undercutting the coal, which leaves a margin of only 1c. per ton to cover maintenance of machines and cables, replacement of parts worn or broken and power to operate. In many cases, these charges average 6 and 8c. per ton.

There is one advantage that machine mining has over solid shooting; but to my mind it is certainly a doubtful one. I refer now to the quality and quantity of the output. However, since both of the companies to which I have referred sell their product in the same market and at the same price, it does not appear that there is any real benefit realized by the machine mine, at least from an economic point of view.

Let me now refer to an aspect of the situation that is not apparent to many. We know that every progressive mining man filling the office of mine inspector, superintendent, foreman or engineer, from time to time, has cherished the ambition that some day he will be able to enter the business as a coal operator himself.

Solid Shooting Requires Smaller Investment of Capital

When one considers the amount it is necessary to invest in the equipment of a machine mine, in order to provide the necessary boilers, generators, condensers and machines, he is led to ask, what chance have these men to ever establish a business of this kind with their limited amount of capital, which would be practically exhausted in the purchase or leasing of a coal property.

Certainly, for the small man, starting out in the mining game, the proposition of machine mining is not attractive. Instead, he is led to choose the plan that promises the smallest initial outlay. It is this phase of the question that has appealed to me in connection with the discussion of eliminating the practice of shooting coal off the solid. Let us hope that no undue influence or interference will be used to change our present laws in this respect.

Clinton, Ala. WILLIAM CROOKS.

Sharp Tools in Every Miner's Working Place

Reducing accidents from roof falls at the face—Cutting timbers to exact size not a practical solution of the problem—All miners to have sharp tools and use them—Discipline needed—Good workmen are known by their tools.

ACCIDENTS from falls of roof and coal at the face are ascribed as largely due to the dull axes and saws of miners, in the letter of J. H. Taylor, *Coal Age*, Sept. 22, p. 460. Recommendations offered with a view to prevent accidents at the working face, in mines, are always timely and, if practicable, should be put into effect at once.

That dull tools are responsible for a large number of accidents, by reason of working places not being promptly and suitably timbered, there can be no doubt. I have particularly observed that the miner who keeps his timbering tools well sharpened always has his working place properly timbered, and as a result, escapes the many accidents that befall his fellow workers.

The suggestion Mr. Taylor offers, however that cutting mine timbers to the exact lengths required in the several working places will prove a means of reducing the number of accidents from falls of rock and coal in those places does not appeal to me as a practical solution of the problem. The result would be that, eventually, few miners would have an ax or saw, in condition to be used, in their places.

Difficulties Encountered by Cutting Timber to Measure

Most miners are incapable of taking exact measurements for the timbers they need. Again, there would be endless confusion when drivers attempted to deliver these various sizes where they are wanted. The stockkeeper, in the timber yard, would be burdened with duties as complicated as making out an income tax return.

It does not require a great stretch of imagination to see that John Jones would receive the 6-ft. 3-in. timbers ordered by Jack Smith; and the 5-ft. 11½-in. timbers needed by Jack would require some hunt to locate their whereabouts. If Smith received timbers one or two inches too long, he would require as sharp an ax or saw as if 6-ft. or 6½-ft. timbers had been sent him, after the usual custom.

In my opinion, the proper remedy to apply, in an effort to reduce accidents

arising from the failure of miners to properly timber their places, is to see that all miners have sharp axes and saws in their places and use them. The mine foreman should insist on each miner providing his own tools and keeping them in condition for use. He should hold the miner responsible for the timbering of his place and his own protection.

Discipline Needed to Avoid Accidents at Face

At times I have worked beside men who borrowed an ax or saw whenever they needed these to cut a timber; and you can be sure that they never timbered their places until compelled to do so by the foreman. Had the foreman kept after these men continually they would, in most cases, have gotten their own tools rather than continuing to borrow from their neighbors.

Just here, let me say, one important thing needed in every mine, if accidents at the face are to be avoided, is discipline. Bear in mind the fact that where there is good discipline it will seldom happen that the working places are not properly timbered. It is up to all mine officials to maintain this discipline.

Careful inspection of every place should be made by competent men at frequent intervals, while the men are at work. The condition of the roof and coal and the amount and kind of timber on hand should be carefully noted. The prompt delivery of timber at each working place must be the rule.

In closing, let me say that, in coal mining as in other callings, a good workman is known by his tools. A miner cannot cut coal with a dull pick; neither can a timberman perform his work with dull axes and saws. Then, if face accidents are to be prevented there must be sharp tools in every working place. Safety-First.

Thomas, W. Va.

Observations in a Model Mine

Surface and underground arrangements cause admiration—Increased safety, efficiency and economy afforded — Standard switches expedite work of tracklaying — Company inspectors employed.

READING the excellent letter of R. W. Lightburn, under the caption, "Model Room Switches," *Coal Age*, Sept. 22, p. 460, leads me to describe briefly what I saw on a recent visit to what may well be called a "model mine."

This mine is located in Cambria County, Pennsylvania. On approaching the place, the first thing that attracts the eye of the visitor is the neat and orderly arrangement of the timbers and other material stored in the supply yard. The yard is located convenient to the railroad tracks, so that there is no delay in unloading the smallest shipment of material or the largest locomotive used in the mine.

Arrangements on the Surface and Underground

Next, one is greeted with the pleasing appearance of all surface buildings, including the company offices, power plant, repair shops, all of which are built of brick or other fireproof material. The drift mouth of the mine is walled and arched over with quarried rock and, for a distance of 200 ft., the roadway leading into the mine is arched with brick and whitewashed.

Passing into the mine, one is pleased to observe ample shelter holes, which are also well whitewashed. At this mine, a standing order provides a suitable reward to all miners who will promptly remove any obstruction or refuse they may chance to find in a shelter hole and report the fact promptly to the mine foreman.

The main haulage road is built of ample size and all tracks and rolling equipment are designed to carry a maximum load, with the least possible chance of a breakdown or derailment of cars. The roads on the cross-entries are laid out with the same care. The effect of these arrangements is to reduce the cost of haulage to a minimum and provide a maximum efficiency.

One point worthy of mention is the standard form of room switch provided. The lead rail and frog attached form one solid piece, which greatly facilitates the laying of these switches. Where only cars and cutting machines are required to pass over the switch a No. 1½ frog is used; but a No. 2 frog is laid where locomotives must enter the rooms.

Tracklaying Expedited by Use of Thirty-Foot Rails

All rooms are turned on 60-ft. centers, and 30-ft. rails are used exclusively, in laying track on these headings. This arrangement greatly expedites the work of tracklaying, as there is no need to cut any rails. One tracklayer and helper can easily lay from three to five room switches a day. All the switches have point rails, with switch-throws located 3 ft. from the rail, thus combining safety and efficiency.

It is the custom in this mine for each miner to order the length of timber and number of posts and caps required. These are sent into the mine and delivered to his working place. The posts are already cut and squared to the required length, which saves the miner much valuable time, increasing his earning capacity and, incidentally, enlarging the output of the mine.

On the haulage roads, no material is allowed to obstruct the clearance side of the track, at any time. All trolley and feedwires are carried on the opposite side of the road. When necessary to store material in the entries, this must be kept in a crosscut and the wires crossing the opening must be protected.

If material is stored in a roomneck, there must be kept a clear space of 8 ft. between such material and the roadway. All cross-entries are driven 6 ft. high in the clear, and clearances of 4 ft. on the manway side and 3 ft. on the wire side of the track must be provided.

Safety Inspectors Employed

The company employs a private inspector, who devotes his entire time to matters pertaining to the safety and efficiency of operation. In this connection, it may be said that more is required by this company inspector than the state law specifies, notwithstanding the completeness of the Bituminous Mine Law, in matters relating to safety. All machinery and rolling stock are kept in the best condition possible, and the more important machines are maintained in duplicate to avoid a loss of time in case of breakdown.

At this mine, employing an average of 1,000 miners, the cost of production, per ton, is considerably less than at most mines. Although roof conditions are very bad, the coal low and steep grades endanger the haulage roads, the accident rate in the mine is very low. There is the best of co-operation between the mine superintendent and foreman, and a good spirit prevails throughout the organization. Improved machinery and methods of mining are given a thorough trial, the officials being open to suggestions at all times.

Johnstown, Pa. Reader.

Value of Certification Law Appreciated

Decade of mine disasters in Pennsylvania—Thirty years of certification, 1885-1915 — Operators and mine workers need the protection afforded by old law—Its value shown by employment of certified men by large corporations.

THAT mining men, both employer and employee, require industrial protection in respect to life and property is plainly evidenced by the many mine disasters that have occurred in the history of coal mining. Few doubt that such protection is best afforded through the operation of the certification law properly enforced.

Uncertified mine foremen, assistant foremen and firebosses have had their day in Pennsylvania. No doubt they did their best, but their lack of technical knowledge of mining principles and problems has proved an insurmountable obstacle to their continued employment, by operators who consider the safety of their men and the security of their property of the first importance.

Certification in Pennsylvania

If one has any misgiving in regard to the practical value of a law requiring the examination and certification of candidates for positions of responsibility in the operation of mines, he needs but to refer to the history of that law and its revision, in Pennsylvania.

From a list of coal-mine disasters of the last decade (1911-1920), in which five or more lives were lost, which was recently prepared by the Bureau of Mines (Technical Paper 288, p. 29), it appears there have occurred a total of 99 such disasters in the United States during that period.

It is interesting to note that of this number 29 of these occurrences, or 29.3 per cent of the total, have occurred in the State of Pennsylvania. The list shows the total number of deaths, in these disasters, to be 2,441, of which 531 deaths, or approximately 21.7 per cent are ascribed to Pennsylvania.

If the same proportion of disasters and deaths, in the coal mines of Pennsylvania, was in evidence during the fifteen years, from the enactment of the first mining law in that state, in 1870, to the passage of the certification law, in 1885, it is no wonder that public sentiment compelled the state legislature to set the standard, by requiring the examination and certification of all mine foremen and firebosses by state examining boards.

Since that time, thirty years of certification (1885-1915) have established beyond a doubt the value of such legislation. That the need of this law was recognized by expert mining men has since been proven by its general inclusion in mining legislation in most

of the coal-mining states, to say nothing of its forming an important feature in the mining laws of Great Britain and their recently adopted code.

Most of our coal-mining laws state specifically that the purpose of the law requiring certified mine officials is to provide for the health and safety of persons employed in the mines and insure both the protection of property and the more efficient management of operations underground.

No one doubts that both operators and mine employees need the protection of this law. The operator needs the law to protect him from his plum-seeking friends who are unwilling or unable to obtain the necessary certificate. The worker underground needs protection from the employment of incompetent bosses, on whose knowledge and judgment they must rely for safety.

Large Operators Appreciate the Value of Certification

That the value of the law is appreciated by the majority of coal operators is clearly shown by the fact that large corporations will employ no uncertified man in a responsible position. Many choose certified men, by way of preference, when filling positions where the law does not require certificates.

It is hard to understand what influences were brought to bear on the Pennsylvania legislators, in 1915, to induce them to revise the old law, by inserting a clause that practically nullified the requirement of examination and certification of mine foremen and firebosses in the state.

In authorizing the mine operator to use his judgment in the selection of men for these positions, as does the revised law, the legislators have set aside the judgment of the state examining boards, which is still retained as a feature of the law. It would seem that the requirement of certification should have been removed from the statute when the other clause was inserted, as it practically renders the work of examining boards unnecessary when the judgment of the operator is made a substitute provision.

Revised Pennsylvania Law an Anomaly

Candidly speaking, one is forced to the conclusion that the revised law is an anomaly. I do not claim that all uncertified men lack the ability to make successful mine foremen. That is quite possible, under certain conditions, where one's lack of technical knowledge is supplemented by an engineering department charged with the supervision of all underground operations, including the ventilation, drainage and haulage systems.

Neither is there any doubt but that there are some timid, unassuming certified men who can never make successful foremen, owing to their lack of executive ability and the power to organize and handle men. They may have the technical knowledge required for safe mining, but would be unable to get results, in the operation of the mine, because of their lack of practical experience.

Such considerations, however, do not represent average conditions. They are the exception and not the rule and form no argument against the certification law in coal mining.

Bayview, Ala. John Wall, Sr.

Inquiries Of General Interest

Standard Weights and Measures of Coal

Average Weight of Bituminous Coal (Run of Mine), per Cubic Foot—Standard Bushel, for Measurement of Bituminous Coal, in Pennsylvania—Cubic Feet per Ton and Equivalent in Bushels

KINDLY permit me to ask for information regarding standards for the measurement of coal in the Pittsburgh seam, assuming the coal to have an average specific gravity, or weight per cubic foot. A difference of opinion has developed in regard to what are the correct answers to the following questions:

1. Assuming an average specific gravity of the coal in the Pittsburgh seam, what should be the weight per cubic foot of run-of-mine coal, in that seam? 2. How many cubic inches are there in a standard bushel? 3. How many cubic feet of run-of-mine coal are there in a short ton (2,000 lb.) and what is its equivalent in bushels?

Avella, Pa. Inquirer.

The average specific gravity of bituminous coal may be taken as 1.3, which makes its weight, per cubic foot of solid coal, $1.3 \times 62.5 = 81.25$ lb. Much will depend on the size to which the coal is broken; but it is common to estimate run-of-mine coal (bituminous) as weighing 50 lb. per cu.ft. On that basis a short ton of this coal would occupy $2{,}000 \div 50 = 40$ cu.ft. (Mine Gases & Ventilation, p. 399).

For general purposes, the standard bushel, in the United States is the old Winchester bushel, which is a circular measure 18½ in. in diameter and 8 in. deep, and contains $8\ (0.7854 \times 18.5^2) = 2{,}150.4$ cu.in. (Mine Gases & Ventilation, p. 400). Estimating on this basis and allowing 40 cu.ft., per ton of run-of-mine coal, the number of bushels, per ton of this coal, is $(1{,}728 \times 40) \div 2{,}150.4 =$ say 32 bu.

Standard Bushel of Coal in Pennsylvania

However, this standard has been slightly modified by the laws in different states. For example, in Pennsylvania, the standard bushel of bituminous coal, by act of legislature effective Jan. 1850, contains 2,688 cu.in. The same act makes the weight of this bushel 76 lb. Two years later an act was passed legalizing the weight of a bushel of bituminous coal, in the borough of Greensburg, County of Westmoreland, at 75 lb.

Taking the legal weight of a bushel of bituminous coal in Pennsylvania as 76 lb., the number of bushels in a short ton would be $2{,}000 \div 76 = 26.3$ bu. Again, estimating on a bushel containing 2,688 cu.in. the number of cubic feet per short ton of bituminous coal in Pennsylvania would be $(2{,}688 \times 26.3) \div 1{,}728 =$ say 41 cu.ft. per ton, run-of-mine.

Summing up briefly, it may be stated that, in Pennsylvania, a short ton contains 26⅓ bushels of run-of-mine, bituminous coal, weighing 76 lb. per bushel. (Law Concerning the Weights and Measures of the United States, Bureau of Standards, 1904, pp. 335, 336, 340).

Force of Hammer Blow

Force of blow struck by a power hammer determined by the estimated energy stored in the hammer and the distance through which the blow is effective.

SOME time ago I filed a clipping taken from *Coal Age* (Vol. 13, p. 984), relating to the method of estimating the force of a blow struck by a hammer. In that case a 2-lb. hammer was assumed to strike the head of a nail, with a velocity of 10 ft. per sec. It was calculated that the energy stored in the hammer at the moment the blow was struck is

$$\frac{Wv^2}{2g} = \frac{2 \times 10^2}{2 \times 32.16} = 3.109 \text{ ft.-lb.}$$

We are anxious to determine the striking force of each one of our Little Giant Power Hammers. For example, one of these hammers is a 25-lb. ram, which travels at a velocity of 8 ft. per sec. and hammers metal with practically no elasticity or compressibility. What we desire to ascertain is the force of the blow struck by this and other hammers. O. M. Hatcher,

Vice-Pres. & Gen. Mgr.

Mankato, Minn. Little Giant Co.

A moving body, in a mechanical sense, is said to possess a certain energy or capacity for performing work, which is expressed in foot-pounds. Thus, the energy of a 25-lb. ram, moving with a velocity of 8 ft. per sec., has an energy of $\frac{1}{2}(25 \times 8^2) \div 32.16 = 24.875$ ft.-lb.

Now, if it is desired to find the force represented by this energy in the performance of work, in any given case, it is necessary to first ascertain the effect produced when the energy is consumed. In the case of the hammer, the energy is consumed when the blow is struck. The work performed, being expressed in foot-pounds, is the product of the force of the blow, expressed in pounds, and the distance passed through in bringing the hammer to rest, expressed in feet.

If we were to assume that there was no elasticity or compressibility in the metal struck, the force of the blow would be infinite. It would be the case of an irresistible force striking an immovable object, and the energy would be completely transformed into heat.

Considering the case from a mechanical point of view, however, there is

always a certain elasticity or compressibility when metal is struck by a power hammer. In order to estimate the force of the blow delivered by the hammer, it is necessary to measure or estimate the very slight distance through which the blow is effective, as determined by the elasticity or the compressibility of the metal struck. This may be a ten-thousandth of a foot, more or less, in which case the force of the blow would be 24.875 ÷ 0.0001 = 248,750 lb., or say 124 tons.

It will be readily seen that the estimated force of the blow depends primarily on the compressibility or elasticity of the metal struck. This solution, however, takes no account of the portion of energy transformed into heat and absorbed by the metal.

Examination Questions Answered

Alabama First-Class Examination, Birmingham, July 25-28, 1921

(Selected Questions)

QUESTION—*Should the main opening to a mine and the air-course be of the same size? If not, which should be the larger, the intake of the return? Answer fully.*

ANSWER—The main opening should be at least as large, or have as great a sectional area, as the air-course through which the current is entering the mine. In general, as far as the circulation of air is concerned, the return air-course should have a somewhat greater sectional area than the intake airway. But where the intake airway is made the haulage road, the conditions relating to safe haulage, the obstruction of the air current by loaded and empty trips passing out and into the mine, and the providing of a safe clearance at the side of the track may necessitate a larger sectional area on the intake than is required in the return airway. The volume of the return air current is generally larger than that entering the mine because of its higher temperature, the addition of mine gases and the expansion of the air owing to the release of the pressure due to the mine resistance. All of these conditions must be carefully considered in determining the relative size of the intake and return airways in a mine.

QUESTION—*In a mine employing a continuous air current for ventilation and the air-courses where the use of timber is necessary for support of the roof, how would you instruct your men in reference to working their rooms? Would you use the same method on the split system? Explain.*

ANSWER—The meaning of this question is very obscure. It would seem that the aim is to ascertain what difference there is, if any, in the instructions given to the men with reference to the working of their rooms, in a mine ventilated by a single continuous current, and in another mine where the current is divided into one or more splits. Attention is drawn to the fact that the nature of the roof is such as to require timber for its support in the air-courses. If this is the meaning of the question, it may be assumed that the use of timber being required in the air-courses would point to a bad condition of the roof generally throughout the mine. In the split system of ventilation, fresher air will be supplied to each working face, than where the air is conducted in one continuous current throughout the mine. Just here, however, we are at a loss to understand how a bad roof condition would alter the instructions given the men, in respect to working their rooms, under a continuous air current as compared to a split system of ventilation. If the roof is bad, the miners must be cautioned to timber the same for their own protection, whether the air is foul or fresh.

QUESTION—*(a) Should the old workings of a mine be ventilated and why? (b) What relation will the air have to old workings by the fall of the barometer?*

ANSWER—(a) The old workings of a mine should either be thoroughly ventilated, or hermetically sealed by building substantial stoppings at all openings leading to the old works. In the latter case, it is necessary to make continual tests of the air in the old workings, at regular short intervals, for which purpose pipes are built into the stoppings and equipped with cocks for tapping the air when desired. The reason for ventilating the old workings of a mine is to prevent the accumulation of dangerous quantities of explosive or poisonous gases within them.

(b) The question probably intends to ask: What effect will a fall of barometer have on the air contained in the old workings in a mine? A fall of barometer indicates a decrease of pressure on the air, and this is followed by an expansion of the air and gases in the old workings. As a result the gas-charged air is forced out onto the entries and into the live workings, making them unsafe and dangerous for work.

QUESTION—*Where there is 2 ft. of slate roof, overlaid with sandstone, what precautions would you use in timbering?*

ANSWER—The method of proceeding, in this case, must be determined by conditions in the mine; but, in general, it may be said that the only safe method to pursue is to take down the 2 ft. of roofslate on all roads and entries. In rooms and headings, the slate must be well supported, for a distance of four or five yards back from the face. As the working face is advanced, however, the rear timbers are drawn and the slate allowed to fall. It is then cleaned up and stored at the side of the road or other convenient place in the mine. Under these conditions, it is necessary to see that the miners in the rooms and entries set the necessary timbers promptly as the face is advanced, keeping the timbers well up to the face, as conditions may require.

QUESTION — *When undercutting a room with a continuous or longwall machine where the roof is so bad that it is necessary to set the timbers within 3 ft. of the face and it requires 7 ft. for the machine to pass along the face, how would you arrange the timbers to cut the place?*

ANSWER — In this case probably three rows of timbers should be kept standing, the first row being 3 ft. from the face of the coal and all posts being set 3 ft. center to center, the posts in each row being staggered. As the machine advances, each post should be temporarily withdrawn to permit the machine to pass and then reset in place. It may even be necessary to use crossbars hitched into the face of the coal, above the machine, but this will only be required in exceptional cases.

QUESTION—*In robbing pillars, where the roof is fairly good, how near the working end of the pillars would you require timbers to be set?*

ANSWER—In any case, when robbing, posts should be set as close as practicable to the end of the pillars, for the better protection of the miners. Conditions alone can determine the distance posts must be set from the face of the pillar.

QUESTION—*What effect has the outside varying weather conditions on the operation of a mine, so far as humidity is concerned; and, in this connection, explain the effect of summer and winter weather?*

ANSWER—When the outside temperature is considerably below that in the mine workings, the air entering the mine holds less moisture, per unit of volume, than it would hold if its temperature was higher, for the same degree of saturation. As a consequence, when the air has become warm, in passing through the mine, its degree of saturation is much lower. In other words, in passing through the mine the air has become drier and is ready to absorb more moisture from the mine. On the other hand, if the outside atmosphere has a temperature above that of the mine, the passage of the air through the mine increases its degree of saturation and renders the air wet, and moisture may then be deposited from the air, in the workings.

The effect of summer and winter, in respect to increasing or decreasing the humidity of the mine air, is quite manifest. In summer, the generally higher and more moist outside air, on entering the mine, is cooled and its moisture may be deposited in the workings, provided the degree of saturation outside is sufficient. On the other hand, in winter, the cold outside air carries a comparatively small amount of moisture into the mine and, being warmed, in its passage through the mine, is rendered much drier. As a result, moisture is absorbed from the workings, which are thereby rendered dry and dusty. It is this condition that makes the operation of a mine generally more dangerous in winter.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

THAT prosperity will not return until a general readjustment of wages and prices has been accomplished is the opinion expressed in the November bulletin of business conditions issued by the National City Bank of New York.

"Taking account of the diminished purchasing power of Europe," the bulletin continues, "its demands upon the United States have fallen very greatly. . . . This loss of purchasing power has affected trade and industry all over the world, and men are intellectually blind who think they can ignore such conditions.

"That certain farm products, such as corn and cotton, will regain some part of the declines they have suffered, may be expected, but there is no prospect of a return of farm products generally to war prices. . . . Any theory that present levels can be maintained for transportation charges and manufactured goods when farm products and raw materials have fallen to pre-war levels is fallacious.

"Broadly speaking, the people in the town industries must sell their goods and services either to the country people or to themselves. It is plain that the former cannot take their usual share at present prices, and the town populations have nothing to gain by holding up the cost of living on themselves. A general reduction of industrial costs would accomplish two very desirable objects, to wit: provide work for the unemployed and lower the cost of living for everybody.

"It is taken for granted as in the interest of the wage-earning class that the well-to-do who are able to continue to pay the present high living costs should be required to do so, but if their living costs were lower they would be able to buy more or invest more (which is the same thing), in either case creating a larger demand for labor.

"The amount of construction work of all kinds is limited today by the amount of capital available. If the wage-earning class absorbs this available amount in half-time work, it will go idle the other half and lose the benefits that would come with an increase of the productive equipment and facilities that minister to the comfort of all the people.

"Until these simple economic truths are comprehended, the present slow, grinding, heart-breaking process of readjustment must continue, with millions out of work and many of them gradually eating up the little savings they had made."

Freight-Car Loadings Fall 9,671

Reduction in the volume of railroad loadings of revenue freight for the week ending Oct. 29 is announced by the Association of Railway Executives. Loadings for the period were estimated at 952,621 cars, or 9,671 cars less than were loaded during the preceding week. The weekly total was 28,621 cars under that for the corresponding week last year, but 17,142 cars in excess of the total for the corresponding week in 1919. Coal loadings were 207,693 cars, or 4,526 cars less than the week before and 15,293 cars under that for the corresponding week in 1920.

Allis-Chalmers Orders Increase

The Allis-Chalmers Manufacturing Co. has felt the recent improvement in business, according to the estimates of new orders booked during the past three months. Figures appearing in the New York financial district show that such orders booked during August aggregated $900,000, while in September they rose to $1,300,000 and last month to $1,800,000.

Production of Steel Ingots Gains

Improvement in the steel industry during October is indicated by the substantial increase in the production of steel ingots during that month. According to returns to the American Iron and Steel Institute furnished by thirty companies which made 84.20 per cent of the total output in 1920 their outturn last month was 1,616,810 tons, as compared with 1,174,740 tons during September, an increase of 442,070 tons.

Automobile Shipments Gaining

Shipments of automobiles during October were virtually on the same basis as for the preceding month, according to *Automotive Industries*. It is added that for the first time since liquidation began shipments will exceed those of the same month of the previous year, and it is believed that from now on the shipments will show gradual improvement over last year.

Railroads Place Equipment Orders

Belief in a "decided upward tendency in traffic" caused the directors of the Chicago, Burlington & Quincy R. R. to decide to buy 7,500 freight cars, 55 heavy freight and passenger locomotives and 127 all-steel passenger cars, Hale Holden, president, has announced. The decision, he said, was made after a survey of the business situation. More than eleven thousand men have been added to the company's payroll to take care of increased traffic since March, Mr. Holden said.

The placing of an order for 2,500 steel gondola coal cars, costing about $4,500,000, is announced by H. E. Byram, president of the Chicago, Milwaukee & St. Paul R.R. Fifty thousand tons of steel will be used in filling the order.

The Illinois Central R.R. has placed an order for 1,000 refrigerator cars, at approximately $2,680 each, according to advices received in Wall Street. Of the total, 350 will be made by the General American Tank Car Corporation and 650 by the Haskell & Barker Car Co.

The Atchison, Topeka & Santa Fe has placed an order for $8,000,000 worth of new equipment. The contract includes the delivery of 2,500 refrigerator cars, divided equally between the Haskell & Barker Car Co. and the American Car & Foundry Co.

Work for Road Makers

The good roads bill, carrying an appropriation of $75,000,000 for road improvements apportioned on maintenance provisions by the states, was signed Nov. 9 by President Harding. The improvements planned are expected to have material effect in relieving unemployment.

Supreme Court Rules Against P. R.R. for Discrimination in Alloting Coal Cars

IN AN opinion by Justice Day the U. S. Supreme Court on Monday, Nov. 7, affirmed the decision of the Circuit Court of Appeals, Third Circuit, confirming an award of $21,094 in favor of Isaac C. Weber, surviving partner of the firm of W. F. Jacoby & Co., assessed against the Pennsylvania R.R. for discrimination in coal-car distribution to mines. Weber, and Jacoby before him, contended that the railroad favored other coal mines, such as the Berwind-White Coal Mining Co., and instituted this action fourteen years ago before the Interstate Commerce Commission. The case had been pending in the courts since then and this was the third time it was before the highest court in the land. The substance of the case and decision follows:

This cause has been the subject of much and long-continued controversy. This is its third appearance in this court. The action is based upon a reparation order made by the Interstate Commerce Commission in favor of the Jacoby company. . . . The second trial in the district court resulted in a verdict and judgment for the plaintiffs for the sum awarded by the commission, with interest. The judgment was affirmed by the Circuit Court of Appeals and the case is again here.

At the last trial the testimony before the commission was put in evidence, with some additional testimony tending to show that plaintiffs had been discriminated against because of the special allotment to the Berwind-White Co. of 500 cars daily, and the sale to it, and to other companies, of a large number of cars in times of car shortage. There was evidence tending to show that but for these discriminations the plaintiffs would have received a sufficient number of cars to furnish them with all they needed during the periods complained of.

The commission in the report condemned the practice of giving to the Berwind-White Coal Co. 500 cars daily by special allotment and the selling of the company's own cars during the same period to favored shippers, thereby diminishing its capacity to supply the coal car requirements of other coal companies along its line. . . .

As there was substantial testimony in the record to support the finding of the commission in awarding damages in a sum at least equal to the amount assessed by it, the principal question to be decided is: May a plaintiff recover in such circumstances in a suit based upon a reparation order of the Interstate Commerce Commission when there is testimony fairly tending to show that recovery was justified because of unfair practices in the distribution of coal cars in times of shortage, which practices, as its report shows, were condemned by the commission, although it may appear that the sum awarded by the commission was actually based upon an erroneous calculation?"

In determining the rule to govern this situation we must bear in mind that the commission is empowered to act upon questions of unfair practices and discrimination. While this is true, when an action is brought upon a reparation order of the commission, as it may be under section 16 of the act to regulate commerce, its findings and order are prima facie evidence of the facts therein stated. Cases cited have disposed of the question of the right of the defendant to attack the prima facie value of the award and have dealt with the nature of the award of the commission in view of the statutory provisions as to its character.

U. S. Labor Department Asks $40,000 for Experts to Help Adjust Miners' Wages

AMONG deficiency appropriations requested of Congress are several of interest to the coal trade. For operating supplies for public buildings, including fuel, $164,000 is requested. In explanation the Treasury says that when estimates for prior appropriations were made there was not taken into account the subsequent increase in the cost of fuel and increased freight rates. An additional appropriation of $12,500,000 for fuel for the navy for the year ending June 30 next is requested, it being explained that the year's requirements for the navy in fuel cover $30,000,000, Congress at the last session having appropriated $17,500,000 after a long fight. Unless the additional funds are granted the activity of the fleet will be reduced materially.

Anticipating a struggle over bituminous coal mine wages next spring, when the present agreement expires, the Department of Labor requests $40,000 with which to employ coal experts to aid in adjusting wages. "It is stated that an opportunity for most helpful work will exist in connection with the contracts of the bituminous coal miners which expire March 31, 1922," says the Department of Labor in explaining the estimate. With these funds the department will assign additional commissioners expert in coal and other basic industries in which agreements expire during the present fiscal year, so as to prevent stoppage of work or at least minimize the effect of any disagreements that may arise in these industries.

F. R. Wadleigh Heads Coal Section of Fuel Division of Department of Commerce

SECRETARY of Commerce Hoover formally announced the appointment Oct. 31 of F. R. Wadleigh, of New York City, to take charge of the coal section of the recently created fuel division of the Department of Commerce.

Mr. Wadleigh has been made chairman of the coal committee of the Federal Purchasing Board, now in course of formation by the director of the budget. It is to be the duty of the board, among other things, to determine the best times to purchase, the best place to purchase, the extent of the available market, the method of obtaining the best competition, the comparative advantages of local or centralized purchases, the best kind of contract, long- or short-time purchases, place of delivery, conditions of delivery, storage and transportation.

F. R. WADLEIGH
Chairman Coal Committee, Federal Purchasing Board

In the matter of coal purchases, chief responsibility is placed upon the Bureau of Mines. Director Bain selected Mr. Wadleigh to direct the work of this committee. One-half of Mr. Wadleigh's salary, as chief of the coal section of the fuel division of the Department of Commerce, is paid by the Bureau of Mines.

The Federal Purchasing Board is divided into commodity subdivisions known as Committees of Co-ordination of Purchase.

Mr. Wadleigh is generally recognized as one of the best possible selections that could have been made for this important post. It is admitted in the industry generally that something definite must be done if the United States is to continue a factor in the export coal trade. The Department of Commerce is in a position to render material assistance in this critical situation and it is believed that the selection of Mr. Wadleigh insures the fact that this assistance will be forthcoming.

Mr. Wadleigh is a native of Muncy, Pa. He was graduated from Princeton University in 1883. He immediately took employment with the Pennsylvania R.R., which he

served in the capacity of locomotive fireman and as an assistant in its shops. He then went with the Norfolk & Western Ry. and served that company for nine years as a fuel inspector and road foreman of engines.

After leaving the Norfolk & Western he was for eleven years associated with the coal firm of Castner, Curran & Bullitt. Later he was employed by the Chesapeake & Ohio Coal & Coke Co., where he remained five years. He also has been associated with the New River Collieries Co., the International Coal Products Corporation, Weston Dodson Co. and the Tuttle Corporation. In addition he has done consulting work as a coal-mining engineer.

Pennsylvania Soft-Coal Men Mine Nearly One Thousand Tons Per Man

THE bituminous mines of Pennsylvania in 1920 produced a total of 157,700,400 tons of coal, valued at the mines at $556,644,400, according to figures tabulated by the Pennsylvania Department of Internal Affairs. This production was approximately 20,000,000 tons greater than that of 1919, when 137,058,500 tons were produced at a value at the mines of $327,475,400.

One thousand three hundred and fifty-eight mines reported to the department for 1920 and their reports show that 159,423 persons were employed in the industry. In 1919 the mines in the bituminous region of the state gave employment to 153,207 persons. Thus there was an increase in the number of men employed in 1920 of 6,216 persons.

Foreigners led all classes of the soft-coal miners in 1920, with a total of 88,828. Americans, white, employed in the mines numbered 66,105 and Americans, colored, totaled 4,490. There were 50 women credited to the mine fields in Washington, Indiana, Greene, Fayette, Clearfield and Allegheny counties. Two hundred and thirty-six boys under the age of 16 years also were engaged in the mining industry. In 1919 there were 31 women and 176 boys at work in the bituminous region.

Bituminous-mine workers were paid a total wage in 1920 amounting to $289,657,500, all but $62,000 of which went to the male workers; in 1919 the total payroll was $196,024,700.

Fayette County was the greatest producer of bituminous coal both in quantity and in value in 1920. That county produced a total of 32,998,300 tons, having a value of $88,980,700. Westmoreland County was second in tonnage with 22,933,000, and third in value with $80,032,700. Washington County was third in quantity production with 22,575,700 tons and second in value with $82,300,800.

Of the twenty-six counties out of the sixty-seven in Pennsylvania in which bituminous coal was mined last year, the County of Venango had the smallest production, namely, 300 tons of the value of $1,400 at the mines. The output per man employed was for the whole state 989.2 tons and the average price was $3.53, of which $1.84 was wages.

Kansas Agriculture Official Opposes Use of Corn in Place of Coal for Fuel

EAR corn at 20c. a bushel is equal in fuel value to a fair grade of Western soft coal at approximately $10 a ton, according to the U. S. Department of Agriculture. In districts where corn is very cheap now the coal is usually of a rather poor grade and is selling at high prices. Under such conditions, the department states, it will pay both farmers and people in country towns to use corn instead of coal. Because of the variation in quality of both corn and coal it is difficult to make scientific experiments the results of which are applicable everywhere, but, speaking generally, the relative heating values of corn and coal indicate that corn at 10c. a bushel equals coal at $5 per ton, and at 32c. equals coal at $16 per ton.

J. C. Mohler, secretary of the Kansas State Board of Agriculture, characterized the statement as "unfortunate." "Corn is a chief element in the maintenance and fattening of live stock," said Mr. Mohler, "and, considering its efficiency in the rations for live stock, it cannot be used to greater advantage than as a foodstuff at present low prices.

"Even at equal values for heating purposes, burning corn in place of coal involves economic waste. To destroy the value of coal by substituting corn as fuel and at the same time depriving the world of the services that corn may render as feed and food is ridiculous. The whole tendency, in a broad way, is to increase the cost of living and to add to unemployment."

Finds International Control of Fuel and Raw Materials Impracticable

THE Economic Section of the League of Nations has found impracticable the resolution adopted in March, 1920, by the Miners' International Congress in favor of an international office "for the distribution of fuel, ores and other raw materials essential to the renewal of the economic life of all nations." The reasons for this decision are:

(1) That it would be impracticable to obtain the general consent of the producing and consuming states to delegate the important functions contemplated by the scheme to an international body, and the League of Nations has no power of compelling its members to enter into any such arrangement against their will.

(2) No scheme for international control of the distribution of raw materials could be operated without fixing prices and allocating supplies on some principle of rationing. This necessarily involves the international control of the whole economic life of the countries concerned.

(3) No scheme of rationing is possible without the power of compelling the consuming countries to take up their rations and pay for them, which is clearly impracticable under present conditions.

MEN EMPLOYED, WAGES EARNED PER EMPLOYEE AND TOTALS, TONS PER EMPLOYEE AND TOTAL TONS, WAGE PER TON PRODUCED AND AVERAGE VALUE PER TON FOR ALL BITUMINOUS COAL OF PENNSYLVANIA BY COUNTIES DURING 1920

Counties	Number of Employees	Total Wages	Tons Produced	Value of Production	Wages per Ton Produced	Annual Wages per Employee	Annual Tons per Man Employed	Average Value per Ton
Allegheny	14,188	$26,037,000	14,605,700	$53,164,900	$1.78	$1,835	1,029.44	$3.64
Armstrong	5,916	10,037,000	5,248,000	19,153,200	1.91	1,697	887.09	3.65
Beaver	187	286,300	125,900	553,100	2.27	1,531	673.26	4.39
Bedford	1,154	1,573,600	640,800	2,887,300	2.46	1,364	555.29	4.51
Blair	369	459,500	172,700	844,100	2.66	1,245	468.02	4.89
Butler	1,953	3,164,200	1,292,400	5,979,700	2.45	1,620	661.75	4.63
Cambria	20,488	37,338,900	17,182,400	71,865,500	2.17	1,822	838.66	4.18
Centre	1,804	3,497,200	1,457,300	7,091,900	2.40	1,939	807.82	4.87
Clarion	2,291	3,254,400	1,377,400	5,518,000	2.36	1,421	601.22	4.01
Clearfield	10,764	18,017,900	7,622,200	33,491,800	2.36	1,674	708.12	4.39
Clinton	264	538,700	289,700	1,034,200	1.86	2,041	1,097.35	3.57
Elk	1,260	2,219,700	944,500	3,582,800	2.30	1,761	749.60	3.72
Fayette	24,336	47,305,500	32,998,300	88,980,700	1.43	1,944	1,355.95	2.70
Fulton	61	111,600	50,100	200,400	2.23	1,830	821.31	4.00
Greene	2,065	3,809,700	1,746,600	6,585,800	2.18	1,845	845.81	3.77
Huntingdon	1,386	2,134,900	833,100	3,625,100	2.56	1,540	601.08	4.35
Indiana	9,846	18,704,300	9,613,900	34,104,000	1.95	1,900	976.43	3.55
Jefferson	5,148	8,795,600	4,749,400	18,516,800	1.85	1,709	922.57	3.90
Lawrence	214	249,900	94,500	300,600	2.64	1,168	441.59	3.18
Lycoming	25	28,300	11,600	58,200	2.44	1,132	464.00	5.02
Mercer	798	1,166,100	487,900	1,996,100	2.39	1,461	611.40	4.09
Somerset	12,328	20,982,800	9,913,000	41,797,500	2.12	1,702	804.10	4 22
Tioga	1,048	1,941,600	715,100	2,977,800	2.72	1,853	682.35	4.16
Venango	9	4,900	300	1,400	16.33	544	33.33	4.67
Washington	20,731	40,244,400	22,575,700	82,300,800	1.78	1,941	1,088.98	3.65
Westmoreland	20,790	37,754,100	22,933,000	80,032,700	1.65	1,816	1,103.08	3.49
	159,423	$289,027,500	157,700,400	$566,644,400	$1.83	$1,813	989.00	$3.59

Anthracite Costs and Prices During 1921 Compared with Those of 1913

THE anthracite industry is one of the few in which deflation has not yet taken place. Moreover, the hard-coal situation affects the consumer almost as intimately as does the supply of food. For this reason the subject has been considered of sufficient importance to warrant an independent investigation by the New York Trust Co. of the factors entering into the cost and price of anthracite, the results of which are given here.

The company is indebted to representative producers and distributors of anthracite for their assistance in obtaining the information necessary to a proper understanding of the facts. To focus the results of the investigation, the figures given, unless otherwise indicated, relate to the cost of stove coal and its price in New York City.

While data are not available for a thoroughly reliable comparison of present-day mine costs with 1913 figures, since the records formerly compiled by the Federal Trade Commission from returns made by all the principal operators were discontinued in 1918, it is believed that the tables of costs published by the anthracite operators represent a fair average of present costs. Costs for 1913 are taken from Federal Trade Commission reports.

It must be considered that for every seven tons of domestic sizes (egg, stove and chestnut) there are three tons of steam sizes (buckwheat, rice and birds-eye) produced as a necessary byproduct. Steam sizes are sold at much lower prices than domestic sizes in order to meet the competition of bituminous coal. In published figures on mine costs, all sizes have been lumped together and no allocation of cost has been made to grades which bring varying prices. Selling prices also have been averaged to give a "sales realization" price in calculating the margin for each ton mined. While the realization price is necessarily lower than the price of stove coal, the percentage of the elements entering into mine costs are the same in all cases. On this basis the following table compares the average mine costs of the principal producers in 1913 with the 1921 costs as published by the operators:

TABLE I. AVERAGE MINE COSTS OF PRINCIPAL ANTHRACITE PRODUCERS IN 1913 AND 1921
(Per Gross Ton)

	1913		1921	
	Dollars	Percentage of Total	Dollars	Percentage of Total
Wages	$1.60	60.2	$3.92	63.7
Supplies	0.35	13.1	1.05	17.1
General expense	0.34	12.8	0.58	9.4
*Margin	0.37	13.9	0.60	9.8
Sales realization	$2.66	100.0	$6.15	100.0

*From the margin must be deducted Federal taxes and interest on the investment (and in the case of 1913, selling expense as well).

It will be noted that wages and supplies, factors over which the operators have had no control, have increased more than the other two items. The amount and percentages of increase in the four elements of mine cost are as follows:

TABLE II. INCREASES IN PRINCIPAL ELEMENTS OF MINE COST IN 1921 COMPARED WITH 1913
(Per Gross Ton)

	Dollars	Percentage
Wages	$2.32	145
Supplies	0.70	200
General expense	0.24	71
Margin	0.23	62
Total increase in mine price (average of all grades)	$3.49	131

For the purpose of comparison, the above cost figures, which are based on all sizes, may be translated into stove costs by multiplying them by the percentage that the mine price of stove bears to the "sales realization," or the average mine price of all grades. Such a calculation shows that with relation to stove coal wages have increased $2.70, supplies 83c., general expense 28c., and the margin 28c., or a total of $4.09 per net ton. These figures expresrs the difference between 1913 and 1921 costs as applied to stove coal.

Upon leaving the mine the next cost burden encountered by coal on its way to the consumer is transportation. This cost (so far as dealers in New York City are concerned) consists of freight to one of the New Jersey ports and lighterage to New York. The figures for 1913 and 1921, with percentages of increase, are given in the table following.

It is evident that the increases of $1.29 in freight rates and 35c. in lighterage have been unavoidable and important factors in causing higher retail prices.

TABLE III. TRANSPORTATION COSTS ON ANTHRACITE FOR NEW YORK CITY IN 1913 AND 1921
(Per Gross Ton)

	1913	1921	Percentage of Increase
Freight to Perth Amboy	$1.40	$2.61	92
Government tax on freight	....	0.08	
Lighterage	0.15	0.50	233
	$1.55	$3.19	106
Increase	....	$1.64	...

Coming to the price paid by consumers in New York it is found that the present price of $13.30 per ton for stove coal compares with a price of $6.66 in the corresponding period of 1913. This is an increase of approximately 100 per cent as against an increase of 62.8 per cent in the cost-of-living index compiled by the National Industrial Conference Board. There has been a reduction from the peak of $14.54 in January, which is greater than the usual 50c. per ton reduction which occurs in the spring, but the price is still out of line with other commodities.

The three principal elements which make up the retail price are as follows:

TABLE IV. COMPONENTS IN THE NEW YORK RETAIL PRICE OF ANTHRACITE, 1913 AND 1921

	1913			1921		
	Gross Ton	*Net Ton	Per Cent of Total	Gross Ton	*Net Ton	Per Cent of Total
Mine price	$3.42	$3.05	45.8	$8.00	$7.14	53.7
Transportation—						
Freight and lighterage	1.55	1.38	20.7	3.19	2.85	21.4
Retailer's gross margin	....	2.23	33.5	....	3.31	24.9
Price paid by consumer in New York City	....	$6.66	100.0	....	$13.30	100.0

*Mine prices and freight are quoted on a gross ton of 2,240 lbs. These have been translated into cost per net ton of 2,000 lbs.

It will be noted that mine prices now constitute 53.7 per cent of the total paid by the consumer against 45.8 per cent in 1913. The percentage paid for transportation is approximately the same in both periods, while the retailer's gross margin has dropped from 33.5 per cent in 1913 to 24.9 per cent at present. Too great an importance should not be attached to this fact, however, as the increase in the retailer's costs, which come out of gross margin, may have been much less than the increase in other factors.

Of the increase of $6.64 paid by the consumer, $4.09 represents the increase in mine price (134 per cent), $1.47 is increase in transportation cost (106 per cent), and $1.08 increase in retailer's gross margin, or 48 per cent. The following table makes possible a complete analysis of the increase paid by the New York consumer:

TABLE V. SUMMARY OF COST INCREASES AFFECTING 1921 RETAIL PRICE OF ANTHRACITE IN NEW YORK
(Per Net Ton)

Increases paid to	Increase over 1913 Dollars	Percentage
Mine wages	$2.70	145
Mine supplies	0.83	200
Mine general expense	0.28	71
Mine margin*	0.28	62
Total increase in mine price	$4.09	‡134
Freight	$1.15	
Lighterage	0.32	
Total increase in transportation	$1.47	106
Retailer's gross margin†	1.08	48
Total increase paid by consumer in New York	$6.64	100

*Out of this margin must be paid Federal taxes and interest.
†Out of this margin must be paid all expenses incurred in handling the coal from the dock to the consumer.
‡The difference between 134 per cent in the above table and 131 per cent in Table II is caused by variation in the relation of stove prices to the average of all prices in the two periods.

From the foregoing table it is seen that the two biggest single items are the increases in mine wages of $2.70 per net ton and in transportation of $1.47 per net ton. The total of these two items constitutes 63 per cent of the total

increases, and without a readjustment of these two factors little can be done substantially to reduce coal prices.

It is apparent from the figures presented that coal prices at retail, which show an increase of 100 per cent above 1913, are out of line with other necessities of life. Coal at wholesale, which shows an increase of 134 per cent, is further out of line than the retail prices. The general price level of commodities at wholesale is only 25 to 50 per cent above 1913. The general reduction, from a peak much higher than that attained by coal, was brought about in most cases by a forced liquidation of stocks on hand. Owing to the special nature of the product this has not been the case with anthracite. Large stocks have not been present, or where they exist they are in comparatively strong hands. The coal operator cannot see why he should operate at a loss, and it appears that the situation has not as yet been such as to force him to do so, as has been the case in other lines.

In order to effect a considerable reduction in retail prices it will be necessary to effect a reduction all along the line. Immediate action in this connection seems improbable. Mine wages are fixed by a written contract based on the award of a Federal arbitration commission. This contract runs until March 31, 1922, and the miners have refused to consider a readjustment. In fact, they have announced that they will demand further increases. Freight rates at present are barely adequate for railway maintenance, and are not likely to be reduced immediately (unless railway wages also can be reduced), and from the evidence available the retailer's cost of handling has shown no reduction.

The bulk of the increase from 1913 can be laid directly to higher mine wages and freight rates. Increases in supplies, mine expenses, retailer's costs and profits have all helped swell the total. These were to be expected during the period of inflation and it must be admitted that coal prices did not advance nearly as much as the general price level.

The lack in the anthracite industry of compelling business reasons for deflation may make it necessary for the big men of the industry to take strenuous methods to relieve the situation for the consumer. A situation of this character often leads to agitation for government control or ownership or price fixing or interference of other sorts, the disastrous consequences of which have been only too apparent whenever an industry has been subjected to them. No intelligent business man wants to see this come about, since nothing could be more unfortunate for producer, retailer and consumer alike. But it may be expected unless the best brains of the coal industry and its legal and financial advisers make strenuous efforts to correct the situation before the irresponsible and incompetent undertake to do it for them.

Railroad executives have just produced constructive measures for reduction of rates in response to a country-wide demand and this in the face of financial and operating difficulties which make the coal problem look simple. Leaders of the coal situation should do the same and even if their efforts should not be entirely successful at first, a clear exposition of the situation will enable public opinion to place the blame for high prices exactly where it belongs.

Injunction Sought Against Anthracite Tax

AN equity suit to test the constitutionality of the Pennsylvania anthracite tax of 1½ per cent ad valorem on each ton prepared for the market was filed Nov. 9 in the Dauphin County Court, Harrisburg, Pa. The proceedings had been expected and George E. Alter, Attorney General, at once filed an answer, and the court fixed Nov. 25 as the date for the hearing. Roland C. Heisler, of Philadelphia, a shareholder of the Thomas Colliery Co., of Schuylkill County, is the plaintiff, and the colliery company is made one of the defendants, as are its directors and the state's fiscal officers, Samuel S. Lewis, Auditor General, and Charles A. Snyder, State Treasurer. Counsel for the plaintiff are Reese Harris and Henry S. Drinker, Jr., of Philadelphia; William D. Jenney, of New York, and Frank W. Wheaton, of Wilkes-Barre. The Attorney General and three of his deputies, Robert S. Gawthrop, Emerson Collins and George R. Hull, appear as counsel for the defendants.

The state coal tax, which became a law May 11, became effective July 1, and the first payments to the state are to be made in January, 1922. The law provides that the superintendents of the mines assess the tax, and Herbert Suender, superintendent of the Thomas Colliery Co., is therefore made one of the defendants. Mr. Heisler seeks to enjoin him from making the assessment and to restrain the directors from having the tax assessed and paying it. The plaintiff asks that the Auditor General be enjoined from collecting the tax and the State Treasurer from joining in any tax settlements or receiving the tax.

The plaintiff's bill states that Superintendent Suender has been assessing the coal of the company daily and that this act is "an essential step in the proceedings to enforce the collection and commits the company to the payment of said unlawful tax to the injury of the plaintiff and the other stockholders." The bill avers that the difference between anthracite and bituminous coal is one of degree and not of kind, that the two kinds of coal are sold in competition and that large quantities of Pennsylvania anthracite are sold outside the state. It is held, therefore, that the law is not only in conflict with the state but also with the Federal Constitution.

The answer states that the commonwealth does not admit that anthracite and bituminous coal are merely different grades of coal but that they are different commodities. The differentiation of the two kinds of coal is explained and it is shown that anthracite is found only in a few counties and that bituminous coal is never found in the same counties. The state declares that anthracite is used for fuel only, whereas bituminous coal is converted into coke and other products. The commodity rates of the railroads of Pennsylvania, the answer sets forth, recognize a difference between anthracite and bituminous coal. Congress recognized this difference, it is said, in fixing different import taxes for anthracite and bituminous coal. The legal ton for anthracite in Pennsylvania is 2,240 lb., whereas the legal ton for the bituminous coal of the state is 2,000 lb., and the state has also regulatory laws for the anthracite fields different from those for enforcement in the bituminous fields.

Oil Fuel for Motive Power in World's Shipping Makes 6 Per Cent Gain in Year

OF the world's total tonnage of vessels of 100 tons and upward on Lloyd's Register, an approximate division as to the fuel motive power is as follows, according to Westgarth Brown, president of the South Wales Institute of Engineers:

	Per Cent
For the year ending June, 1919:	
Using coal as fuel	82
Fitted to use oil as fuel for boilers	10.5
Using oil in internal combustion engines	1.5
Using sail power only	6
For the year ending June, 1920:	
Using coal as fuel	76
Fitted to use oil as fuel for boilers	16.3
Using oil in internal combustion engines	1.7
Using sail power only	6

It will thus be seen that during the period of one year oil has gained at the expense of coal 6 per cent of the tonnage available.

WEST VIRGINIA HAS REVISED ITS STATE MAP.—A new edition has been made of the Coal, Oil, Gas, Limestone and Iron-Ore Map of the West Virginia Geological Survey. This edition shows, like the last, the gas and oil pools, now better known than before, many anticlinal lines not heretofore charted and is accompanied by a book containing the addresses of all the principal coal-mine operators in West Virginia up to July 1, 1921. It is printed on a scale of eight miles to the inch and is sold by the Survey, Box 848, Morgantown, W. Va., for one dollar; six copies for five dollars. Five series of measures are differentiated by colors on the map.

Public Reaction, Despite Striking Misconceptions, Is Favorable to Anthracite Publicity Campaign

PUBLIC reaction on the newspaper advertising being done by the General Policies Committee of the anthracite operators, on the whole, has been favorable. Several hundred letters from nineteen states and Canada have been received of which but nine expressed any measure of disapproval.

Here is the substance of a letter from a retail dealer in Philadelphia that clearly expressed a point of view becoming every day more common in the trade:

"I agree with you that there has been a great deal of hard feeling against the retailer. There always has been and always will be until the operators co-operate with us. Take any other line of business. Who does the selling for the retailer? Why, the advertisement of the manufacturer.

"Follow me a minute: You go to bed at night, wind up your Elgin watch, set your Big Ben so as not to oversleep, get into a Bernstein bed covered with a Komfo mattress and go to sleep. In the morning you get up, put on your B.V.D.'s, your Hart-Schaffner suit, get your Gillette safety razor and shave with Colgate cream. You go down stairs to your dining room and eat Swift's premium ham and eggs, and your Kellogg's cornflakes or your Shredded Wheat, you start toward your Buick or Dodge and go to the office.

"Only the past few weeks have the operators ever done anything in the way of advertising. The public needs educating before they will have any confidence in us."

There is no question but that the minds of those who have taken the trouble to write letters to the operators were open and that the advertisements made an impression. Some of the criticisms are vigorous, but so are some of the commendations.

Advertising Man Wants Statements Under Oath

One man—an advertising man, of all things—in Massachusetts, writes to know why, if the statements in the advertisements are true, "don't you swear to them?" He thinks the coal man is not to be believed except upon oath, or rather that the public will accept none but attested facts. It would go hard with many advertisements outside of the coal industry if this rule were to be universally adopted.

Another man, from Connecticut, frankly says that he had been "of the opinion that the coal men were largely grafters," but that the advertisements had been "a revelation to me."

From a Broadway address comes a clipping of the first advertisement in the series, with a brief note attached: "Why do we pay $13.75 a ton?"

Still another letter, from a manufacturer of paper goods in Massachusetts, says: "This [grumbling at prices] is nothing new, as nearly everybody is kicking about the price of everything."

One of the interesting phases of the correspondence is the interest shown by students. There were twenty-three requests from pupils of all sorts, from high school to college and state debating leagues. In New Jersey—especially in Newark, Jersey City, and Somerville—the high-school pupils are taking up the study of coal, and they requested information from the committee.

Out in Minnesota the question of government ownership of the coal industry is the subject of debate in the state league this winter, and members of the league are now in possession of information sent from the Anthracite Bureau of Information.

There are a good many passing references to prices, and a good many suggestions that some explanation be given of the dollar the consumer pays, rather than of the dollar the operator gets. The point is made in several cases that what interests the consumer is the price he pays for coal delivered at his house, and not the price paid at the mine.

There are instances of the confusion in the public mind as to the differences in coal. One New Jersey worthy wants to know why it costs $13 or so to have coal delivered to his house when he reads in the papers that the railroads have been buying roal for $3.75 a ton. Apparently the run-of-mine intellect does not grasp the difference between anthracite and soft coal, nor the difference between railroad fuel bought at the mine and domestic fuel dumped into the cellar.

There also are highly-placed inquirers after knowledge. The Secretary of Labor and the statistics branch of the General Staff, U. S. Army, at their own solicitation, are receiving information regularly.

Four firms offer to make snappy movies to carry the story of anthracite home to millions, and another guarantees to make up graphic charts which will convert all the unbelieving coal consumers. Two firms would like to get facts on the call for timber in the hard-coal region, and two gentlemen—one in West Virginia and one in Wyoming—offer to make it interesting for any hard-coal producer who might like to try out bituminous mining, as they have land to sell.

A grocer writes in to tell how he approves the idea of giving publicity to costs and detailing the elements entering into them. A man interested in corporation financing also writes in, with his eagerness to help worthy distressed concerns perhaps just a little visible between the lines. A Massachusetts Mayor requests the latest information as to royalties paid in the anthracite fields.

It might interest retailers to know that a good many queries ask for quotations on carload lots and the chances of being able to buy coal direct.

A letter from a firm of manufacturers and dealers in lighting fixtures and art metal deals with a question often touched upon in the correspondence and it states the case, from the consumer's point of view, succinctly as follows:

"Your article 'Coal Producers' can only tell about the mine price. Can you tell me and the rest of the public how, when paying for nut coal, that half of it is pea coal? Can you also tell the public why, when they order pea coal, half of it is buckwheat? When the writer complained to the dealer, his answer was that is how they received it from the mines. Now instead of you being abused it is the public that is being abused. This matter should be given your serious thoughts and attention. If I were to sell you anything in our line you would expect what you bought, but when you buy coal today you get what you don't expect."

Appoint Committees to Devise Commerce Department Aid to Mining Industry

SECRETARY HOOVER held a conference at Washington Nov. 14 with a committee appointed by the American Mining Congress, when co-operation of the Department of Commerce in efforts to develop the mining industry of the United States was discussed. More than two hours were devoted to a discussion of possible development of exports, with the result that sub-committees were appointed to prepare definite plans in which the department could co-operate.

The following mining men were present at the conference with Mr. Hoover: Representing the coal branch: Albert G. Nason, president Nason Coal Co., Chicago; J. G. Bradley, president Elk River Coal & Lumber Co. and also president of the National Coal Association; T. H. Watkins, president Pennsylvania Coal & Coke Corporation; J. G. Puterbaugh, president McAlester Fuel Co., and E. W. Parker, director of the Anthracite Bureau of Information.

Representing the oil branch: E. L. Doheny, New York, president of the Mexican Petroleum Co.; George S. Davidson, Pittsburgh, president of the Gulf Refining Co.; Judge A. L. Beatty, president of the Texas Company.

Representing the metal branch: Bulkeley Wells, Denver, gold; F. B. Richards, Lake Superior Iron Ore Association; Edgar Z. Wallawer, zinc; B. B. Thayer, New York, copper.

Disclaims Federal Liability for Profit Cut Due to Fuel Administration Prices

SOLICITOR GENERAL BECK has filed in behalf of the government a brief before the U. S. Supreme Court asking that that court sustain the decision of the Court of Claims against the suit of the Morrisdale Coal Co., which sought to recover the difference between fuel prices fixed by the Fuel Administration and those which it could obtain under private contract. The coal company claimed that the government requisitioned 12,000 tons of coal from June to November, 1918, at a price less than the sale price agreed to by its former customer, and that the coal was diverted by the Fuel Administration.

The government points out that the fuel was not actually expropriated or used for any government purpose or requisitioned for public uses. The government declines to admit liability to make good the differences between prices fixed during federal control and prices which might otherwise have been obtained either in open market or under sales contracts made prior to the order of the Fuel Administration. The government insists that the power to regulate must be unaffected and undiminished by the existence of contracts entered into prior to the advent of public control, and that contracts are subject to the possibility that the sovereign may render them unenforceable or impair their value.

The government denies that the diversion of coal here in question was the taking of private property for public use or binding the government to indemnify against loss. It asserts that public regulation restrictive of freedom of contract and of self-controlled business management is universally imposed without provision for compensation. Unless property is actually taken and directly put to use for a public purpose no duty to compensate arises since the injury complained of results incidentally from valid exercise of government power. The government points out that there is no allegation in this case that the price fixed by the Fuel Administration and received by the coal company for the diverted coal did not afford a fair return and reasonable profit on invested capital over and above cost of production and plant depreciation.

Coal Represents 33.6 Per Cent of Capital Invested in U. S. Mining Industries

NEARLY $7,000,000,000 is invested in mines and mining in the United States, according to the 1919 census. Of this total, bituminous coal represents $1,904,450,000, or 27.4 per cent, and Pennsylvania anthracite $433,868,000, or 6.2 per cent, a total for the coal-mining industry of 33.6 per cent. Petroleum and natural gas combined overtop coal by a slight margin, representing 34.8 per cent of the country's total investment in mining. Copper follows coal with $853,639,000, or 12.3 per cent, after which comes iron, with $501,396,000, or 7.2 per cent.

The instructions on the census schedules called for the total amount of capital owned and borrowed representing the operators' investment in the mining enterprises on the last day of the business year reported. Securities or loans representing investments in other enterprises were not to be included. In many instances, however, and especially in those cases where the company was carrying on some other industry in connection with mining, it was found difficult or impossible to obtain an accurate return for capital according to the census definition. The figures compiled by the Census Bureau may, however, be accepted as a rough approximation of the amount of capital invested in mining.

CAPITAL INVESTED IN MINES AND QUARRIES IN THE UNITED STATES IN 1919, BY INDUSTRIES

Industry	Amount	Industry	Amount
All industries	$6,955,468,831	Miscellaneous[4]:	
Fuels:		Abrasive materials	$1,442,909
Coal, anthracite[1]	433,868,039	Asbestos	772,299
Coal, bituminous	1,904,450,123	Asphalt	3,171,405
Petroleum and natural gas[2]	2,421,485,942	Barytes	2,290,455
Metalliferous ores:		Bauxite	1,950,173
Iron	501,396,044	Chromite	1,572,908
Copper[3]	853,639,017	Clay[5]	17,644,524
Gold and silver:		Feldspar	729,404
Lode mines[3]	280,388,711	Flunrspar	8,046,827
Placer mines	24,574,441	Fuller's earth	1,877,233
Lead and zinc[3]	192,223,814	Graphite	3,755,055
Manganese	7,268,426	Gypsum	13,541,548
Quicksilver	4,423,601	Magnesite	2,612,605
Rare metals	4,889,912	Mica	699,373
Stone[4]:		Millstones	53,105
Basalt	12,899,171	Mineral pigments	815,572
Granite	18,823,980	Phosphate rock	72,733,956
Limestone[5]	82,124,367	Pyrite	4,455,785
Marble	9,033,522	Silica	661,711
Sandstone	18,955,321	Sulphur	28,046,634
Slate	6,923,172	Talc and soapstone	6,225,747

[1] Pennsylvania only.
[2] Including natural-gas-gasoline extraction plants, but not including distributing systems, etc., of oil and gas companies.
[3] Including mineral milling plants, operated by mining enterprises, but not including metallurgical works.
[4] Including mills and dressing plants operated at the mines or quarries.
[5] Exclusive of enterprises producing limestone for their own use at the quarries in the manufacture of lime.
[6] Including only enterprises producing clay for sale as such.

Conference Agrees That Nova Scotia Wage Scale Shall Not Be Reduced This Year

REPRESENTATIVES of District No. 26, United Mine Workers of America, meeting with company officials, succeeded on Nov. 11 in getting the British Empire Steel Corporation to extend the wage scale now in effect from Nov. 30 to Dec. 31.

The corporation recently had announced that all plants and mines under its control in Nova Scotia would be shut down unless the 20,000 workmen accepted a 10-per cent wage cut, effective Dec. 1. The month's extension was granted as a compromise after the miners had asked an extension of four months.

Another conference is called for Dec. 15, when the officials of the British Empire Steel Corporation will endeavor to put the wage scale at the figure desired.

EVIDENTLY RAILROAD LABOR REALIZES that a strike would not be a hit.—*Norfolk Virginian-Pilot.*

Bituminous Coal Loaded Into Vessels at Lake Erie Ports During Season to End of October*

(In Net Tons)

Ports	Railroads	1921 Cargo	1921 Fuel	1921 Total	1920 Cargo	1920 Fuel	1920 Total	1919 Cargo	1919 Fuel	1919 Total
Toledo	Hocking Valley	4,073,150	107,350	4,186,500	3,344,832	73,820	3,418,652	3,939,454	111,006	4,050,460
	Toledo & Ohio Central	1,027,438	29,667	1,057,105	1,508,792	56,183	1,564,975	1,158,862	33,925	1,192,787
	Baltimore & Ohio	2,354,369	72,016	2,426,385	1,337,880	38,948	1,376,828	2,101,187	50,642	2,151,829
Sandusky	Pennsylvania	1,552,971	45,076	1,598,047	1,418,843	21,775	1,440,618	1,253,718	33,382	1,287,100
Huron	Wheeling & Lake Erie	1,491,595	42,905	1,534,500	1,641,441	84,893	1,726,334	1,400,981	50,170	1,451,151
Lorain	Baltimore & Ohio	2,393,742	97,034	2,490,776	2,735,633	171,290	2,906,923	2,632,866	143,647	2,776,513
Cleveland	Pennsylvania	1,990,664	86,325	2,076,989	1,054,953	151,469	1,206,422	2,190,614	235,336	2,425,950
	Erie	359,981	12,782	372,763	364,048	17,486	381,534	305,977	9,904	315,881
Fairport	Baltimore & Ohio							16,692	12,954	29,646
Ashtabula	New York Central	1,064,824	59,124	1,123,948	1,351,849	246,548	1,598,397	1,625,130	143,138	1,768,268
	Pennsylvania	2,213,665	72,753	2,286,418	1,662,618	83,858	1,746,476	1,934,022	98,285	2,032,307
Conneaut	Bessemer & Lake Erie	1,362,601	18,258	1,380,859	2,105,250	35,516	2,140,766	1,343,888	9,683	1,353,571
Erie	Pennsylvania—West	770,091	27,030	797,121	228,731	21,730	250,461	690,144	41,835	731,979
	Pennsylvania—East	209,778	34,073	243,851	335,957	68,672	404,629	163,301	13,181	176,482
Totals		20,870,869	704,393	21,575,262	19,090,827	1,072,188	20,163,015	20,756,836	987,088	21,743,924

* Compiled by Coal & Ore Exchange, Cleveland, Ohio; H. M. Griggs, Manager

October Anthracite Shipments 353,371 Tons Greater Than Those of September

SHIPMENTS of anthracite for October, as reported to the Anthracite Bureau of Information, Philadelphia, amounted to 5,872,753 gross tons against 5,519,412 for the preceding month of September, an increase of 353,371 gross tons; but show a decrease over October of last year of 368,118 gross tons, when 6,240,901 gross tons were recorded. October of this year can be regarded as a fair average shipment when consideration is given to the fact that a number of mines in the Scranton district were idle during the month owing to the fact that they could not operate under the provisions of the Kohler Act. Operations at these mines were resumed, however, on Nov. 2. The total shipments of anthracite for the coal year, beginning April 1, have amounted to 40,223,367 gross tons as compared with 39,720,654 gross tons for the corresponding period last year, a gain of 502,713 tons.

Shipments by initial carriers, in gross tons, follow:

	October, 1921	September, 1921
Philadelphia & Reading	1,104,828	1,081,085
Lehigh Valley	1,048,996	966,600
Jersey Central	570,189	576,875
Lackawanna	759,492	736,571
Delaware & Hudson	898,376	711,199
Pennsylvania	492,632	426,344
Erie	618,034	631,882
New York, Ontario & Western	126,925	123,742
Lehigh & New England	253,311	265,114
Totals	5,872,783	5,519,412

West Virginia Court Is Asked to Abolish Check-Off; Decision Expected Soon

LEGAL activities in connection with the move to abolish the check-off were transferred from Indianapolis and Chicago last week to Charleston, W. Va., where identically the same suit brought before Judge Anderson at Indianapolis was pending before Judge George W. McClintic in the U. S. District Court for the Southern District of West Virginia. It was not originally intended to try this case before the regular November term but early in the week counsel for the plaintiffs asked Judge McClintic to set Thursday, Nov. 10, as the date for the hearing. That was agreed to and counsel for the defendants notified. The plaintiffs in this case, as in the Indianapolis court, are the Borderland Coal Corporation and sixty-three other coal companies and the plaintiffs seek an injunction to restrain and enjoin the activities of the United Mine Workers in the Mingo district and to prevent operators from continuing the check-off.

A. M. Belcher, of Charleston, of counsel for operators, began his argument for the issuance of an injunction as requested, making the assertion that "If a drastic injunction is granted, as we have a right to expect, it is not because of anything done by the Mingo operators but because the United Mine Workers have placed themselves in such a position that they are outside the law."

Counsel for the operators laid stress on the fact that the few remaining coal operators who have refused to permit the unionization of their mines want to do a legitimate business. "We don't want to turn over our business to the United Mine Workers, which is an organization controlled at Indianapolis by the Central Competitive Field," Mr. Belcher declared.

In support of his assertion that such control existed, Mr. Belcher said that only a few weeks ago northern West Virginia coal operators had sought to effect an adjustment of wages in conference with the United Mine Workers because mines in the section referred to could not operate in competition with the Somerset and other Pennsylvania fields and that the reply of the United Mine Workers officials of District 17 had been that it was out of the question to reduce wages because the rate of wages was set in the Central Competitive Field.

Answering Mr. Belcher's argument, Harold W. Houston, of Charleston, of counsel for the United Mine Workers, declared that the check-off system was originally devised by the operators, having been used long before the days of the union and that it was utilized by coal companies as a means of collecting for fuel, physicians' fees, grocery bills and rent.

"For the convenience of both parties the check-off system was adopted in connection with union dues," continued Mr. Houston. There is nothing essentially illegal in the check-off system and there has been no evidence introduced to prove that any of the check-off money was used for illegal purposes."

The case heard by Judge McClintic was originally set for hearing at Huntington but was later transferred to Charleston for the convenience of both parties. It was generally expected at the conclusion of the hearing that Judge McClintic would render a decision in this case before Nov. 15, when the regular November term of federal court begins.

Jobbers Will Furnish Coal Statistics Monthly to the Government

THE American Wholesale Coal Association has received from F. R. Wadleigh of the coal division of the Bureau of Foreign and Domestic Commerce a request that certain information be furnished on the first of each month during the forthcoming winter. It appears that the Department of Commerce when preparing to meet a possible railroad strike wanted estimates of the supply of coal on hand at some sixty different points in the United States. It was desired to know the number of days' supply on hand among retailers, householders, public utilities and industries. The association, through its Washington office, was able to compile this information within twenty-four hours. The service was so prompt and satisfactory that the Department of Commerce desires to be kept advised similarly this winter.

The executive committee of the association concluded that it would gladly supply this information. The statement was made by C. L. Deering and others that as the coal trade had volunteered to supply such information as the government might want, this proposed action by the committee was but "making good" on the promise. Accordingly, requests will be sent out by mail to the directors and others on the 25th of each month calling for the desired information.

Illinois Union Lends to Kansas Insurgents Money to Continue Outlaw Strike

A RESOLUTION providing that an assessment of $1 per month be laid on the United Mine Worker members in Illinois to raise $90,000 monthly on behalf of the striking Kansas mine workers was passed Nov. 11 by the annual convention of the union members in the State of Illinois.

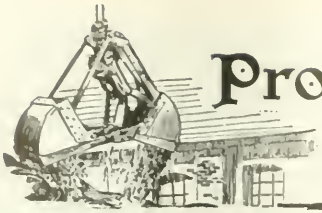
The resolution also condemned the action of John L. Lewis, international president, in removing from office President Howat and the other executive officers of District 14 without even giving them an opportunity to comply with the action of the official convention, and for "appointing men to govern District 14 in whom the membership of Kansas has no confidence."

The Kansas industrial law, against which the fight of Kansas miners is directed, was termed "Governor Allen's nefarious industrial court law, which chains the workers to the job and takes from them the right of free men, namely the right to strike as a last resort to right a wrong that may be perpetrated by our industrial masters."

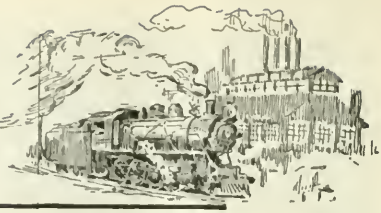
Prior to the vote on the resolution President Farrington warned the delegates to go slow in their decisions, as they were likely to face a war with the international organization, and in the clash they must go the limit until one side or the other was forced to surrender. Farrington said that if the resolution was approved, he would lead the fight.

Deny Helper Promotion, 8,000 Miners Quit

EIGHT THOUSAND anthracite mine workers at six collieries of the Pennsylvania Coal Co., near Wilkes-Barre, Pa., went on strike Monday, Nov. 14, because, it was announced, the company refused to promote a blacksmith's helper to the position of blacksmith after the latter had quit his job. Other grievances are said to be involved.



Production and the Market



Weekly Review

FOR three weeks the consumers took sufficient interest in coal to buy fairly heavily for storage. They kept this up during the period of uncertainty of a railroad strike and during the flurry of outlaw strikes at the coal mines over Judge Anderson's injunction. But things have settled down again to a waiting game for more and better business conditions. It is still decidedly a buyers' market and a good time to buy. Some hold it also is a good time to wait, arguing that prices are good for at least thirty days. Predictions now are that the government's report of stocks as of Nov. 1, which is expected to be available in two weeks, will show that millions of tons of steam coal have been put in storage this autumn, much if not most of which will be held against a suspension of mining next April.

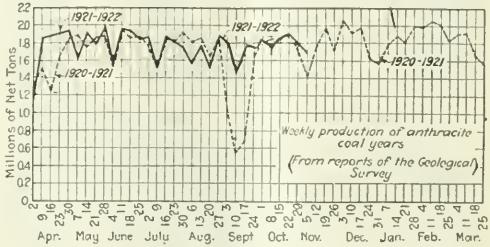
Production of soft coal in the week of Nov. 5 fell to 9,344,000 tons, a drop of 1,624,000 tons, or 15 per cent, accounted for by observance of All Saints' Day and outlaw strikes in the Central Competitive Field, possibly accentuated by a reaction in demand after the settlement of the railroad controversy.

Holidays Curtail Production and Consumption

There is nothing in reports so far available to indicate any gain in production during the week of Nov. 12. Election and armistice day observance cut both consumption and production. Barring a decision this week by the Chicago court unfavorable to the United Mine Workers, nothing save severe cold will raise the demand for bituminous coal above 10,500,000 tons until after the New Year holiday.

Prices are stable, *Coal Age* index standing firm at 91. Coal that became "distressed" because shipped on consignment during the strike threat periods has been absorbed by this time. In the Chicago market the huge oversupply of unsold screenings has dropped from 500,000 tons to less than 50,000 tons in four months. The shoe is on the other foot now, for domestic sizes are in substantial but no serious oversupply.

The Upper Lake region has stopped buying at the mines except small lots of special grade coals. The New England waterfront is crowded with boats waiting to discharge cheap West Virginia coal, to the disadvantage of all-rail business. Canada is harboring a fat surplus, much unsold, of steam coal. Coal is accumulating at Hampton Roads.

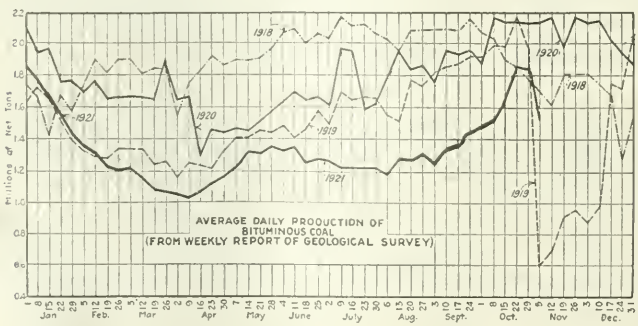

1921-1922
1921-1922
1920-1921
1920-1921
Millions of Net Tons
Weekly production of anthracite coal years
(From reports of the Geological Survey)
Apr. May June July Aug. Sept Oct. Nov. Dec. Jan. Feb. Mar.

Anthracite production has been off temporarily for two weeks because of holidays. Demand is fairly steady and prices firm. Coke output is slowly gaining as the iron business recuperates.

BITUMINOUS

Production of bituminous coal received a setback during the first week in November, when, according to the Geological Survey, the output dropped 1,624,000 tons to 9,344,000 tons. The observance of a religious holiday, labor troubles incident to the check-off controversy and a market plugged by abnormal buying when the rail strike threatened were the main causes of the loss in output. Loadings on Monday and Tuesday of last week—Nov. 7-12—were 65,730 cars, or practically the same as on the corresponding days of the week before the railroad strike order was issued.

Cumulative production for 1921 is approximately 55,000,000 tons behind 1919, 113,000,000 behind last year and about 137,000,000 behind the average of the war years. It is



Estimates of Production

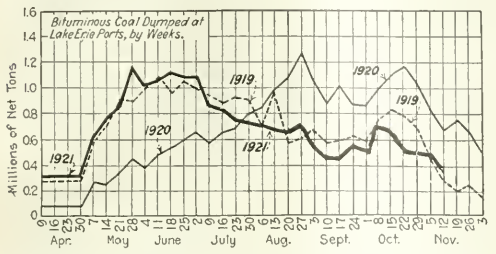
(Net Tons)

Week Ended	1921	1920
BITUMINOUS COAL		
Oct. 22 (b)	11,049,000	12,232,000
Oct. 29 (b)	10,968,000	12,407,000
Nov. 5 (a)	9,344,000	11,429,000
Daily average	1,557,000	2,078,000
Calendar year	347,565,000	460,217,000
Daily average calendar year	1,329,000	1,757,000
ANTHRACITE		
Oct. 22	1,942,000	1,969,000
Oct. 29	1,780,000	1,743,000
Nov. 5 (a)	1,716,000	1,429,000
Calendar year	75,149,000	74,838,000
COKE		
Oct. 29	102,000	422,000
Nov. 5 (a)	115,000	385,000
Calendar year	4,611,000	18,073,000

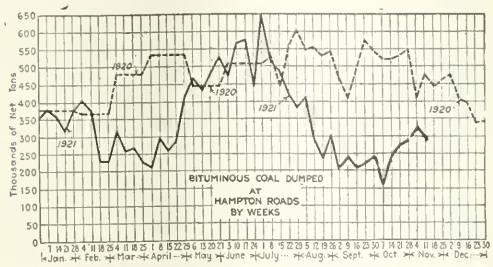
(a) Subject to revision. (b) Revised from last report.

110,000,000 tons less than the average of the last four years.

Markets everywhere are quiet, as an aftermath of a sales spurt when the two strikes threatened. Both union and non-union coals feel the sluggishness. Production appears to have been artificially stimulated and the coal trade is marking time until industrial improvement catches up with augmented stockpiles.



The all-rail movement to New England increased during the week ended Nov. 5. According to the Geological Survey, 3,548 cars were forwarded over the Hudson, compared with 2,971 cars in the week preceding. Much of this tonnage represents the delivery of orders placed when the strike threatened, and a decline in movement is expected. Pennsylvania producers are still at a disadvantage in those parts of this territory that are being reached by the water-borne coals, which are in more favorable position, due to the low range of coastwise freights as well as to the all-rail rates, which are sadly in need of adjustment.


Thousands of Net Tons
1921
1920
1921
1920
BITUMINOUS COAL DUMPED AT HAMPTON ROADS BY WEEKS
Jan. Feb. Mar. April May June July Aug. Sept. Oct Nov. Dec.

The Lake movement is dragging to a close, although shippers expect to continue this business throughout the month. Dumpings during the week ended Nov. 14 were 369,648 net tons—359,776 cargo and 9,872 vessel fuel—compared with 668,950 tons in the corresponding week of 1920. Cumulative movement for the season to date is 22,342,043 tons; in 1920 it was 21,728,660 tons. Northwestern markets are

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

	Market Quoted	Oct. 10, 1921	Oct. 31, 1921	Nov. 7, 1921	Nov. 14, 1921†
Low-Volatile, Eastern					
Pocahontas lump	Columbus	$4.75	$4.80	$4.85	*$4.60@$5.00*
Pocahontas mine run	Columbus	2.75	2.55	2.55	*2.25@ 2.75*
Pocahontas screenings	Columbus	2.05	1.75	1.75	*1.25@ 2.00*
Pocahontas lump	Chicago	4.75	4.75	4.75	4.50@ 5.00
Pocahontas mine run	Chicago	2.60	3.15	3.15	*2.50@ 3.25*
*Smokeless mine run	Boston	4.85	4.80	4.80	4.75@ 4.90
Clearfield mine run	Boston	1.95	1.95	1.95	1.75@ 2.15
Cambria mine run	Boston	2.40	2.45	2.45	2.10@ 2.25
Somerset mine run	Boston	1.85	1.90	1.90	1.60@ 2.15
Pool 1 (Navy Standard)	New York	3.15	3.25	3.20	*2.90@ 3.25*
Pool 1 (Navy Standard)	Philadelphia	3.10	3.15	3.15	3.00@ 3.30
Pool 1 (Navy Standard)	Baltimore	2.75	2.65	2.65	**2.60@ 2.75**
Pool 9 (Super. Low Vol.)	New York	2.40	2.65	2.50	*2.25@ 2.60*
Pool 9 (Super. Low Vol.)	Philadelphia	2.40	2.45	2.45	2.25@ 2.60
Pool 9 (Super. Low Vol.)	Baltimore	2.45	2.45	2.35	**2.35@ 2.45**
Pool 10 (H. Gr. Low Vol.)	New York	2.15	2.30	2.15	2.00@ 2.25
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2.05	2.15	2.15	2.00@ 2.25
Pool 10 (H. Gr. Low Vol.)	Baltimore	2.30	2.20	2.10	2.10
Pool 11 (Low Vol.)	New York	1.80	1.85	1.85	**1.75@ 2.00**
Pool 11 (Low Vol.)	Philadelphia	1.85	1.85	1.85	1.75@ 2.00
Pool 11 (Low Vol.)	Baltimore	2.10	2.00	1.85	**2.00**
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.75	1.85	1.65	**1.60@ 1.75**
Pool 54-64 (Gas and St.)	Philadelphia	1.75	1.75	1.70	1.65@ 1.80
Pool 54-64 (Gas and St.)	Baltimore	1.85	1.75	1.65	1.50@ 1.80
Pittsburgh scr'd gas	Pittsburgh	2.65	2.65	2.65	2.60@ 2.70
Pittsburgh mine run (St.)	Pittsburgh	2.20	2.15	2.15	2.10@ 2.20
Pittsburgh slack (Gas)	Pittsburgh	2.15	1.65	1.65	*1.50@ 1.60*
Kanawha lump	Columbus	3.20	3.30	3.25	**3.25@ 3.50**
Kanawha mine run	Columbus	1.95	2.15	2.05	*1.90@ 2.15*
Kanawha screenings	Columbus	1.20	1.25	1.10	**1.00@ 1.30**
Hocking lump	Columbus	3.20	3.25	3.25	3.00@ 3.50
Hocking mine run	Columbus	2.00	2.05	2.10	2.00@ 2.20
Hocking screenings	Columbus	1.05	1.10	1.10	1.00@ 1.20
Pitts. No. 8 lump	Cleveland	3.25	3.25	3.25	3.00@ 3.50
Pitts. No. 8 mine run	Cleveland	$2.20	$2.15	$2.15	*$2.05@$2.15*
Pitts. No. 8 screenings	Cleveland	1.55	1.55	1.60	*1.35@ 1.40*
Midwest					
Franklin, Ill. lump	Chicago	3.80	3.75	3.65	3.25@ 4.05
Franklin, Ill. mine run	Chicago	2.70	2.75	2.90	**2.75@ 3.50**
Franklin, Ill. screenings	Chicago	1.40	1.60	1.60	*1.25@ 1.75*
Central, Ill. lump	Chicago	2.50	2.50	3.50	3.25@ 3.75
Central, Ill. mine run	Chicago	2.25	2.25	2.50	**2.25@ 3.00**
Central, Ill. screenings	Chicago	1.45	1.60	1.85	*1.00@ 2.25*
Ind. 4th Vein lump	Chicago	2.95	2.95	3.55	3.00@ 4.05
Ind. 4th Vein mine run	Chicago	2.55	2.35	2.90	*2.40@ 3.25*
Ind. 4th Vein screenings	Chicago	1.50	1.55	1.75	**1.40@ 2.50**
Ind. 5th Vein lump	Chicago	2.70	2.70	2.70	**2.60@ 3.50**
Ind. 5th Vein mine run	Chicago	2.50	2.35	2.45	2.15@ 2.75
Ind. 5th Vein screenings	Chicago	1.45	1.55	1.75	**1.25@ 2.50**
Standard lump	St. Louis	3.40	3.35	3.35	*3.00@ 3.25*
Standard mine run	St. Louis	1.85	1.95	1.95	**2.00@ 2.10**
Standard screenings	St. Louis	0.55	0.90	0.75	**0.75@ 1.00**
West. Ky. lump	Louisville	2.95	2.90	3.25	*2.75@ 3.25*
West Ky. mine run	Louisville	2.25	2.45	2.20	*1.75@ 2.25*
West Ky. screenings	Louisville	1.30	1.10	0.85	**0.40@ 1.50**
South and Southwest					
Big Seam lump	Birmingham	3.75	3.75	3.75	3.25@ 4.25
Big Seam mine run	Birmingham	2.15	2.15	2.15	2.00@ 2.25
Big Seam (washed)	Birmingham	2.30	2.30	2.30	2.15@ 2.40
S. E. Ky. lump	Louisville	3.65	4.00	3.75	**3.75@ 4.00**
S. E. Ky. mine run	Louisville	2.20	2.20	2.30	*2.00@ 2.25*
S. E. Ky. screenings	Louisville	1.25	1.30	1.30	**1.30@ 1.60**
Kansas lump	Kansas City	.....	5.75	.....	.....
Kansas mine run	Kansas City	.....	4.00	.....	.....
Kansas screenings	Kansas City	.....	2.40	.....	.....

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in heavy type, declines in *italics*

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	Oct. 31, 1921 Independent	Oct. 31, 1921 Company	Nov. 7, 1921 Independent	Nov. 7, 1921 Company	Nov. 14, 1921† Independent	Nov. 14, 1921† Company
Broken	New York	$2.61	.....	$7.60@$7.75	.....	$7.60@$7.75	.....	$7.60@$7.75
Broken	Philadelphia	2.66	$7.60@$8.20	7.75@ 7.85	$7.60@$8.20	7.75@ 7.85	$7.60@$8.20	7.75@ 7.85
Broken	Chicago	5.63	13.40*	12.80*	13.40*	12.80*	.....	.....
Egg	New York	2.61	8.00@ 8.25	7.60@ 7.75	8.00@ 8.25	7.60@ 7.75	8.00@ 8.40	7.60@ 7.75
Egg	Philadelphia	2.66	8.10@ 8.35	7.75@ 7.85	8.10@ 8.35	7.75@ 7.85	8.10@ 8.35	7.75@ 7.85
Egg	Chicago	5.63	13.40*	12.80*	13.40*	12.80*	8.00**	7.15**
Stove	New York	2.61	8.50@ 9.00	7.90@ 8.10	8.50@ 9.00	7.90@ 8.10	8.75@ 9.25	7.90@ 8.10
Stove	Philadelphia	2.66	8.50@ 8.75	8.00@ 8.35	8.50@ 8.75	8.00@ 8.35	8.75@ 9.00	8.00@ 8.35
Stove	Chicago	5.63	13.40*	12.90*	13.40*	12.90*	8.50**	7.40**
Chestnut	New York	2.61	8.50@ 9.00	7.90@ 8.10	8.50@ 9.00	7.90@ 8.10	8.75@ 9.25	7.90@ 8.10
Chestnut	Philadelphia	2.66	8.25@ 8.75	8.05@ 8.25	8.25@ 8.75	8.05@ 8.25	8.50@ 9.00	8.05@ 8.25
Chestnut	Chicago	5.63	13.40*	12.80*	13.40*	12.80*	8.25**	7.40**
Pea	New York	2.47	5.75@ 6.00	6.05@ 6.45	5.75@ 6.00	6.05@ 6.45	*5.50@ 6.00*	6.05@ 6.45
Pea	Philadelphia	2.38	5.00@ 5.50	6.15@ 6.25	5.00@ 5.50	6.15@ 6.25	5.00@ 5.50	6.15@ 6.25
Pea	Chicago	5.63	12.40*	11.15*	12.40*	11.15*	*6.60**	5.80**
Buckwheat No. 1	New York	2.47	3.25@ 3.50	3.50	2.75@ 3.25	3.50	*2.50@ 3.25*	3.50
Buckwheat No. 1	Philadelphia	2.38	2.75@ 3.50	3.50	2.75@ 3.50	3.50	*2.75@ 3.25*	3.50
Rice	New York	2.47	2.15@ 2.50	2.50	2.15@ 2.40	2.50	*2.00@ 2.40*	2.50
Rice	Philadelphia	2.38	1.75@ 2.25	2.50	1.75@ 2.25	2.50	1.75@ 2.25	2.50
Barley	New York	2.47	1.25@ 1.50	1.50	1.25@ 1.50	1.50	*1.25@ 1.50*	1.50
Barley	Philadelphia	2.38	1.10@ 1.25	1.50	1.10@ 1.25	1.50	1.00@ 1.25	1.50
Birdseye	New York	2.47	.....	2.50	.....	2.50	.....	2.50

*Prices and freight rates, net tons; quotations f.o.b. cars, Chicago.
†Advances over previous week shown in heavy type, declines in *italics*.
**Net tons, f. o. b. mines

dull and buyers are holding down their orders in the hope that lowered freights may yet come in time to affect their fuel budgets for this year. This may prove a dangerous policy, for an early winter would throw an abnormal demand into a period when transportation difficulties are at their height.

Hampton Roads shippers feel the universal dullness. Tonnage is again piling up at the piers, despite strenuous efforts to move it coastwise. Last week the accumulations had reached 300,000 tons and waiting vessels aggregated but 10,000 tons. Dumpings at the Hampton Roads piers for all accounts during the week ended Nov. 10 were 251,961 gross tons, as compared with 294,334 in the week preceding.

TIDEWATER BITUMINOUS COAL SHIPMENTS FOR OCTOBER, 1921
(In Thousands of Net Tons)

Destination	New York	Phila.	Balto.	Hamp. Rds.	Charleston	Total Oct.	Total Sept.
Coastwise to New England	142	58	85	702		987	809
Exports		35	28	190	18	271	210
Bunker	255	37	19	190	1	502	492
Inside capes		196	96	28		320	279
Other tonnage	658	2	7	65		732	623
Oct. Total	1,055	328	235	1,175	19	2,812	
Sept. Total	917	236	255	991	14		2,413

With the exception of a single cargo to Italy last week, the European market remains inactive. C.i.f quotations are being hammered down but there is yet too much price difference in favor of British coals. The South American market occupied the limelight last week and exporters were figuring on bids for the Brazilian State Railways, which were reported to be in the market for 150,000 tons with a spread over 1922.

ANTHRACITE

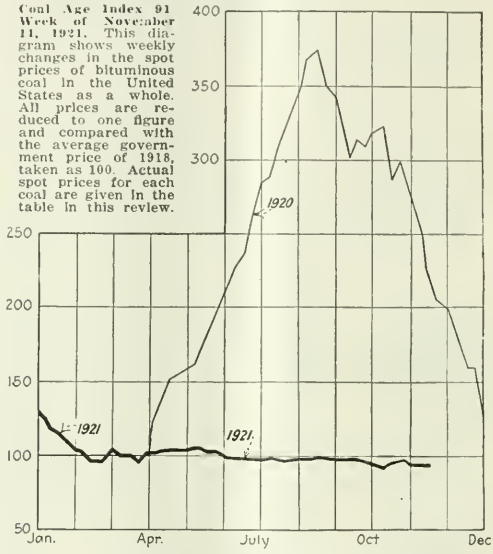
Production of hard coal was affected by holidays near the close of October and the early part of November. This and not any lack of demand cut the output for the week ended Nov. 5 to 1,716,000 net tons. The latest full-time week—Oct. 22—showed a tonnage of 1,942,000.

New England is absorbing an increasing volume of anthracite. During the first week of November 3,309 cars were forwarded over the Hudson, 101 cars more than in the preceding week. Lake dumpings reflect the approach of the end of the navigation season—during the week ended Nov. 9 there were 68,600 net tons loaded as compared with 106,400 in the preceding week.

Stove size continues to lead the demand, and independent prices have strengthened accordingly. Egg and pea are long and some shippers are selling stove and nut in conjunction with these grades. Steam coals feel the reaction in the bituminous market and independent prices have softened a trifle.

COKE

Production of beehive coke was 115,000 net tons in the week ended Nov. 5, according to the Geological Survey. The increase of 13,000 tons over the preceding week reflects the slowly improving iron business; in fact, there is no doubt but that production has outstripped demand, temporarily at least. The Frick company continues to increase production despite the softer coke market, largely to provide work for its employees. Byproduct coke is still being purchased wherever possible and will be until the iron and steel industry gains considerable momentum.



Coal Age Index 91 Week of November 11, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.

Foreign Market And Export News

Coastwise Slump Affects Hampton Roads; Accumulations Increase; South American Market Offers Export Outlet

Business was dull at Hampton Roads last week, with coastwise movement falling off slightly and with foreign cargoes negligible. Prices took a slight drop in an effort to stimulate trade, but with little effect.

Accumulations of stocks at Tidewater increased, apparently carried on the momentum of the business which obtained during the latter part of October but which has not held up. Fear of demurrage has prompted many shippers to make flattering offers for immediate shipment, but little activity in the spot market has been seen.

The bunker business is still brisk, although the majority of the sales are on contract, with few chances for operations on the spot. The hope of revived industry in the North is still held out by dealers as the only source of optimism for the immediate future. A gradual decline in New England business has taken place since the railroad strike was called off.

The general tone of the market is weak, with a very listless atmosphere throughout. It is expected that the approach of midwinter will stimulate the trade in domestic coals, particularly in the northern states, thereby involving the coastwise business.

Nearly 300,000 tons of coal are on hand at the piers, with vessel tonnage approximating only 30,000. At the Newport News piers the vessel tonnage was reduced to nothing. These piers, handling high-volatile coals very largely, have felt the decline in business particularly.

Foreign markets are extremely inactive and the only substantial business in sight is a contract to be let by the Brazilian State Railways. Bids on this South American business have been requested, the tonnage involved being placed around 150,000, on a c.i.f. basis at Rio de Janeiro, deliveries to commence Jan. 1. A peculiar uncertainty exists, as the Brazilians have named an arbitrary figure of $9 or less, while exporters are not sure of their ability to quote on that basis, with the prevailing ocean freights.

Coal Paragraphs from Foreign Lands

GERMANY—The production of coal in the Ruhr region during the week ended Oct. 29 was 1,776,000 metric tons, according to a cable to *Coal Age*. This is a slight decline as compared with 1,803,000 tons for the preceding week.

BELGIUM—The industrial coal market is unchanged, being weak with little demand. Household descriptions on the contrary show a fresh tendency to rise. There is a lack of stocks in these descriptions.

HOLLAND — The latest quotations in Rotterdam, cabled to *Coal Age*, are as follows: American gas $8; British steam 30s.

SWITZERLAND—The *Colliery Guardian* says that one of the present troubles of the Swiss State Railways seems to be that they have coal enough to last them for a year or more, coal bought when it was very dear and cost 150 fr. a ton. One of their last actions has been to purchase some stocks of English coal, which will come to only about 48 fr. a ton f.o.b. Dieppe.

British Fuel Undersells Coals at French Mines; French Producers Ask Government Aid

Declining Quotations in U. K. Show Necessity of Foreign Outlet—British Miners in More Conciliatory Mood, Accepting November Wage Scale—Some Pits Reopening with Lowered Production Costs

Considerable sensation has been caused in the French Northern coalfields by the appearance of British coal on the very fields themselves in competition with the local output, which is actually being undersold not only in Lille and other large towns but almost at the pit mouth. The price of the British coal on rail at Calais is 95.50 fr. as compared with 106 fr. for home coal of corresponding quality on rail at Comines.

Hitherto British competition in the Northern Departments has been confined to the Coastal region and this invasion of the Inland markets has caused great perturbation among the French mine owners. The only way of countering this new competition is to lower their own prices, but this can only be done at once by reducing wages.

There are difficulties in the way which prevent the immediate adoption of this step. There is already a shortage of miners, and there would be a further falling off if the wages paid were not in proportion to those paid in other industries. Operators are to hold a conference at Douai. It is probable that this conference will send a deputation to the Minister of Public Works to ask him not to check the importation of British coal by prohibitive tariffs, but to give the industry aid in other ways, especially such as will enable it to recruit more hands. There are some, however, who think that an early reduction of wages, which are now five times what they were in 1914, cannot be avoided especially as there is a possibility of the Belgian mine owners also invading the Northern markets.

The delivery of German reparation coal up to the end of September included the following: 5,344,956 tons of coal, 2,227,955 tons of coke, and 271,334 tons of lignite briquets; or a grand total for the three quarters of 7,844,246 tons. In September deliveries included 619,556 tons of coal, 253,118 tons of coke, and 42,327 tons of lignite briquets.

British Solving Wage Problems

British production is proceeding evenly. During the week ended Oct. 22 the output was 4,235,800 gross tons, as compared with 4,238,000 tons in the week preceding. Export quotations, cabled to *Coal Age*, show further reductions.

The Far East is sending in more inquiries, totaling more than 200,000 tons, for shipment over the next four months. Newcastle reports an Indian inquiry for 50,000 tons of steam coals. Australia is understood to be competing for this business. Heavy tonnages of coal are on track which also tend to depress quotations.

British press advices show an interesting statement of present day production costs and prices compared with the year 1913. September prices averaged 30s. 6d. per ton, 220.5 per cent over the 1913 figure of 13s. 10d. Wages rose from 6s. 10½d. in 1913 to 21s. 8d. in September, 1921, an increase of 315.2 per cent of the 1913 average.

Wages in the South Wales area have been adjusted for November on the basis of the auditors' report. These wages are now 28.95 per cent on the 1915 standard. This means that piece work miners are to receive 11s. 3d. per day, underground day wage men average 9s. 3d. per day, and the lower paid surface men 7s. per day. The drop amounts to about 4s. or 5s. per day compared with September. Miners' wages in Yorkshire, Derby, Nottinghamshire, Leicester, Warwick and Cannockchase will be reduced by 29.64 per cent on the 1915 standard, so that their November rate will be 110.55 per cent of the base. The arbitrator's award in the South Wales coal dispute means that the whole of the August receipts above the wage scale are to go in wages. The payment, as decided by the arbitrator, of 79.03 per cent on the 1915 wage also means that all July profits will go in wages.

The Yorkshire Miners' Association have charged the owners with breaking their agreements by endeavoring to obtain a reduction in tonnage rates, and that some men had been given notice because they would not agree to work for 5s. per day. In reply to this charge the owners say that the only alternatives to the securing of cooperation of their men in keeping the pits open by an economic adjustment of wages is either to run at a loss or to close the pits altogether. In a statement the owners say they are striving to avert the catastrophe of another stoppage, as threatened by the miners, but they cannot accept the implied suggestion that they should run their business at a loss to maintain wages at an artificial level. This virtually means that the owners cannot pay the agreed wages and that the only alternative to a lower wage is closed pits.

More colleries are closing down. A Glasgow concern has closed because it cannot pay the arbitrator's wage, while another colliery has closed because of excessively low output. Out of 200,000 miners in South Wales 80,000 are now idle, while in Lanark 10 additional pits have closed down. The total unemployment among the miners amounts to 175,000 while 73 per cent of those employed are now working three shifts per week. In these circumstances the outlook for November, when the owners are due to take their share of profits, is distinctly discouraging.

Another step in the dissolution of the miners' federation is shown by a decision, by a large majority, of the Durham County Colliery Enginemen to withdraw from that body. A group of collieries in the Forest of Dean have broken away from the Mining Association and the District Board, and have informed their employees that they will be paid the district wage, while any profits over 10 per cent of the company's capital will be divided equally between shareholders and workmen.

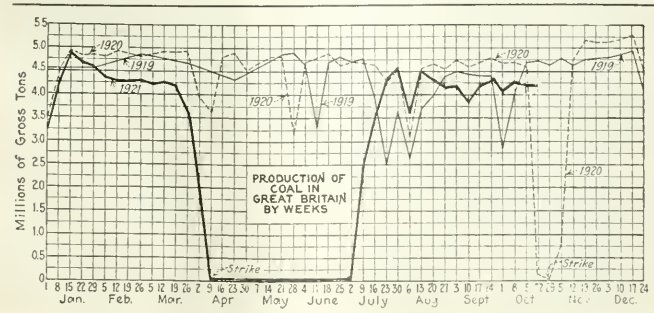
The Northumberland Miners' Association is ready to make sacrifices to keep the industry going and the executive of that body has supported the action of those men who have offered to accept a lower wage to keep the pits in operation.

A colliery in Glamorgan, one of the largest in the Avon Valley, which has been closed for some months, has decided to reopen now that miners have approached the owners and promised to increase their output.

More collieries in Durham in Derbyshire have closed, throwing out of work about 5,000 more men. November wages are being reduced in the Durham by 55 per cent and in Northumberland 91 per cent. On account of the consequent lower costs of production some pits are expected to reopen. More forks vs. shovels controversies are being carried on, notably in Leicestershire.

The Cardiff Chamber of Commerce has convened a conference at which it was stated that from Nov. 1 the charges by the railways were reduced from 150 to 125 per cent on the 1913 rates for tonnage dues, crane hire, mixing coal for shipment, discharging, ballast and wharfage at docks and harbors at Cardiff and other South Wales ports.

Reports indicate a total of nearly £7,000,000 for army expenditures occasioned by the recent coal miners' strike.



Export Clearances, Week Ended Nov. 10

FROM HAMPTON ROADS

	Tons
For Atlantic Islands:	
Am. SS. Glyndon, for Cayo Mambi	469
For Canada:	
Russ. SS. Tobolsk, for Bathhurst, N. B.	2,110
For Brazil:	
Ital. SS. Piave, for Buenos Aires	7,012
Br. SS. Caithness, for Buenos Aires	5,154
For Italy:	
Br. SS. M. S. Dollar, for Genoa	10,000
For Peru:	
Br. SS. South American, for Lima	551
Am. Schr. Horace A. Stone, for Covernas	1,931
Nor. SS. Bur, for Fort de France	6,358
Am. SS. Callabasas, for Tanamo	974

Pier and Bunker Prices, Gross Tons

(Foreign Bunker Quotations by Cable to Coal Age)

PIERS

	Nov. 5	Nov. 12†
Pool 9, New York	$5.80@$5.90	$5.65@$5.75
Pool 10, New York	5.60@ 5.75	5.45@ 5.60
Pool 9, Philadelphia	5.75@ 5.95	5.70@ 5.90
Pool 10, Philadelphia	5.50@ 5.75	5.50@ 5.65
Pool 71, Philadelphia	6.00@ 6.20	6.00@ 6.10
Pool 1, Hamp. Rds.	4.75@ 5.00	4.75@ 4.90
Pools 5-6-7 Hamp.Rds.	4.25	4.25
Pool 2, Hamp. Rds.	4.50@ 4.75	4.60

BUNKERS

Pool 9, New York	$6 15@$6.25	$6.05@$6.15
Pool 10, New York	5.95@ 6.15	5.85@ 5.90
Pool 9, Philadelphia	6.00@ 6.25	6.00@ 6.20
Pool 10, Philadelphia	5.75@ 6.00	5.75@ 6.00
Pool 1, Hamp Rds.	5.15	5.05
Pool 2, Hamp. Rds.	4.90	4.75
Welsh, Gibraltar	47s. 6d. f.o.b.	46s. f.o.b.
Welsh, Rio de Janeiro	65s. f.o.b.	65s. f.o.b.
Welsh, Lisbon	57s. 6d. f.o.b.	58s. f.o.b.
Welsh, La Plata	60s. f.o.b.	60s. f.o b.
Welsh, Marseilles	125 fr.	125 fr.
Belgian, Antwerp	40s.	40s.
Alexandria	48s. f.o.b.	48s. f.o.b.
Bombay	35 rupees	35 rupees
Capetown	42s. 9d.	42s. 9d.

C.I.F. Prices, American Coal

(In Gross Tons)

	—Nov. 5— Low Vol.	—Nov. 5— High Vol.	—Nov. 12†— Low Vol.	—Nov. 12†— High Vol.
French Atlantic	$9.00	$8.85	$8.90	$8.65
West Italy	8.90	8.70	8.80	8.60
The Plate	9.75	9.60	9.80	9.35
Rio Janeiro	9.35	9.20	9.80	9.60
Scandinavia	....	....	9.50	9.20

These quotations are purely nominal and as far as can be learned, no business is being done in these markets.

Current Quotations British Coals f.o.b. Port, Gross Tons

Cardiff	Nov 5	Nov. 12†
Admiralty Large	27s. 6d.	26s.6d.@27s.
Steam, Smalls	19s.	18s.6d.@19s.6d.
Newcastle:		
Best Steams	23s. 3d.	22s 6d @23s
Best Gas	24s. 3d.	24s.@24s. 6d.
Best Bunkers	23s. 3d.	23s.@23s. 6d.

†Advance over previous week shown in heavy type, declines in *italics*.

Hampton Roads Piers Again Show Tonnage Accumulations

	— Week Ended — Nov. 3	Nov. 10
N. & W. Piers, Lamberts Pt.:		
Cars on hand	1,588	2,223
Tons on hand	79,064	124,544
Tons dumped for week	139,061	111,633
Tonnage waiting	21,325	10,250
Virginian Ry. Piers, Sewalls Pt.:		
Cars on hand	1,363	1,533
Tons on hand	68,150	76,650
Tons dumped for week	111,781	109,991
Tonnage waiting	28,302	10,670
C. & O. Piers, Newport News:		
Cars on hand	947	1,191
Tons on hand	47,350	59,850
Tons dumped for week	43,492	30,337
Tonnage waiting	2,710	2,000

Swedish Imports Increase

SWEDEN—During the last week in October imports of coal at Stockholm totaled about 14,200 tons. Figures published by the Board of Trade show that an increase in imports occurred during September, 306,500 tons of coal coming into the country compared with 154,000 tons in August, the September figure being the highest this year.

SPAIN—The prices for Asturian coal have at last been brought down to the level of British figures. At Barcelona the following rates are quoted: Screened 95@100 pesetas; large 90@95 and small 75. British coals, however, are still given the preference by Spanish industries because of superior quality.

CHINA—The market is very quiet but with the time approaching for making next year's contracts, the Shanghai trade is instituting tentative inquiries as to consumers probable requirements.

Reports From the Market Centers

New England

BOSTON

Dull Market—Pennsylvania Operators Pressed to Find Outlet—Hampton Roads Shipments Still in Fair Volume —Coastwise Freights Unchanged—Active Demand for Popular Anthracite Sizes.

Bituminous — The current market is without apparent change from a week ago. Inquiry has fallen off, and receipts are beginning to recede noticeably. Buyers are again offish with respect to purchases for the next 30 days. A few industries, such as shoe manufactures, are on a somewhat better earning basis and in time this will spread to other manufactures and be reflected in a demand for steam coals, but the cherished day seems still far ahead. Purchasing agents are inclined to consult their own convenience, for there is now little confidence on their part in any material advance in prices the next few weeks.

No recent price movement has been observed. On Hampton Roads coals the range of quotations remains about the same. Some of the factors who rehandle coal over their own wharves and are therefore in position to retain coal in storage are asking slight advances from small buyers here and there, but the supply of market cargoes is fairly constant, and under the pressure to free vessels at railroad berths there are occasional sacrifice sales that are under $6 on cars, Boston or Providence. This low level is only spasmodic, however, and is made usually only to large buyers in position to take cargo lots. At the Norfolk and Newport News piers there are similar sales where prices have reached well below $4.75 f.o.b. on Navy Acceptable coal.

Pennsylvania producers have shown no disposition to shade the minimum prices they individually set for themselves some months ago. Perhaps at no time in the season has it been quite so difficult as just now to place coal in any volume. Many operators whose connections are ordinarily of the best are dragging on the bottom so far as new business is concerned. Large blocks of territory have been wiped out by the much lower prices that the smokeless interests have made, even though the net result to the latter will not afford them much satisfaction.

The Southern coals are being shipped here in fair volume on old sales, but there is bound to be less tonnage for November than came forward during October. There should also enter into calculation the quantity of Pocahontas and New River that has been shipped to the St. Lawrence River by the all-water route, here again driving out Pennsylvania coals that would normally be shipped all-rail.

Inquiry for coastwise bottoms has also dropped off. We hear of no actual charters at less rates, but something of a fleet of sailing vessels is accumulating at Hampton Roads due to slack demand and it is quite likely a low offer will be accepted in the near future and thereby establish a lower range of freights. On Long Island Sound for New York loading there was an effort to mark up rates for a few days, but it came to nothing and rates are on the same actual basis as a fortnight age; namely, 70c. to Providence, with 5c. more for New Bedford.

Anthracite—There is the same active demand for stove and chestnut that has prevailed since Sept. 15. Egg and pea are still draggy. Retail demand in Boston is quite brisk, and other cities share this improved state of trade.

Tidewater—East

NEW YORK

Mild Weather Affects Anthracite Demand—Bituminous Market Quiet—Quotations Easier—Industrial Improvement Slow.

Anthracite — Production during the past two weeks has been kept down, due to the various holidays. Such a loss in tonnage would usually be serious but it has not had an adverse affect in the present instance because dealers have fairly good stocks and the demand for certain sizes has been so light that the operators were just as well satisfied to have production curtailed.

The market could easily absorb increased shipments of stove and chestnut. Some retail dealers in Brooklyn have cut their delivery price on egg 50c. to $12.50.

Egg and pea are not expected to show much sign of life until the retail supplies have been considerably reduced by a continuation of colder weather.

Mild weather conditions are no doubt responsible for keeping independent quotations at the present level. While prices as high as $9.35 for stove coal have been heard, it is only in spots and then usually on straight lots. Chestnut is being quoted as high as $9.25 but most sales are reported around $9 unless the order calls for a substantial percentage of egg or pea. In New York the peddler trade is calling for a larger tonnage of chestnut and retail dealers are getting rid of some of their surplus.

Demand for the steam coals is erratic. There is a considerable surplus of buckwheat and rice in the local market and prices are unsettled. Loaded boats and tonnage on demurrage at the piers are being sacrificed occasionally for prices lower than those quoted for spot shipments at the mines.

Bituminous—The market is still suffering from the reaction that set in two weeks ago. Operations had been stimulated out of all proportion to the increase in actual requirements and it soon became apparent that production was going ahead too fast.

No stimulating influences are anticipated until colder weather puts in an appearance, but so far wholesale dealers see no forward business of any great volume for several weeks to come.

Awaiting only formal decision regarding the check-off system, it would appear that a goodly portion of the users who have only a minimum supply would be taking due precautions in the matter of their fuel requirements. Instead of that they are not even taking their usual amounts, but selecting choice offerings at low prices. With business entirely suspended for two days—Election and Armistice—and buyers not inclined to do much, the week was one of the quietest since back in the summer.

Much of the tonnage taken in during the latter part of last month by industrial consumers and public utilities would not have been called for until the present month had it not been for the danger of deliveries being interrupted by labor troubles. Consumers, as a result, are now asking to have contract shipments curtailed, and those who buy spot coals are out of the market for the time being because of the extra amounts bought.

There is considerable unsold coal at Tidewater that was brought down when it looked as if there would surely be a strike and this tends to make matters worse. This accumulation, however, it seems likely will be absorbed much more quietly than would have been the case a short time back, for consumption has increased materially since the summer months. Industry is speeding up gradually and salesmen and others who travel around report that factories in many different lines are operating on a much better scale than during the summer and that consumption of coal has increased accordingly.

Export business is still at low ebb, although there has been a sharp upturn in offshore shipments at Hampton Roads. Any substantial improvement is unlikely until a freight rate reduction puts exporters in better position to compete with British coal.

PHILADELPHIA

Anthracite Remains Quiet—Nut in Best Demand—Steam Coals Lose Strength—Retail Prices Fluctuate Downward—Bituminous Is Overstocked—Market Stagnant.

Anthracite—Even with normal weather the consumer is buying in small lots. The dealers are fearful that the winter will not be as productive of business as anticipated. The belief grows that it may not be advisable to carry heavy stocks, but with the season so young they hesitate to hold shipments.

The buying is centered on nut and all dealers are urging further shipments of it. Most of them now have plenty of stove. Egg and pea are still in the undesirable class. Shipping houses are receiving some holders on pea and the outlook for this size is not at all promising.

There is an increasing restlessness among the retailers as to prices, and the number selling coal at $14@$14.25 seems to be growing. This cutting from the standard price of $14.50 is not done openly, but the consumer shopping around soon learns of it.

So anxious are some for business that in one section of the city a dealer hung out a sign of $10 for pea, the consumer to arrange for his own delivery. This looked like a heavy cut from $12.25, but some consumers quickly learned what overhead means in the retail business, when drayman charged them $2@$3 to make delivery.

There is still some inclination among smaller shippers to cut prices on the slow moving sizes, particularly pea. This week there were numerous quotations heard of $5@$5.50 on ordinary qualities of pea coal. While the price was somewhat tempting compared to company circular of $6.20, yet sales were few, as the dealers realized that they must take this size in a fair proportion from regular shippers in order to insure a supply of the needed sizes.

Steam sizes seem to lose a little of the toning up that was apparent a few weeks ago, although barley still is in good demand and the better grades not at all easily obtained. Rice has been weak right along but buckwheat, which has been improving until recently, seems to have fallen back a bit.

Bituminous—The trade is now suffering from the effects of the moderate stocking of coal that took place in anticipation of strikes. Concerns with a fair stock ahead are not at all inclined to take in any more. During the past week buying has been almost at a minimum.

So far as weather is concerned it has been close to normal, if not entirely so, yet the stagnation of buying continues. After the quiet summer, which was akin to the olden days, the selling agencies also expected that when they had gotten thus far into fall the seasonal buying would also approach something like normal.

In the way of prices the scale as reached a few days following the calling off of the rail strike is still effective in a general way. The producer continues certain that this is low for the year, yet the consumer under present conditions of light buying is prone to insist that even lower prices are probable, and there are occasional instances where some cuts have been made to move coal in blocks.

BALTIMORE

Stronger Tone to Bituminous Trade—Prices Responding Slowly—Trade Optimism Felt—Almost Normal Seasonal Demand for Anthracite.

Bituminous—The slowly but surely growing spirit of a renewed optimism in the general business world is being reflected in a better tone to soft coal trading. The demand at present is by no means of a noteworthy character, and supplies are ready at once for any and every inquiry but the fact remains that there is a more hopeful feeling in coal offices of a much brighter future.

Price reflection of this tone has not been marked, although the better grades are slightly stronger. The more exclusive coals are selling $2.60 and up while other fuels of excellent quality are selling over a range of $2.35@$2.50. Low grade fuels show little or no change as it is too easy to get good coals at low prices for the less desirable to figure much in the market.

A hopeful feature in this section is that the reserve industrial supply is very light. Any decided industrial betterment, therefore, will naturally mean a fairly lively demand. A traffic congested by snow and sleet would bring a quick demand and turn-over coal would naturally soar in price.

If the winter remains an open one there will be little difficulty in supplying fuel, as it will merely mean the resumption of idle mining groups and the release from sidings of idle rolling stock.

Anthracite—Dealers report an almost normal seasonal demand. This does not mean that the consumers of Baltimore and the nearby territory have laid in the usual amount, as the cellars of Baltimore as a whole are now probably around 135,000 tons short of normal. This is due to the fact that while in former years consumers had been in the habit of storing a full winter's supply, a great portion this year have bought, but one, two or three tons to date and will expect mid-winter deliveries to take care of them in the period after the first of the year.

Again the question of whether the winter is to be open or not will play a big part in the situation to develop later. Meanwhile the present run of orders is about what usually comes in late November. Receipts here have improved recently as compared with August, September and October, and this has given the yards some little reserve.

BUFFALO

Not Much Bituminous Demand—No Early Improvement Likely—Anthracite Market Strengthens—Lake Loadings Slump.

Bituminous—Demand is very light. Business seems to improve, but at such a slow rate that in many lines it is not of much account. There is really little to warrant normal trade for a while yet. The shippers are doing as best they can. Consumers are so loaded up with coal that they cannot carry any more, so that buying for awhile will not exceed consumption and in many cases will go below it.

For all that the winter outlook is not as bad as it was three months ago. The fear that so many men would be out of work that it might cause a sort of panic has given way to more employment until the list of idle men is comparatively small. If conditions go on improving, even if activities are slow in returning to normal, there will be no bad labor problem to face, here at least. Buffalo Harbor is full of work and the many cargoes of grain laying up to be handled through the winter will be a great help.

Buffalo has little coal on track, but a large amount is reported at Toronto. Quotations remain at $2.75 for Youghiogheny gas lump, $2.50 for Pittsburgh and No. 8 steam lump, $2.25 for Allegheny Valley and all mine run, $1.50@$1.75 for slack.

Anthracite—The supply is light, but the amount in consumers' hands is up to ordinary and will not be less, as it looks now. As yet the usual amount coming westward has not been received, and it is still said that more is shipped East than formerly.

The independent anthracite supply is pretty good and the demand enables its sale at a premium of $1. So long as the consumers will pay that, with some prospect of its still going considerably higher the complaint of exeessive prices in the regular trade goes for little.

Lake—The small amount moving indicates the approach of the end of the season. The amount reported for the week ended Nov. 9 is only 68,600 net tons, of which 29,800 cleared for Milwaukee, 24,800 for Duluth, 9,000 for Sheboygan and 5,000 for Chicago. Shipments to Canadian ports have been next to nothing lately. Freight rates are easy at 65c.@70c. to Chicago, 60c. to Milwaukee, 55c. to Sheboygan and 50c. to Duluth.

Coke—As a rule the contracts held by furnaces are enough to supply them, so that the local jobbing trade gets an order only now and then. The condition of the local furnace trade is shown by the report that the Buffalo docks

have so far received only 1,051,580 tons by Lake this season, less than half of last year's receipts.

Coke prices remain at $4.50@$4.75 for 72-hour Connellsville foundry, $3.75 @$4 for 48-hour furnace and $3.25 for stock, adding $3.64 to cover freight to Buffalo.

Northwest

DULUTH

October Receipts Decline While Shipments Gain—Prices Stable—Market Is Quiet—Dock Supplies Ample.

Receipts showed a falling off during October, as compared with the corresponding month last year, the total being 808,260 tons of soft coal against 1,508,400 tons last October and 257,240 tons of hard coal against 271,600 tons. For the season to Nov. 1 receipts of soft coal aggregated 7,969,084 tons, an increase of 2,285,306 tons as compared with the same period last year. Hard-coal receipts were 1,671,840 tons against 347,641 tons last year.

In 1920 entire receipts were 7,393,-219 tons of bituminous and 1,637,477 tons of hard coal. It is assumed in trade circles that stocks of coal on the docks will be able to take care of Duluth and the Northwest for some time in the event that a miners' strike developes.

Movement from the docks during October to interior points was the heaviest for any month since February last year. The total is reported at 28,-722 cars as compared with 20,286 cars during October, 1920. September shipments were 18,735 cars, and August, 20,000 cars. Country demand has shown a slight falling off so far this month, due to warm weather and the settlement of the railroad strike.

Comparative figures of coal receipts as compiled by the Tomlinson Co., Duluth vessel agents, bear a close comparison with the government figures, soft coal receipts being placed at 7,994,-946 tons and hard coal receipts at 1,657,825 tons.

Prices remain practically unchanged. Rumor has it that one company has been cutting screenings to $3.50 from $4 but this could not be confirmed and seems unlikely in view of the fact that but 200,000 tons of screenings are on the local docks and one dock has been in the market to purchase 15,000 to cover its needs.

MINNEAPOLIS

Buying Still Low—Steam Prices Shaved —Further Stocking Delay Depends on Weather.

It is evident from the lack of demand heretofore, that people will not buy coal until they simply must have it. But the time is at hand when coal should be stocked if it is going to be this winter. However, the plan of holding off worked well a year ago, and many hope that it will have a similar effect this year.

Despite all previous incentives, buying has been confined to a narrow channel. The rail strike promised to urge a little pickup of business, but it was limited and tapered off as the season advanced. Now comes the suggestion of a general strike in resentment to the court ruling on the check-off, but already there are indications that this will not be effective in any large territory. And still the coal buyers of the Northwest are not worried.

Buyers look at the reports of stocks of coal, both soft and hard, on the Lake Superior docks, and note that they are the largest since 1918. Whereupon they assure themselves that there is no need to worry, and relapse to the point of letting the coal men do all the worrying on the subject.

But if the late touch of winter proves the beginning of some seasonable weather coal buyers will arouse themselves to the possibility that they may have some interest in the question of securing fuel a little ahead of the time that it is to be consumed. Because they have had the service of mine and railroad awaiting their pleasure for months is no assurance that there may not soon come a time when the mine may have other orders accumulated ahead, or that the railroads may not be able to spot and move cars immediately upon demand. There may be such a thing as riding a buyers' market unduly, and receiving some unpleasant results therefrom.

Steam buyers are working hard for lower prices. Indiana coal priced at $2.40 at the mine was recently placed for a test lot with a local plant. After a trial of a car or so the buyer advised that the coal was all right, but it would not be used at a better price than $2.20 at the mine. The chances are that acceptance of this figure will be followed shortly by a request for a lower figure still.

MILWAUKEE

Market Remains Dull — Dock Yards Well Stocked—No Change in Prices.

Coal dealers continue to report a dull and listless market. The domestic trade has been livened a little by a spurt of wintry weather, but the country business as a whole seems to be beyond arousing. There will be no betterment, to all appearances, until sub-zero weather has an inning.

Hard coal is moving from the docks at a reasonably fair rate, but the sheds are filled to capacity practically all the time. As soon as enough coal is shipped to make sufficient room, another cargo is dumped into the hole. The soft coal yards are kept filled in the same way. There is a possibility that Milwaukee will have a number of storage cargoes afloat when navigation closes.

There is no change in prices of either hard or soft coal or of coke. Receipts by Lake are falling off as the season draws to a close. Usually the tendency is the other way. Thus far in November, 45,769 tons of anthracite, and 85,211 tons of soft coal, or 130,980 tons in all have been received. Last year November receipts of coal aggregated 439,778 tons.

Inland West

CHICAGO

Steam Market Weakened by Distress Non-Union Coal—Domestic Dealers Not Buying—Anthracite Trading Is Slow.

An erratic market has existed during the last week. After Judge Anderson's injunction against the check-off was temporarily set aside, the market reacted quickly, with prices on all steam coals slumping. Domestic coal is not necessarily weak. Rather, the trade is showing no interest and those operators who are still running are doing it on the surplus orders they had booked within the past two weeks when the demand was heavy.

Another element tending to depress the steam market came about by non-union operators shipping heavily on consignment. In a great many cases this coal has arrived at destination, and there is considerable difficulty in disposing of it. Coal consigned in this manner to Indianapolis has also hurt the market in that town for Indiana coal very seriously. The adventurous gentlemen who took this long shot have received such a severe burning that it will take more than a strike rumor next time to get them to repeat it.

Eastern coals are coming in in fairly large quantities. We are experiencing the first cold snap of the year, in fact, the thermometer is perhaps a little lower than it ought to be at this season. In spite of this, however, the demand for domestic coals is extremely dull. The dealers stocked up, first in anticipation of the railroad strike, and then in anticipation of the coal strike. Consequently, it will take more than a cold snap to bring them all back into the market again. Current quotations are shown in the Weekly Review.

Prices on prepared Pocahontas are holding firm. Mine run is selling 25c.@ 50c. off. Very little splint coal moved in during the past week, but receipts of Kentucky block were fairly heavy.

COLUMBUS

With Appeal from Check-off Injunction, Conditions Have Quieted Down—All Markets Are Slow—Lake Trade Still Holding.

Consumers are apparently not much concerned in the check-off matter as there was practically no increase in demand as a result of the lay-off of many Ohio miners last week. Little change is expected until some definite decision is given by the courts.

The domestic trade is now a weather proposition. While colder weather has not stimulated the demand to any extent, still there is a better feeling and with continued low temperatures a fair call is anticipated. There is still considerable distress coal on track and this is being bought up by dealers in need of supplies. The retail trade is slightly better. Orders are generally for small lots. Prices are firm at former levels. Hocking lump sells at $6@$6.50; West Virginia splints $7.25 @$7.75 and Pocahontas $9.25@$9.50. Anthracite is rather firm around $15.

The steam trade shows little if any improvement in any section. Users who ordered rather freely when the railroad strike threatened are not in the market as their coal is now coming in. Public utilities and institutions are the best purchasers at this time, although some lines of manufacturing are increasing their fuel requisitions.

Lake trade is still showing some activity and will continue for the present month. The H. V. Docks at Toledo during the week ended Nov. 5 loaded 147,646 tons as compared with 176,752 tons the previous week, making 4,296,-130 tons for the season. During the same week the T. & O. C. docks loaded but 9,934 tons as compared with 22,900 tons the previous week, making 1,035,-039 tons for the season.

Production in Ohio fields, where not interfered with by the walkout, has been increasing. Owing to suspension of mining in many sections the latter part of last week, the records do not show up very well.

CLEVELAND

Markets Again Quiet—Strike Threats Caused Undue Spurt in Sales—Trade Slump Here Worse.

Sluggishness has reappeared in the coal market in this district. This is due largely to the lull following the flurry of buying incident to the threat of the railroad strike and, following that, the prospects of a coal strike. The improvement which was present for a few weeks was reflected in mine operations, which for the No. 8 district attained the high level of 75 per cent of capacity in the week ended Nov. 5, an increase of over 15 per cent.

The recession is not serious and most observers believe it is only temporary. There is a slight industrial relaxation reflected in the lessened buying of steel products, the result largely of the uncertainty over freight rates. Due to the fair accumulation of orders the steel mills are continuing operations at a good rate for the present. Indications are that buying will be resumed before the first of the year. The feeling is growing that freight rates will be reduced not later than in January.

Some explanation of the exceeding dullness in the coal trade is found in the fact that a record of bank transactions in the country disclose that the slump in the Cleveland district was greater than in any other. Compared with the third quarter of 1920, transactions dropped 31 per cent. Declines in other districts ranged down to 4 per cent.

As the winter creeps on the retail trade is meeting with a more active demand. The Lake season is virtually at an end.

Bituminous coal receipts for industries and retail dealers for the week ended Nov. 5 again registered a high mark and amounted to 1,898 cars; divided, 1,221 cars to industries and 677 for dealers.

CINCINNATI

Strike Flurries Leave Consumers Over-Stocked — Distress Tonnage Heavy — Retail Prices Stable.

The full force of the miscalculations made of the possibilities of a railway strike and the effect of the check-off bore home this week on the Cincinnati trade. Orders were practically nil and cancellations were numerous—this in the face of the fact that hundreds of "no-bills" were awaiting disposition in the yards of the C. & O. and the L. & N. To make matters even worse cars kept turning up all week at northern points where they had been shipped on consignment and precluded placing shipments in that part of Ohio and Michigan.

In the general tumble of prices that followed the effort to move the congestion, smokeless coal was hit least of all. A scant reduction of 25c. generally was all that the mines or jobbers saw fit to make to keep the coal moving. Spot lump could be bought around the $4-mark, although most of it kept moving at $4.25@$4.50. Other prices were, egg $4@$4.25, nut $3@$3.50, mine run $2@$2.75 and slack from $1.10 up.

There was a wide variation of prices for bituminous. Both Kentucky and West Virginia offerings sold: Lump $2.40@$3.50, mine run $1.40@$1.85; Kentucky slack 80c.@$1.10 and West Virginia $1@$1.25.

The flighty condition of the wholesale market failed to show any reflection on the retail situation, prices holding to the same spread as they have for the past three months: Smokeless $9.50@$10; mine run $7.50 and slack $6.25. Bituminous lump was $7.75, mine run $6@$6.50 and slack $4.50@$5.50.

DETROIT

Dullness Remains Dominant—Distress Tonnage Heavier—Anthracite Orders Confined to Small Lots.

Bituminous—There is almost no buying demand and efforts to arouse interest among consumers meet with discouraging lack of success. Some coal is being purchased but the quantity is small and the demand of an irregular nature.

Because of the shortened market for their products, many factories and steam plants are now running on low schedules, with greatly lessened fuel requirements. Buyers seem to be getting coal enough by picking up such bargains as come their way.

The impression that all railroad freight rates will be reduced and that freight charges on coal will be set at a lower level in the near future seems to be an added influence deterring some buyers from placing orders now. The idea seems to have spread that a reduction in transportation charges may be expected about Jan. 1.

Several brokers, in anticipation of a railroad strike, took a chance on increasing their shipments. They are now undergoing a troublesome ordeal in an effort to dispose of the coal. Almost any price is said to be acceptable in their dilemma.

West Virginia lump is quoted at $3.15 @$3.25, egg at $2.50, mine run $2, nut and slack $1.25. Ohio lump is $3@$3.25, egg $2.40, mine run $1.90, nut and slack $1.15@$1.25. Pittsburgh No. 8 1¼-in. is $2.40, ¾-in. lump $2.35, mine run $2.15, nut and slack $1.65. Smokeless lump and egg is $4.75, mine run $2.65, nut and slack $1.60.

Antracite—Lower temperatures with heavy snowfall has not yet increased the demand to the degree expected by dealers, who, owing to the earlier limited distribution, were looking for a rush of buyers. Orders are usually in small lots.

ST. LOUIS

Colder Weather Fails to Stimulate Market — Steam Unusually Quiet — Country Demand Is Slow.

A little cold weather has helped the local condition a trifle. There is some little domestic call for Standard coal, but other than that the dealer trade is quiet and all the yards are piled high with coal. As a result there is very little domestic moving to St. Louis. Country dealers are in pretty much the same position.

Steam is quiet. The acquired storage seems to be filling in for ordinary needs, with the result that the market has a tendency to slip some. The situation is also quiet in the country.

A pretty fair movement of coal has been going through St. Louis to Kansas City and Omaha until the last few days. Congestion at this point has held up shipments. Chicago movement is fairly good.

Very little anthracite is moving, but coke seems to be doing quite well. There is no change in price schedules.

South

BIRMINGHAM

Demand Extremely Light—Movement Confined to Contracts and Shipments to Furnaces — Domestic Trade Awaits Colder Weather.

The trade is now up against the dullest period that it has experienced in several months. There is slight demand for coal in the spot market, which has been the only channel where buying has been done in the past six months. Prior to the threatened rail strike there was some stocking on the part of consumers, both spot and contract customers, and this has been reflected in a slackened movement. Railroads and utilities are reported to have a sufficient supply on hand to rest easy and they are taking the minimum allowed and sometimes less.

The domestic situation is little if any better and no further activity is expected until a normal stage of winter weather sets in. Yards have full stocks on hand and are disposing of it at an extremely slow pace.

There have been no fluctuations of importance in either steam or domestic figures the past week and prices quoted in our last report are representative of the market at this time.

Increased production in this field is due alone to the large amount now required for coking purposes for furnace use. There are now twelve furnaces in operation as against five in blast Aug. 1. Commercial and domestic mines are still averaging about 50 per cent running time.

LOUISVILLE

Prices Slightly Weaker and Movement Light—Domestic Trade Awaits Colder Weather—Screenings Hard to Move.

Screenings are being absorbed a little better, due in part to the fact that production of prepared is slightly smaller. With some western Kentucky screenings at 40c.; some eastern Kentucky at 80c.@90c.; and West Virginia as low as 75c., it cannot be said that the market is doing much in the way of showing strength. Mine run continues inactive as a result of the cheap fine coal market. Prepared needs cold weather to move it freely enough to make for better price. General quotations are off around 25c. over top figures of a week ago on prepared sizes. Current quotations are shown in the Weekly Review.

During last week there was some demand from sections generally supplied by Indiana, as a result of the temporary miners' strike forcing a lot of inquiries into Kentucky.

While there is a good deal of pessimism expressed, business conditions in Louisville are about normal as a whole, and the outlook is improving. Bank clearings for the year to date are $1,009,624,312 as against $1,344,741,017 last year. Clearings for the week ended Nov. 5, were $23,397,110 as against $26,319,749 last year. October clearings were $101,474,725 as against $126,890,013 last year. The loss in dollars and cents has not been as great as the depreciation in the value of general commodities, and it is claimed that tonnage movement as a whole is larger here than last year, which would indicate normal coal consumption.

West

DENVER

Production Improves—Strike Threatens as Wage Cut Looms — Cheaper Coal Promised.

Just as production is reaching its stride of a year ago, union miners are threatening to strike if the Colorado Fuel & Iron Co. decides to cut wages 30 per cent, as it sought to do Sept. 1, when the company was prevented from so doing by the Colorado Industrial Commission, pending investigation, which only recently gave its decision, upholding the company's contention. The wage reduction will be announced soon.

The commission has held that the agreement between the company and the men looking to lower wages "Is not unreasonable or injurious to public interest." The union leaders insist that the minority could not be bound by the majority in accepting a new wage scale without proper notice being given the industrial commission.

Weekly production for the last half of October was 275,000 tons, averaging 70 per cent of full-time output, and 25,000 tons more than during the corresponding weeks of a year ago.

Cheaper coal was promised consumers at the time the Colorado Fuel & Iron Co. first sought to make a reduction in wages. Just what the outcome of the present development will show, company officials are reluctant to discuss.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

No Labor Developments—Market Stagnant—Demand Lower Than Ever.

There have been no new developments in the matter of the check-off since Nov. 7, when operators notified the district mine workers that their notice of discontinuance of the check-off was withdrawn by reason of the appeal granted at Chicago on Judge Anderson's check-off injunction. If the injunction prevails over the appeal the operators will of course discontinue the check-off at once. If the injunction does not become effective, the situation remains as stated in last report, that the operators will not consent to the check-off being included in any scale to be agreed upon for the period beginning April 1, 1922.

The market has been extremely dull since the possibility of a railroad strike disappeared. The threatened mine strike on the check-off produced no appreciable increase in demand. The present stagnation is due chiefly to stocks accumulated in the period when a rail strike was threatened. However, the market is even quieter than a week ago, instead of the quietness wearing off. The district is not feeling increased competition from non-union fields, for reports from the Connellsville region are of decreased activity there.

Slack continues to be a drug on the market, being produced in excess of demand by reason of the screening of gas coal. Prices are unchanged from a week ago, being nominal asking prices in the case of steam coal but actual trading prices in gas and domestic.

CONNELLSVILLE

Prices Declining Account of Overproduction—Consumers Prefer Byproduct Coke.

Market prices have suffered as a result of coke production being increased at too strong a pace for the increase in consumptive requirements. The condition of operators being somewhat precipitate in blowing in ovens has been referred to in each of these reports for the past three weeks. In the past ten days merchant ovens have been going out, after considerable tonnages of coke accumulated on track.

The overproduction of coke cannot be attributed to conditions in the iron trade having turned for the worse, nor did it represent a plain error of judgment on the part of coke operators. Rather it was psychological, the contemplation of idle ovens having become irksome to operators, who thereupon decided to take a chance on blowing in.

The September report of the Geological Survey shows production one-sixth beehive coke and five-sixths byproduct, showing a very slight gain in the beehive proportion, which in July was down to one-eighth. There is speculation as to when beehive coke will "come back" and indications are this will not occur until the byproduct ovens are running full, which would require a very fair degree of iron and steel activity, something that is not discernible for the nearby future. A price of $3.25 on spot furnace coke has changed from the minimum to the maximum, and can be shaded, possibly to $3. Contract furnace remains nominal at $3.35@$3.40. Spot foundry is still quotable $4.25@$4.75, but the $4.75 price is rarely obtained even for the best brands.

The *Courier* reports production in the week ended Nov. 5 at 29,000 tons by the furnace ovens and 38,400 tons by the merchant ovens, a total of 67,400 tons, an increase of 2,200 tons.

CENTRAL PENNSYLVANIA

Confusion in Check-Off Controversy—Operators Await Further Court Decision.

Following the issuance of Judge Anderson's check-off injunction, a meeting of the Central Pennsylvania Coal Producers' Association was held in Altoona and a resolution adopted setting forth that the system would be discontinued in the district.

Shortly after the meeting adjourned, word came from Chicago of the setting aside of that ruling relating to the check-off. The members of the association were immediately recalled, and in view of the sudden change it was decided to continue the collection of the check-off in the field until such time as the courts may decide otherwise.

Coal operators in the central Pennsylvania field largely welcomed the injunction and were keenly disappointed at the later turn of events. President John Brophy of District No. 2, U.M.W., issued a statement in which he terms the injunction a blow at the very heart of the union and called upon all union miners in the district to stick to their agreements and await the decision of the Federal courts.

The association members do not object to the check-weighman maintained at the union mines and so expressed themselves in a resolution at the meeting in Altoona.

UNIONTOWN

Softened Demand Fails to Halt Coke Production—Prices Weaker—Possibility of Lower Freights Delays Buying.

Although the coke market continues soft the H. C. Frick Coke Co. is steadily increasing its number of ovens in blast. On Nov. 12, a total of 600 were fired, distributed: Leisenring No. 2, 200; Lemont, 150; Youngstown, 150 and Colonial 175 ovens. The Leisenring and Colonial plants have been closed since last spring but the other plants have been working on transient orders for the Steel Corporation.

The coke market has been softened through a lack of demand, consumers who discontinued buying while the threat of a railroad strike was present not having returned as yet. The possibility of lower freight rates also is a contributing factor, orders for coke being limited to immediate needs instead of blast furnaces laying up stock piles against interrupted transportation due to weather conditions. While all concerned believe that reduced rates will eventually come there has been no indication when and the uncertainty has worked against buying for future needs.

The quotable market is fairly indefinite but a $3 figure for furnace coke has been connected with sales. Most operators, however, are inclined to be firm and quotations range up to $3.25. Foundry carries a quotation of $4.25 @$4.50.

ANTHRACITE

Demand Is Heavier—Holidays Cut Production—Steam Coals More Stable.

During the past week the demand for anthracite has been increasing. However, the output was reduced by the observance of Armistice Day, which was generally celebrated throughout the field. Election Day also caused many of the mines to be closed down.

Steam sizes are moving more freely and it is becoming difficult to secure them at prices below the standard company price. Stove continues to feed the domestic market.

EASTERN OHIO

Heavy Production Caused by Labor Threat—Market Reacts and Sluggishness Prevails—Prices Easier.

With the stimulated demand by reason of Judge Anderson's injunction concerning the check-off this field produced the maximum tonnage of the year during the week ended Nov. 5, namely, 464,000 tons, which is approximately 76 per cent of the total rated capacity. Cumulative production for the calendar year shows an aggregate of 15,303,000 tons as against a potential capacity of 27,525,000 tons.

The operators' association reports

that their mines worked 58 per cent of possible worktime as compared with 49 per cent the preceding week, and produced approximately 70 per cent of rated capacity. Time lost account "no markets" continue less than 35 per cent, and while the railroads are pretty well stocked, they are taking something over 35 per cent of the total output.

The operators' association took action to continue the check-off of dues from payrolls in line with the decree handed down by the United States Circuit Court of Appeals, Chicago, on Nov. 5.

Barometer reports from various industrial centers indicate that there was a definite pickup in business during the week, especially in the Youngstown district with the iron and steel industry, where a substantial lessening of unemployment reflected a general betterment.

However, so far as the coal trade is concerned, it is pretty generally felt that the high volume of tonnage mined during the past few weeks has been due to artificial conditions, and that consumption has been much less than the quantity produced; consequently, both industries and retail yards are now well stocked. The situation is expected to result in a lessening demand, temporarily at least.

Orders and inquiries have subsided during the past few days. Along with this lessening in demand there has been a softening in prices, particularly in slack.

It seems to be the opinion that the coal trade will continue quiet for the next few weeks, barring severe weather or the looming up of labor troubles at the mines by some unexpected developments in the present litigation in the Federal courts concerning the check-off.

FAIRMONT AND PANHANDLE

R.R. Orders Heavier—Prices Weaker—Production Still Cut by Sluggish Markets.

Fairmont

Mine idleness was very marked, with most operations shut down during the week ended Nov. 5. Production was heavier on the Morgantown and Wheeling R.R. than in any other field, some of the coal going to the Lakes. Tidewater shipments were small, and railroad fuel still constituted the bulk of production. Prices were slightly lower than at the close of October.

Northern Panhandle

Railroads were increasing their fuel orders which caused the output to rise to about 85,000 tons. Little steam coal was being moved, the bulk of production going to the West with some tonnage to Buffalo and Canada. A few inquiries were coming in, but only a small proportion of these were materializing into new orders.

UPPER POTOMAC

Conditions Fail to Improve — Prices Still Weak—Production Low.

Conditions were unimproved during the first week of November as compared with recent weeks. Production was largely at a standstill at most of the mines in the Upper Potomac and Georges Creek regions. Tucker County mines continued to operate at about 50 per cent of capacity and it was also possible to produce some coal in the Big Vein mines, otherwise inactivity reigned.

Middle Appalachian

LOW-VOLATILE FIELDS

Car Shortage Causes Heavier Losses—Markets Less Active—Slack Coal Declines.

New River and the Gulf

Production underwent a decrease in the New River field during the week ended Nov. 5. The reaction of the strike curtailed the output to about 40 per cent. Even with this low tonnage there were hardly enough opentops to go around. Demand was lacking for every grade except lump. Little coal was being exported, but some was moving to New England markets.

There was not so strong a market for Gulf coal and production was still held down to about 50 per cent. Many mines were not working at all. Although some coal was being sold for bunkerage the movement to Tide was not large.

Pocahontas and Tug River

Railroad disability was responsible for large gaps in the Pocahontas output, car shortage losses being nearly three times as large as "no markets." Most of the coal going to Tide found its way to the New England market. Prepared sizes were in good call in the West, but slack coal had increased its distress position.

Tug River production was also hampered by the lack of empties, the output being reduced to below 90,000 tons. There was a fairly good market especially in the West. The Tidewater movement was small. Price conditions closely paralleled those in the Pocahontas region.

HIGH-VOLATILE FIELDS

Production Declines — Car Shortage Causes Trouble—Markets Give Promise of More Activity.

Kanawha

Mines began the week ended Nov. 5 with an output of about 22,000 tons daily and ended with about 12,000, production being under 40 per cent. There were hardly more than enough opentop cars to meet requirements despite the limited number of operations. The only call was for domestic coal and the price on mine run accordingly tended downward.

Logan and Thacker

Logan production was greatly hampered by an inadequate car supply. Prices were on about the same level as during the preceding week, lump ranging $2.75@$3.75 and mine run $1.35 @$1.90.

Thacker mines were running at about 40 per cent of normal. No market losses were being reduced, but those from car shortage were increasing. The majority of the output was assigned to Western markets and railroad production was good. The check-off decision of Judge Anderson had a tendency to strengthen the morale of producers and workers in the region, where order has now been almost completely restored.

Northeastern Kentucky

As was expected, there was a reaction during the first week of November in the demand for coal, those who came into the market in anticipation of the strike being well stocked. The market for domestic grades was nearly as sluggish as for steam coals and production slumped accordingly.

Virginia

Notwithstanding an increasing number of inquiries prices remain firm. Production was maintained at about 60 per cent of capacity. In general, operators were somewhat more optimistic about the future and were confident that the better line of inquiries would soon increase the volume of business.

Middle West

WESTERN KENTUCKY

Demand Slower Following Check-Off Trouble — Steam Market Especially Dull. Screenings Moving Slightly Better.

With reports of snow in Michigan and Northern states, and colder weather here, it is believed that demand will pick up somewhat. Last week a very fair steam demand developed from Chicago and the North as a result of the walkout of miners in Indiana, but the demand was only temporary, although it aided materially in moving screenings.

Domestic demand is fair, but mine run and screenings are not moving as they should. Operators have been maintaining prices very well as a whole, but there has been considerable competition from cheap coal and distress fuel from other fields.

The mildest fall weather of years has not improved the situation materially in the South. Industrial conditions are improving slowly, but steadily.

MIDWEST REVIEW

Domestic Is Oversold—Other Coals Slump—Steam Stocks Heavy—Check-off Hearing Awaited with Interest.

As was expected, the market took a decided slump last week. This reaction from the strength of the week previous was caused almost entirely by the temporary settlement of the check-off fight. It is anticipated that market conditions will be extremely dull until after Nov. 16, when the check-off case again comes up for a hearing in the Circuit Court at Chicago, under Judges Carpenter, Evans and Alschuler.

The domestic market has been fairly firm, but this strength has not been derived on account of the demand, but entirely because many operators oversold their domestic output during the last two weeks, when the market was good. Few cancellations have been received, but to make up for this, practically no new orders have been placed.

It is expected that domestic prices will remain at the present level or go higher later on in the season. Taking all in all, the market is just about as good now as it was during the dull days of July and August.

Steam coal suffered a severe collapse earlier in the week. Prices on good grade Illinois screenings, which have been holding firm at $2@$2.85, slumped back to $1.25, and the end is not yet in

sight. Some of the stronger operators in the southern part of Illinois and in the Fourth Vein District of Indiana are holding out for $2 or more, but they are selling practically no coal. Mine run is not much better off and took a corresponding slump in price.

The industrial situation looks a little more cheerful, but those industries who are working apparently have enough coal on hand to keep them from worry and, consequently, are not in a mood to purchase. On account of the threatened railroad strike, followed by the trouble with the mine workers, a great many plants anticipated their coal needs and bought heavily. As a natural consequence, they are out of the market for the next two or three weeks. The only chance of an improvement in the steam market will be intense cold weather for a period of weeks, or renewed talk of a strike of the United Mine Workers.

SOUTHERN ILLINOIS

Miners at Work Again—Oversupply of All Sizes—Light Demand for Steam—Domestic Prices Easier.

A quietness prevails in the Carterville field that is disappointing. The warm weather has accumulated considerable stocks. Domestic is hit hard. Lump is unbilled at some mines and egg and nut are strung alone the sidetracks in full train-lots.

Steam is heavy. Domestic prices are pretty well maintained at $4.05 for lump and egg and $3.25 up on No. 1 nut. There is a wide gap between the high and low price on steam. Screenings are as low as $1, or were. Other reports show up to $1.75. Mines are getting about three days a week run.

In the Duquoin and Jackson fields somewhat similar conditions prevail. The Mt. Olive situation has eased up to such an extent that all grades of coal are unbilled and working time is down 50 per cent. Kansas City is drawing heavily, however, on account of unsettled conditions in the Kansas fields where some mines are on strike.

An oversupply did not affect the price on domestic sizes, which is $3.50 for St. Louis and Chicago shipment and $3.75 for country. Screenings when forced on the market brought $1@1.25.

In the Standard field prices hold up unusually well under the jolt. Working time dropped off to two and three days. Railroad tonnage continues good. General conditions, however, are not satisfactory and such coal as is moving is under pressure.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Demand Slows Down—Domestic Grades Well Booked—Prices Stable.

There has been a general slowing up in demand for all grades since strike scare, although most operators are well booked up for the present, especially on domestic. The major portion of the orders, however, were no doubt placed because of the strike flurry, as new business is scarce and hard to get.

The change in the weather is expected to bring back the domestic market. Current prices on best 4-in. block range $3.75@$4; egg, $3@$3.25; nut and slack, $1.30@$1.60; mine run, $2@$2.25.

West

UTAH

Retail Business Hurt By Warm Weather—Impossible to Market Slack —R.R. Fuel Buying Increases.

Retailers report another slump in demand. The reason for the change is due to the fact that the cold weather experienced toward the latter part of October was of short duration and the temperature has mounted again. However, large quantities of railroad fuel are being stored.

With slack at only $1.70 at the mine, producers are finding it difficult to secure a market for this grade. The price has been nearly cut in two during the past eighteen months, while other grades have gone up. The poor slack market is, of course, due to the industrial depression, which shows very few signs of improvement at present. Some of the companies are dumping their slack where they can get it should a market present itself.

News Items From Field and Trade

ILLINOIS

The Latham-Lincoln coal mine at Lincoln, one of the biggest mining properties in Logan County, has been purchased by the **Sangamon County Mining Co.** Edward Brennan of Springfield will be the business manager of the property while James Casey of Springfield, will be general superintendent.

The Valley Mine at Birkner Station, near Belleville, owned by the **West Virginia Coal Co.** of St. Louis, was the scene of a large fire recently. The flames destroyed the entire top works, including tipple, shakerscreens, picking tables, and all buildings. The origin has not yet been determined.

Mine No. 2 of the **Wasson Coal Co.,** located near Harrisburg has resumed operations after being idle for several months.

R. B. Rians, for the past twenty years with the H. W. Lynch Coal Co., of Peoria, has become sales manager for the Central West Coal Co., also of Peoria. The Central West company has mines in the Fulton-Peoria district, located on the Chicago, Burlington & Quincy.

Thomas L. Harris of St. Louis has acquired the controlling interest of the mine of the **Madison County Mining Co.** at Edwardsville, the four other stockholders transferring their interests at $160 a share. It is not known whether a new organization will be perfected or whether the property will be operated by Mr. Harris individually.

Three men from Harrisburg recently organized and incorporated the **Eagle Valley Coal Co.,** of Harrisburg with a capital stock of one million dollars. The men are Andrew Gish, A. W. Helmholtz and Ownly Furman who own a large acreage east of Harrisburg in the region known as Eagle Valley, hence the name. It is expected that the company will sink a large mine in the future.

M. J. Woodhull has been appointed central sales manager of the **Bucyrus Co.** to succeed E. G. Lewis in charge of the Chicago office.

The O'Gara Coal Co., is making extensive improvements at its No. 9 mine near Harrisburg. The mine has been idle for some time.

The annual meeting of the directors of the **Wasson Coal Co.** was held recently in Harrisburg and was attended by the various directors. The meeting is one in which much interest is usually manifested and this year a trip to the various mines owned by the company, was made by the entire party.

James A. Boopé of the MacWhyte Co. has been transferred from the Birmingham office to Chicago. He has been traveling the Southern States for the past twelve years. In addition to the Southern States he will take care of Illinois, Indiana, Kentucky and Missouri, out of the Chicago branch warehouse.

INDIANA

The Miller Coal Co., Terre Haute, has filed a final certificate of dissolution with the secretary of state.

The Fort Dearborn Coal Co., has closed its district office in Indianapolis. The company's representatives in the state will report directly to the Chicago office.

The offices and store at the Glendora Mine of the **Templeton Coal and Mining Co.** were recently destroyed by fire, sparks from a passing locomotive causing the blaze.

The Clovelly Mine, located north of Terre Haute on the Terre Haute division of the C. M. & St. P., has resumed operation after a period of inactivity. The mine is owned and operated by the **Fort Harrison Coal Co.** A few other large mines in this field which have been idle during the summer are preparing to resume normal production at an early date.

Contracts have been awarded and work will be soon started on the sinking of two shafts for a new coal mine on the property of the **Grasselli Chemical Co.,** north of Terre Haute. The Prevo Contracting Co., Pittsburgh, has been awarded the contract. Coal mined will be used exclusively to supply the three Indiana plants of the Grasselli company located at Terre Haute, East Chicago and Fortville.

KENTUCKY

The Saulsburg Coal Co., bankrupt, has filed schedules showing liabilities of $83,597.67 and assets of $60,890. J. W. Lam and the Hillside Coal Co., Greenville, hold secured claims of $47,000. Unsecured claims are $36,595.67, of which Leon Frankel, Louisville, holds $19,650 and Nathan Naririn, $5,150. Assets are composed principally of four coal tracts at Hillside, in Muhlenburg, valued at $50,000, and machinery valued at $10,000.

Articles of incorporation have been filed by the **Live Oak Land and Development Co.,** with a capital stock of $25,000. The new corporation will develop mineral lands in Kentucky. The incorporators are: J. H. Ferring, of Evansville, Ind.; T. W. Wolpert, of New Albany, and W. M. Viser and R. E. Wixon, of Louisville. The debt limit is not to exceed $150,000.

It is reported from Shelbyville that **Frank Wright** has left that city to go with the Central Pocahontas Coal Co.

James Watson, of the Consolidated Coal Co., Fairmont, has been in Pineville in connection with the Consolidated's interest on Puckett's Creek, Harlan County.

Frank D. Rash, of the St. Bernard Coal Mining Co., Madisonville, was in Louisville for several days, attending the annual meeting of the Grand Lodge of Masons.

O. W. Miller, president of the Long Branch Coal Co., Minneapolis, made a recent tour of inspection of the company's mines on Beaver Creek.

MINNESOTA

The yard of the **Western Coal & Coke Co.,** in northeast Minneapolis, was held up recently, and three armed men knocked down the yard master, robbed the cash register of $300 and made their escape. They cut the telephone wires to prevent help being summoned.

A. W. Neukom, of the firm of Cotton, Neukom and McDevitt, Duluth attorneys, has returned from Montana where he obtained options and leases upwards of 2,700 acres of coal lands. These were secured for Duluth parties but Mr. Neukom would not disclose the names.

MISSOURI

Suit has been filed by the **Madison Coal Corporation** of St. Louis, for $40,000 damages against the **Donk Bros. Coal & Coke Co.**, also of St. Louis. Both concerns have large mining operations in St. Clair County and the Madison Company alleges that the Donk Bros. operations have driven entries in their territory and is taking coal which belongs to the Madison company.

Vernon Wells, formerly with the Union Colliery Co., and the West Virginia Coal Co., both of St. Louis, is now general sales agent for the Ellis & Richmer Coal Co., also of St. Louis.

NEW YORK

The Bucyrus Co. announces the removal of its New York office to 30 Church St. with E. G. Lewis in charge, effective Dec. 1.

Magnus Jensen and **James Cox**, coal exporters at 25 Broad St., New York City, were recently awarded a verdict of $134,800 by a jury in Justice Brown's part of the Supreme Court in a suit against Douglas A. Barnes, as president, and Joseph J. Weinhandler, as treasurer of the **Douglas Barnes Corporation** to recover $159,800 for the shipment of inferior coal to Copenhagen. The jury exonerated Weinhandler of all responsibility in connection with the shipment.

The plan by which **Burns Brothers** will acquire the property, rights, privileges and franchises of **William Farrell & Son, Inc.**, provides that 80,940 shares of new Class B common stock of Burns Brothers of New Jersey, to be delivered to Farrell & Son, is to be distributed by it to the holders of its common stock now outstanding, in the ratio of five shares of the new stock for eight shares of the common stock of Farrell & Son now outstanding. In order that the distribution may be affected on this basis, Farrell & Son will acquire for cash and will retire 496 shares of its common stock, so as to reduce the outstanding amount to 129,504 shares. A special meeting of the stockholders of Burns Brothers will be held on Dec. 1 to vote upon the proposition. A special meeting of the stockholders of Farrell & Son has been called for Nov. 30 when action on the proposal is to be taken. The stockholders of that concern will also consider the sale of the company's wholesale department known as **"Pattison & Bowns, Inc.,"** which has a capital stock of 2,500 shares of 8 per cent cumulative preferred stock, and 20,000 shares of common stock, divided into 9,000 shares of Class A common stock and 11,000 shares of Class B common stock. Farrell & Son have arranged to sell to the United States Distributing Corporation, the 2,500 shares of preferred stock and 11,000 shares of Class B common stock.

John T. Hatfield, vice president and general manager of the Reliance Coal and Coke Co., was a recent visitor in New York, where he held a conference with the president of that corporation, Julius Fleischmann.

OHIO

The Elkhorn Coal Co. has been chartered with a capital of $50,000 to do a general jobbing business. Incorporators are W. K. Elliott, George N. Rapp, Clifford McDermott, George A. Dormette and Alfred Opunger.

The organization of both the **Starr-Jackson Mining Co.**, and the **Starr Collieries Co.**, of Columbus, chartered recently with authorized capital of $50,000 each has been effected. The Starr-Jackson company will have Louis H. Helling as president; George Coyle, vice president and Ralph J. Kramer, secretary. The Starr Collieries will have Louis H. Helling as president; Don Creveling, vice president and Ralph J. Kramer, secretary. The Starr-Jackson company has taken over the Starr Mine on the H. V. Ry. in Hocking County from the Central West Coal Co. In addition, the Commonwealth Coal Co. of Martins Ferry, controlled by Louis H. Helling, is included in the organization. Sales will be handled through the Columbus office in charge of Ralph J. Kramer and a Cleveland office in the Kirby Bldg., in charge of Don Creveling.

Ralph Ingo, for a number of years connected with the C. L. Ayers Coal Co., Cleveland, as secretary and treasurer, has resigned in order to accept the presidency of the Paragon Coal & Coke Co., with headquarters in Cleveland. Continued expansion of the Paragon Company's business led to the appointment being offered to Mr. Iago.

Geo. M. Jones, president of Cambria Collieries Co., Toledo, which operates in the eastern Ohio field, was a recent visitor to Bellaire.

P. C. Sprague, general freight agent of the Pennsylvania lines, St. Louis, Mo., has been appointed traffic manager of M. A. Hanna & Co., Cleveland, to succeed **Omar E. Anthony**, who was killed in an automobile accident several weeks ago.

The offices of the **Gibson-Spence Coal Co.** have been moved to the Ferris Bldg., Columbus. This concern formerly had its offices in the Ferris Bldg., but removed to the Schultz Bldg., several years ago.

Announcement has been made that **H. Walker**, prominent banker and coal operator of Tiltonville, Ohio, has purchased from the **Sauers Coal Co.**, Cleveland, Gaylord No. 2 Mine, embracing seventy-five acres of coal lands at Patton Run, Pease Township, Belmont County, located on the Pennsylvania near Martin's Ferry. Mr. Walker also operates the H. Walker Coal Mine at Deep Run, and the H. Walker Coal Co. mine at Adena.

The John Stack Coal Co., retail dealers, Lorain, has increased its capitalization from $15,000 to $25,000.

The W. E. Deegans Coal Co., of Huntington was represented in the Cincinnati market recently by **W. B. Hollandsworth**, who had been in Chicago arranging for the establishment of a Chicago branch.

Recent visitors in the Cincinnati market were: **W. J. Dillon** of Mitchell and Dillon, Chicago; **A. R. Klotten** of the R. G. Brown Co., Pittsburgh; **Sol Allen** of Prestonburg, Ky., and **R. E. Howe** of Shamrock, Ky.

L. H. Bobbitt, secretary-treasurer of the Wood-Morton Coal Co. has taken charge of the Wood-Morton Coal Co.'s Western office in Cincinnati. **E. H. Spreen**, who has been in charge, goes with the Thomas Mordue Coal Co., and **Paul Gillham**, Cincinnati manager for Mordue, will take a month's vacation before embarking in another line.

T. W. Arnette, president of the Antler Coal Co. of Fairmont has been in Columbus on business.

A recent visitor in the Cincinnati market was **H. M. Ewald**, president of the Standard Tide and Inland Coal Sales Co., with headquarters in Charleston.

PENNSYLVANIA

The Iron Trade Products Co., Pittsburgh, with branch offices in New York and Philadelphia, has become exclusive sales agents for the **Trucks Coal Mining Co.**, which is operating on the Conemaugh Division of the P.R.R. Trucks No. 1 Mine and Trucks No. 3 Mine are located at Apollo; Trucks No. 2 Mine is at Leechburg.

Edward F. McGlynn, for the past five years superintendent of the Marvine mine and for nearly a half century an employee of the Hudson Coal Co., has been appointed general colliery superintendent for that company, with headquarters in Scranton.

Jules Waterloo, superintendent of the Maryland Coal Co., at St. Michaels, has been named as superintendent of the Chester, W. Va., Coal Mining Co. **J. E. Lodmano**, has been promoted to succeed him.

The Lorberry Coal Mining Corporation, Scranton, has been incorporated, capital stock $50,000; treasurer, John M. Hoen, 1620 Broadway, New York City. Incorporators are Carl Bomeiseler and F. M. Rittenhouse, New York City, and William Griffith, Scranton.

The Richard Fuel Co., of Gibsonia, has been incorporated for $50,000; treasurer, August P. Franks, Gibsonia. Incorporators are August P. Franks, Gibsonia and William P. Woodapple and Louis N. Peterson, Russellton.

Charles E. Reynolds has been appointed superintendent of the Springdale mine of the West Penn Power Co., at Springdale, Alleghany County.

A charter has been issued to the **Harte-Bee Coal Co.**, of Pottsville, $100,000 capital stock, to mine and prepare coal for the market. Incorporators are Charles H. Blanchard, Binghamton, N. Y., who is also treasurer; Waldemar Hartman, Mountain Lake, N. J., and N. Grier Parke, of Pottsville.

The Glen Alden Coal Co. will shortly start construction of a six-story modern office building in Scranton which it hopes to have completed and ready for occupation within a year.

The State Department of Health has issued permits approving the plans of the **H. C. Frick Coke Co.** for the installation of chlorinators in connection with the company's water works at its mining towns in Fayette County.

The Equitable Coal & Coke Co. has changed its name to the Hardwick Coal & Coke Co. Offices are in Pittsburgh.

Chief Button, of the State Department of Mines, has called a meeting for December in Pittsburgh, when all the state's bituminous inspectors will meet with representatives of the National Safety Council to discuss the adoption of a uniform danger sign adaptable to all the coal mines of the country. It is desired to agree upon a system which will be universal in its application to American coal mines.

The Moffit-Sterling Gas Coal Co. will commence the immediate construction of a new tipple at its coal properties at Dillinger, Greene County, to have a hoisting capacity of about 2,000 tons per day. Other improvements will be made at the works.

TEXAS

The Texas and Pacific Coal Co., at Thurber, closed since last spring, when miners refused to accept a reduction in wages, opened recently on the open shop basis.

The Empire Fuel Co. has acquired the properties of the **American Fuel Corporation**, comprising about 2,000 acres of land in the vicinity of Donnie, Freestone County. The holdings have been valued at about $2,000,000. The new owner plans for extensive development and production. Steam shovels, and other equipment will be installed to handle lignite under a stripping process. Adam H. Davidson is treasurer. New York offices of the company are at 347 Madison Ave.

UTAH

Register G. B. Blakely of Salt Lake City is hearing the case of the State of Utah and the **Pleasant Valley Coal Co.**, against L. A. Lawyer, which involves a 40-acre tract in the Castle Dale coal field. Lawyer filed on the land in 1919. The question is whether or not the tract contained known coal deposits when Utah was admitted to statehood.

The State Board of Equalizatton has announced the preparation of a new record to be used in the work of assessing mines in the Carbon County fields. The record will be in the form of a complete and comprehensive report from Harold Peterson, field geologist, and consists of maps and explanations of the entire Schofield mining district showing data available to the State board in the assessment of coal mines.

VIRGINIA

The Black Creek Coal Co., Big Stone Gap, recently organized, has leased a tract of coal land and plans for extensive development work. Considerable machinery will be installed. R. Tate Irvine is president.

The Heaton Coal Co., recently organized, is planning for the immediate installation of new equipment at Tacoma, including pumps, electrical apparatus, mining machinery, etc. The company has a tract of 150 acres and will develop a capacity of close to 500 tons per day. L. L. Heaton is president and general manager.

WASHINGTON, D. C.

So as to be available during the Limitation of Armaments Conference, the Geological Survey is making a special effort on a folder which contains a map of the District of Columbia. Great care and considerable ingenuity have been shown in the effort to make the names of streets clearly legible. The principal buildings and points of interests are emphasized on the map which is cleverly folded between staggered covers. Every effort has been made to produce an attractive cover and it is believed the publication will be prized as a remembrance of the arms conference.

The Federal Trade Commission announces the appointment of **William H. Fuller**, of McAlester, Okla., as its chief counsel.

A Treasury decision has been issued upholding the collector of customs at Philadelphia in refusing to admit mine pullers and prop withdrawers as "miners' rescue appliances," free of duty. It is held that they are dutiable at 20 per cent ad valorem as manufactures of metal.

During the last fiscal year, coal land reserves were reduced by 215,494 acres. The Geological Survey made reports on 249 applications for coal prospecting permits and on 78 applications for coal leases.

The Bureau of the Budget has organized a Federal Purchasing Board which will shortly select a committee to handle government purchases of coal. The chairman of the committee will be a representative of the Interior Department, and the other members will be representatives of the Navy and War Departments.

Arguments have been heard in the Court of Claims in the suit of the **Corona Coal Co.**, a Delaware corporation operating in Alabama, which seeks to recover from the Government $107,431 on coal sold to railroads under Federal control. The company says it received $385,593 for 171,476 tons of coal while the figure under Fuel Administration prices was $486,997. The Government argued that there was no merit to the suit as the coal was sold under contract between the coal company and the railroads.

WEST VIRGINIA

The Canyon Coal & Coke Co. of Uniontown, doing business in West Virginia, has increased its capital stock from $500,000 to $750,000.

T. L. Lewis, secretary of the New River Operators' Association with headquarters at Charleston, was a recent visitor in Fairmont. Mr. Lewis was formerly president of the United Mine Workers of America.

William K. Hatfield of Morgantown has been chosen by the stockholders of the **Rosedale Coal Co.** of Morgantown as president of that company to succeed **C. L. Lantz**, who recently died in a Pittsburgh hospital.

W. J. Kearns has resigned as sales manager of the Kenova Mine Car Co. He will go into business for himself. He was formerly with the Hyatt Roller Bearing Co., and prior to that was general superintendent of the Isabella Connellsville Coke Co.

The Fayette-Kanawha Coal Co. is suing the **Lake and Export Coal Corporation** for $166,000, involving the question of the fulfillment of a contract for delivery of coal by tne plaintiff at the price prevailing when coal was at the height of the market last year.

E. E. White, one of the leading operators of the Winding Gulf region and president of the E. E. White Coal Co., with plants at Stotesbury and Glen White, was a visitor in the Pocahontas field the latter part of October.

R. H. Kann, formerly superintendent of the Consolidation Coal Co. at Mine No. 37, Berryburg, has been transferred and made superintendent at mines 88, 89 and 90 at Wyatt, succeeding **W. D. Thomas**, resigned. **James Hovey** has been appointed acting superintendent of mine 37, Berryburg.

Isaac T. Mann, of Washington, D. C., president of the Pocahontas Fuel Co., the largest company in southern West Virginia, was a visitor in the Pocahontas field toward the latter part of October.

ALBERTA

At the third annual western convention of the **Canadian Institute of Mining & Metallurgy**, held at Edmonton, an address was delivered by the new premier, Mr. Greenfield; his subject was the research work of the government in the matter of the mineral industry. "The government is endeavoring," he said, " to develop more market for Alberta coal, but have met with difficulty in the grading of the coal." He deplored the lack of uniformity in grading, which had proved a hindrance in the market of the product. He suggested the adoption of a uniform system of grading coal.

ONTARIO

Among the recent coal men to visit Toronto were: **W. T. Carden** and **William Bolland**, of Bolland Brothers, Scranton; **C. E. Greaves**, of the E. L. Hedstrom Co., Buffalo and **Frank Howard**, of the Bellebridge Coal and Coke Co., Pittsburgh.

A discovery of coal at Larchwood about 17 miles west of Sudbury, is reported though there is considerable doubt as to whether it occurs in commercial quantities. It is now being worked by a Toronto syndicate, which has leased 20,000 acres around the discovery. Test pits have been sunk for 14 ft. and some stripping done. Dr. A. P. Colcman of Toronto University described the material found in the same locality some time ago as anthracite, and considers that owing to its mode of occurence in veins, and not in seams or beds after the manner of ordinary coal, it is not likely to be found in quantity. It has a high percentage of carbon.

Traffic News

The I. C. C. has authorized railroads to establish rates on bituminous coal from points in Ohio to Marysville, St. Clair and Marine City, Mich., via the Michigan Central; Caro, Mich., and the Detroit, Bay City and Western R.R.; also via the Pere Marquette Ry., Saginaw and Port Huron, Mich., and the Detroit, Bay City and Western, the same as rates via the direct lines between these points.

Hearing in the matter of reduced rates on coal to Kansas City, Mo., scheduled for Nov. 26 at Kansas City, has been postponed to Dec. 7.

The I. C. C. has cancelled its investigation and suspension of rates on coal from Wyoming mines to stations in Utah, the carriers having withdrawn the schedules.

In the complaint of the **Far West Clay Co.**, an examiner recommends that the rates on coal from Floran to Clay City, Wash., during Federal control be declared unreasonable.

Speaker Gillette of the House has introduced by request a bill designed to secure continuous operation of railroads by a system of joint control of capital and labor, with a provision authorizing the I. C. C. to lower rates on coal and other necessities so that producers may reach markets at reasonable rates and make living profits and the consumer may purchase at lower prices.

The I. C. C. has decided that the rate on bituminous coal from Harveyton, Ky., to Red Bank, Ohio, is unreasonable.

The Premier Coal Co. and the **Siberia Rock Springs Coal Co.**, of Ogden, have complained to the I. C. C. against unreasonable rates on water from water stations to mines located in Illinois, and request a refund of $12,800 on former shipments.

The Webb Fuel Co., of Ferndale, W. Va., and Cincinnati, allege unreasonable charges on coal from Ferndale to Madry Siding, N. C., due to failure to observe shipping instructions.

The Litchfield & Madison R.R. is making a physical connection with the Burlington lines at Litchfield, Ill., which will give the Litchfield and Madison an outlet north for their coal.

The Cincinnati Association of Purchasing Agents complain against unreasonable rates on bituminous coal from mines on the lines of the L. & N. in Kentucky, Tennessee and Virginia to points in the Metropolitan Cincinnati District and to points in Kentucky from points in Virginia and Tennessee.

The Alaska Anthracite R.R. Co., has asked authority to issue 2,500 shares of common stock to extend its main line from its present terminus on Canyon Creek to the loading point of the Alaska Pacific Coal Co., 1¼ miles.

The Citizens Gas Co., Indianapolis, requests a rate of $3.50 per ton on coke from Indianapolis, to Omaha, the present rate being $3.70.

The Wabash Portland Cement Co., Detroit, alleges unreasonable rates on bituminous coal from points in Ohio, Pennsylvania, West Virginia and Kentucky, to Stroh, Ind., as compared with rates to Coldwater, Cement City and Chelsea, Mich.

The Pennsylvania Public Service Commission has ordered the Lehigh & New England R.R. Co. to reduce its rates for hauling coal from Coaldale, Lansford, Nesquehoning and other places in that neighborhood to the plant of the Pennsylvania Power & Light Co., at Hauto, to 35c. a ton. This order sustains complaint of the Pennsylvania company, and in announcing its decision the commission says the contention that the commission has no authority to change its rates within the Federal guarantee period is without merit. The rates of 40c. and 70c. in effect during the period covered by the complaint, are set aside.

J. L. Schultze & Co., and others of Skaneateles, N. Y., allege unreasonable rates on anthracite from points in Pennsylvania to Skaneateles and vicinity as compared with rates from the same region to Syracuse on shipments moving prior to Federal control.

In the complaint of the **Clinchfield Coal Corporation** the commission holds that former and present rates on bituminous coal from Moss, Va., to Toledo, Ohio, are not unreasonable.

Trade Catalogs

Jeffrey Material Handling Machinery — The Jeffrey Mfg. Co., Coumbus, Ohio. Catalog 350. Pp. 215; 6 x 9 in.; illustrated, charts and tables. Contains price lists and dimensions of Jeffrey chains, sprockets, conveyor and elevator details, transmission and gears.—Advertiser.

Small Generating Sets — Allis-Chalmers Mfg. Co., Milwaukee, Wis. Bulletin 1117. Pp. 4; 8 x 10½ in.; illustrated.—Advertiser.

Atlas Combination Storage Battery & Trolley Locomotives — The Atlas Car & Mfg. Co., Cleveland, O.—Bulletin No. 1212. Pp. 8; 8¼ x 11 in.; illustrated.—Advertiser.

Coal Mining Plants—Roberts & Schaefer Co., Chicago, Ill. No. 45; pp. 63; 8 x 11 in.; illustrated. Description of mechanical equipment of machinery and completed structures recently designed and built by the company.—Advertiser.

Recent Patents

Feeder for Powdered Fuel. John U. McDonald, Decatur, Ill., 1,386,009. Aug. 2, 1921. Filed Oct. 11, 1919; serial No. 330,090.

Coal-Car Check Holder. John B. Sparks, Raven, Va., 1,386,378. Aug. 2, 1921. Filed Jan. 12, 1921; serial No. 436,737.

Miner's Drill. Samuel T. Skeen, Sandoval, Ill., assignor of one-half to Charles E. Stead, Centralia, Ill., 1,386,434. Aug. 2, 1921. Filed Oct. 10, 1919; serial No. 329,852.

Coming Meetings

The American Institute of Consulting Engineers, Inc., will hold its annual meeting Jan. 16, 1922, at the Engineers' Club, 32 West 40th St., New York City. Secretary, F. A. Molitor, 35 Nassau St., New York City.

West Virginia Coal Mining Institute will hold its next meeting Dec. 6 and 7 at either Charleston or Huntington, W. Va. Secretary, R. E. Sherwood, Charleston, W. Va.

New England Wholesale Coal Association will hold its annual meeting Jan. 10, 1922, at Boston, Mass. Secretary, R. S. Townsend, 27 Kilby St., Boston, Mass.

Southern Appalachian Coal Operators' Association will hold its next meeting Jan. 27, 1922 at Knoxville, Tenn. Secretary, J. E. McCoy, Knoxville, Tenn.

Pike County Coal Operators will hold their annual meeting Jan. 6, 1922, at Pikeville, Ky. Secretary, F. E. Miller, Pikeville, Ky.

The Coal Mining Institute of America will hold its annual meeting at Pittsburgh, Pa. Dec. 7, 8 and 9. Secretary H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

The Illinois Mining Institute will hold its fall meeting in the City Hall, Springfield, Ill., Saturday, Nov. 19. Secretary Martin Bolt, Springfield, Ill.

American Society of Mechanical Engineers will hold its annual meeting, Dec. 5-9 at the Engineering Societies' Building, 29 West 39th Street, New York City. Secretary Calvin W. Rice, 29 West 39th Street, New York City.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

Volume 20 NEW YORK, THURSDAY, NOVEMBER 24, 1921 Number 21

No Coal Freight Reductions This Year

PRESSURE on the government and on the railroads for lower rates is insistent. One group of shippers after another has urged its need for reductions and some have obtained such reductions. The farmers have been successful in having grain rates lowered, the iron and steel men have put through a reduction in the rates on their products destined for export. Others, such as the oil interests, are now presenting a strong case. The docket of the Interstate Commerce Commission is crowded with petitions of this character. In answer to the cry for lower rates the railroads exhibit the list of what they have conceded.

Rates were increased a year ago last summer, by and with the consent of the whole country, for no purpose other than to give the railroads a livelihood. The government was told that the country needed adequate transportation and the railroads needed money to supply it. No one raised an outcry against giving the roads their just due. That was at a time when business was humming, prices high and labor well paid, though the railroads were in severe straits. It was easy then to say "Raise the rates; we will pay." It was a belated but necessary move to give the roads a share of the national prosperity, denied them through the war save at the expense of the public Treasury.

Horizontal increases in rates were resorted to as expedients—in the light of present knowledge there is no other explanation for this system. The old theory of putting rates at what the traffic would bear was, temporarily at least, discarded. The result of the several horizontal raises in rates beginning in 1918 is that rates on commodities and raw products are sadly out of line with those on manufactured goods. The relations between values and freights established through years of our national life are out of tune. One business after another has been thrown out of joint by this factor. The obvious thing to do is to restore the old balance, which means give commodities a general reduction. And because this is the obvious thing to do we hear many say that it is about to be done. But the obvious is not always the proper course.

Freight rates cannot recede to their pre-war level, at least within our necessarily shortened view of the future. The Interstate Commerce Commission has been charged by Congress with maintaining rates at such figures as will assure the roads a certain specified average net return on their valuation. Just how far can the commission go in reducing rates in view of this mandate in the Transportation Act of 1920? There is a limit beyond which the managers of the railroads dare not go in sacrificing maintenance to the credit of net operating returns. That limit, it is alleged, has been reached on some systems. The promised average return on investment has so far been denied the roads by circumstances unforeseen a year ago. Still the "sniping" at the roads for reductions of particular rates goes merrily on.

Coal constitutes one-third of the tonnage carried by the railroads and supplies possibly one-quarter of the revenue. Some time ago efforts were made to obtain reductions of the rates on coal to tidewater when destined for export to Europe and South America. The roads are understood to have opposed such a course because it would have opened the way for claims for reductions on all coal to tidewater, and they are unable to forego the revenue a decrease of such limited dimensions would produce. What then would be the position of the carriers at this time on a general coal-rate reduction?

With freight averaging one-half the delivered cost of coal and with the consumer concerned with the price he must pay, it is small wonder that those who sell coal are asking about the prospects for a reduction. The jobbers have filed a formal petition before the Interstate Commerce Commission asking for a general reduction in rates on coal. They argue, "First come, first served," and point to the grain and lumber-rate reductions, and that, though the commission may not order a decrease on coal, it may have to consent to it.

If this is but a gesture it is ill-timed; if it is a serious effort it is ill-advised. There will be no general reductions in coal freight rates until railroad labor is again reduced, and every indication points to next April for that event. A reduction of 10 per cent in coal rates would mean a decrease of from 2 to 2.5 per cent in operating revenue; a reduction of 20 per cent would cut railroad revenue by 5 per cent. We do not understand why anyone who has given serious thought to the subject and who desires to maintain the solvency of the railroads of this country can advocate or urge such action. And if it cannot now be, continued agitation upsets the coal market and does no good. And who will contend that even an immediate reduction would galvanize the trade or move more coal?

Recognizing the Obvious

THERE always is the possibility of overlooking the obvious. The bituminous coal operators of this country have an organization in which without exception the best men in the business have a personal, active interest. Like many other business men's organizations born of war necessity, the National Coal Association has fought its way through the post-war period and is now in the period of deflation. In answer to the questionings of those who shake their heads and express wonder as to whether the association can longer justify an existence its supporters continue their interest and support, and the association continues to meet the expectations of those who lead it and of those who look to it for leadership.

Another organization in which the coal men have a

large interest and to which many belong and of which two are vice-presidents is the American Mining Congress. The Mining Congress, older in years and embracing the whole of the mining industry of the country, has different purposes and ideals than the coal association. There is no question of divided allegiance, no problem of duplication of effort between these two groups. The Mining Congress is fundamentally a Washington contact for the mining industry, but the history of its activities has identified it primarily with the metal-mining industries rather than with coal.

In our zeal for the success of the older organization, however, we must not lose sight of the obvious fact that the younger is by, for and of the coal industry. Operators in twenty-three states, representing an industry that has 27 per cent of the total investment in all mining in the United States, have banded together in common interest. They have a community of interest that is separate and apart from that animating those engaged in other branches of mining. The ties that bind the coal producers together are more real than those holding all those in extractive mineral industry. There are other national organizations in which the coal operators are a part. The United States Chamber of Commerce numbers the National Coal Association in its membership and the National Industrial Conference Board has individual coal operators as members. But none of these takes the place of an association of coal operators and never can.

An example of the way in which the Mining Congress functions with respect to coal, and in conjunction with the National Coal Association, is found in the recent conference of a committee representing coal, metals and oil with the Secretary of Commerce on the subject of exports and the policy of the national government on foreign commerce. This committee was conceived and organized by the Mining Congress but the separate industries were represented by men from the ranks of the more specialized organizations. The president of the National Coal Association and the chairman of the standing committee on foreign trade of that association were in the group that talked with Mr. Hoover. It is natural to suppose that the officers of the Mining Congress recognized the position of the operators' association and did the obvious thing of inviting the coal men to their party through the National Coal Association. It is patent that there cannot be two groups representing the coal operators, each leading. The National Coal Association is amply competent to take care of the interests of its constituents and is fortunate in having the aid and support of the whole mining industry through the Mining Congress. The Mining Congress, on the other hand, has so far wisely recognized the natural leadership of the coal association in matters of coal and in consequence has the support of many of the individuals in the coal industry.

Anthracite and Metal Flow Sheets

AT METAL mines there is much multiplication of equipment. In the Inspiration mill, for instance, have been installed twenty separate sections which contain twenty 600-ton bins, twenty pan conveyors, twenty weightometers, forty Marcy mills, twenty Dorr classifiers, twenty 16-compartment roughing flotation machines, twenty 6-compartment machines for floating the mineral, twenty drag-belt classifiers, forty spigot Deister classifiers, 240 double-deck Deister tables for use on sand that requires further concentration, etc.

Contrast this with the Marvine preparator described in this issue. There is not a single instance in which as many as twenty similar units are installed. The nearest approaches are in the twelve stove and twelve chestnut jigs. The number of pea, buckwheat and broken jigs is only four apiece. So much for jigs; the number of rolls and shakers is even less. In the Marvine breaker there are only two main rolls—though, by the way, the Inspiration has no more—only two picking tables, two lump shakers, two No. 2 rolls, four shakers for coarser material and the same number for smaller sizes. There are two slush shakers, two slate shakers, one No. 3 roll, a thickener, eight concentrating tables and four Dorr separators. Variety rather than multiplication is the dominant feature of the anthracite preparator.

One reason for the fewness of units in the coal-mining plant is that they do their work more rapidly than similar units in a metal mill. The material is easier to reduce in size and is not intentionally crushed to anything like a coarse powder, as is customary in a metal mill. The coal preparator does not carry the separation of impurities so far and so passes the material along more rapidly. Consequently many units are not needed for the preparation of any one size. But the product is more varied. The mill has but one aim, the anthracite preparator several. It makes broken, egg, stove, chestnut, pea, buckwheat, birds-eye and silt—eight sizes. It must have bins to store each size. Consequently the dimensions and equipment of a big anthracite preparator cannot be much reduced even though a decreased output and reduced duty might be deemed advisable. We soon get down to an aggregation of single units, and beyond that we cannot go. As we approach it efficiency declines, because it is not possible for one man to attend to operations at different levels.

If anthracite could be reduced to one size—say chestnut—and be prepared as chestnut, we could have a one-jig mill with only one railroad pocket, and though the output would be low it would be a remarkably simple and compact little plant. But by reason of the necessity of making and therefore preparing and storing many sizes a breaker must be large whether it produces much or little. If small it would not be as efficient as if large but it would be at least feasible to build it and operate it. But that really is neither profitable nor possible. For this reason most preparators are made large, and at great cost coal is brought to each of them from a distance. Every large breaker has narrow-gage or broad-gage tracks or conveyors bringing coal from distant points, from mines, strip pits or culm piles.

Here then is a natural deduction. If all breakers were to be worked triple shift it would be necessary to bring coal from greater distance to keep the mammoth buildings operating at full capacity or to work them inefficiently, for they could not be greatly reduced in size even where new ones were constructed. One man can take care of several units on the same level and if the numbers of units on one level were reduced the attendance per unit would be increased in costliness and hence it would not pay to reduce the number of any class of units excessively. The attendance costs would mount more quickly than the interest, deterioration and obsolescence charges would decline. Thus the complication of the flow sheets makes triple shifts disadvantageous. It would be good news to the anthracite region were it not so.

Wet Preparation Replaces Dry at Marvine Colliery. The Breaker Being of Fireproof Construction*

After Crushing to Steamboat, Manville Coal Is Dumped Into Railroad Cars and Brought to Conveyor—Marvine Coal Is Crushed at Ground Level, Reducing Height of Structure—No Bucket Elevators Used—Forty-Four Jigs Installed

By Dever C. Ashmead†
Kingston, Pa.

In 1920 construction was started on a 5,000-ton steel breaker at the Marvine colliery of the Hudson Coal Co., in order to concentrate in one breaker preparation of material that was being handled in two old structures where dry methods of preparation were used. Besides, the old Marvine breaker was unable to handle all the tonnage that the mines were able to produce.

The Manville breaker, one of the two eliminated by this concentration, is situated about one mile from the Marvine. The coal is now dumped in this old plant and run through a pair of rolls, which crushes it to steamboat size, then by chutes it is delivered into railroad cars that convey the coal to the new Marvine breaker, where it is dumped into a conveyor line.

The Marvine has two hoisting shafts 2,000 ft. apart, but one of these was used only to hoist the coal from the lower to an intermediate level, where it was sent to the main shaft, up which it was hoisted into the breaker. As the new breaker can handle the output from both shafts, the output is practically doubled.

One interesting feature of this new breaker is that the coal from one of the shafts is carried to the breaker over the main line of the Delaware & Hudson R.R. and

*Extract from article entitled "Advances in the Preparation of Anthracite," presented at the September meeting of the American Institute of Mining and Metallurgical Engineers.
†Anthracite editor, *Coal Age*.

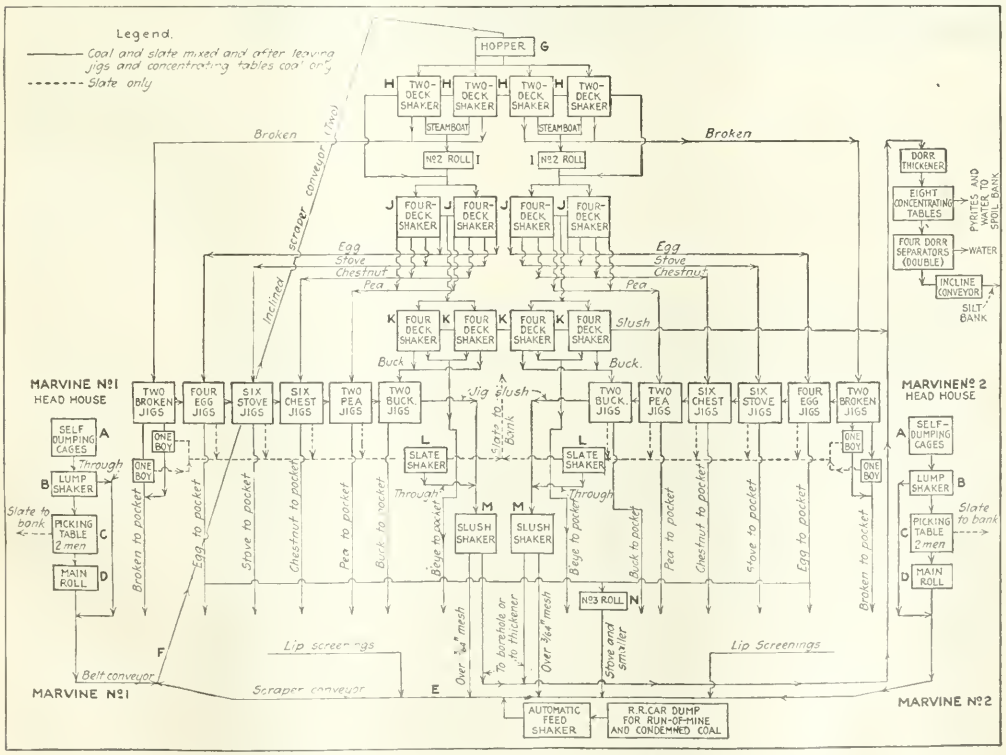


FIG. 1. FLOW SHEET OF MARVINE BREAKER SHOWING, ON EITHER SIDE, WORK DONE IN ROCK, OR HEAD, HOUSES

In this wet preparation plant there are no elevator buckets. The crushing is all done at or near the ground level, and the larger rock is removed before the coal is taken to the breaker. A belt and a scraper conveyor take this coal to the top of the breaker, where it is not further crushed unless the market for broken coal is unusually low. In the upper corner of the chart may be seen a diagram of the plant that cleans, for steam use, the coal under ¾-in. diameter. In all there are forty-four jigs, eight concentrating tables, one thickener, four separators, two main rolls, two rolls to break steamboat and broken and one to break egg to stove and smaller. Note that the slush can be delivered to a borehole for backfilling, if that disposal of it be desired.

FIG. 2

A Rock House at Marvine Colliery

In this building the fine material is removed from the coarse in a bull shaker and the lumpy material passes over a picking table, where two men take the rock out. The coal is then crushed in the main roll to steamboat or finer. Then it is rejoined by the material that has passed through the screen. Thus mixed the product is delivered to the belt conveyor. This erection of rock buildings near the ground level saves much top-lofty construction in the breaker proper.

across the Lackawanna River, two belt-conveyor lines, approximately 1,100 ft. in length, transporting it in this latter portion of the journey.

The new Marvine breaker is constructed of steel and prepares the coal by the wet method. The building is as nearly fireproof as it can be made. The only wooden construction is the jigs, the inside lining of the loading pockets, the treads of the stairs, the shaker sides, hangers and arms, the slate-conveyor trough, and the troughs on the three main conveyor lines. The breaker is electrically operated throughout and controlled from a central switchboard. It is equipped with forty-four Delaware, or Tench, piston-type jigs and a complete plant for the treatment of the silt is installed near by. The latter consists of Dorr thickeners and classifiers and Deister-Overstrom concentrating tables.

The coal is crushed on the ground level before it is taken into the breaker, so that the only crushing done is that of the grate, or broken, coal when no market can be found for this size. Crushing the coal on the ground level has the advantage of eliminating the heavy crushers and bull shakers from the top of the building, which cause severe stress on the structure. It permits also a considerable reduction to be made in the height of the building. Another interesting detail is the complete elimination of coal-carrying elevators. Water is supplied to the breaker from the Lackawanna River by electrically-driven pumps.

This breaker is constructed in two distinct units—that is, it is so built that either half of the breaker is a complete operating unit and can be shut down without interference with the running of the coal through the other half.

The following is a description of the flow of coal through the breaker and the method of preparation followed, Fig. 1.

The two headhouses (*A*) situated at the top of the two hoisting shafts are identical in construction. Coal is hoisted from each shaft, each of which contains two hoisting compartments in which self-dumping cages operate. The coal is dumped into a chute, which delivers it to the lump shaker (*B*). The lump-size coal passes from this shaker onto a gravity picking table (*C*), where two men remove the rock, which is sent to the slate bank. The coal passes through the main rolls (*D*), which crush it to steamboat size and smaller. The material passing through the lump shaker (*B*) is conveyed by chutes to a point under the rolls (*D*), where it mixes with the material from the rolls.

From headhouse No. 1 the coal is transported by means of the two belt-conveyor lines for a distance of approximately 1,100 ft. to the inclined scraper-conveyor lines (*F*). The coal from headhouse No. 2 is moved by a scraper conveyor (*E*), which travels directly underneath the center of the breaker. Into this is delivered, as it passes under the building, all material such as products of the rolls breaking egg coal, material from the slate shaker, that from the slush shaker, and from the lip screens. This conveyor also receives the material dumped from railroad cars, either run-of-mine, previously crushed to steamboat size, or condemned coal, both of which are fed to this conveyor by an automatic feed. This conveyor line delivers its material to the inclined scraper conveyors (*F*), each of which is designed to handle the entire tonnage of this breaker. These conveyors deliver the material to a hopper (*G*) at the top of the building; thence the material passes to four double-deck shakers (*H*, Fig. 5). The steamboat material passes from the deck of these shakers into the No. 2 rolls (*I*), where it is crushed to egg and smaller. The material passing from the second deck of the shakers (*H*), which is the broken, or grate, size, is sent either to the No. 2 rolls (*I*), where it is crushed to egg and smaller, or, when a market exists for this size, it goes to two jigs on either side of the breaker from which the coal product, after passing a picker boy,

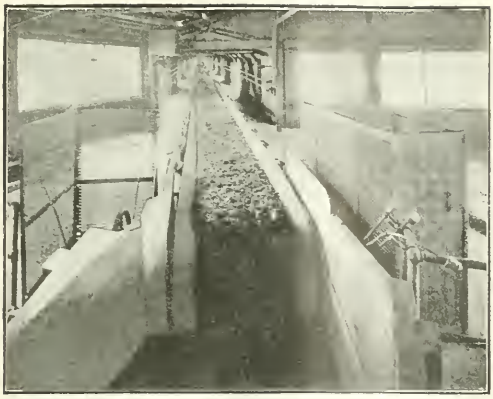


FIG. 3. INTERIOR OF A CONVEYOR HOUSING
This shows one of the long beltways of the Marvine breaker. Note how carefully the gears are guarded and the abundance of light afforded at every point along the travel, even though no picking is done in the conveyor shed.

goes to the loading pocket, and the slate product, after passing a picker boy, goes to the slate bank. Experience has shown that it is necessary to employ one boy on the slate and one on the coal discharged from each of the jigs in order properly to prepare this coal for the market and maintain the slate free from coal.

Material passing through the shakers (*H*), being egg coal and smaller sizes, is mixed by chutes with the product of the No. 2 rolls (*I*). This material then passes on to four sets of four-deck shakers (*J*), which size the coal into egg, stove, nut and pea. The egg coal, which comes from the top deck, goes to four jigs on either side of the breaker. Washed coal from these jigs goes directly to the loading pocket and the slate to the slate bank, both without any hand-picking. In case egg coal is not in demand, this size after leaving the jigs may be passed to the egg-coal rolls (*N*), which break it down to stove and smaller sizes; the material from these rolls passes into the main intake conveyor underneath the breaker.

Stove coal, coming from the second deck of these shakers, goes to six jigs on either side of the breaker. The washed coal from each jig passes to the loading pocket and the slate to the slate bank, both without picking. Chestnut coal, from the third deck, goes to six jigs on either side of the breaker; as in the case of the other sizes, the washed coal goes to the loading pocket and the slate to the slate bank. Pea coal, from the fourth deck, goes to two jigs on either side of the breaker and, as before, the coal product of these machines goes directly to the loading pocket and the slate is sent to the slate bank.

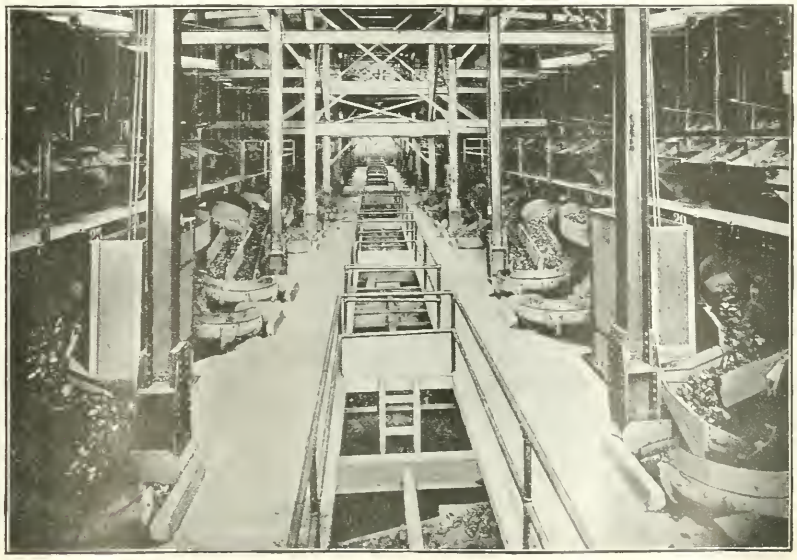
Material passing through these shakers (*J*), consisting of No. 1 buckwheat and smaller sizes, goes to the 4 four-deck shakers (*K*), which make No. 1, No. 2, No. 3 and No. 4 buckwheat, the last three sizes being mixed and shipped as bird's-eye. No. 1 buckwheat comes from the upper deck and passes to two jigs on either side of the breaker, the washed coal from these machines goes to the loading pocket and the slate to the slate bank. No. 2 buckwheat, from the second deck; No. 3 buckwheat, from the third deck, and No. 4 buckwheat, from the fourth deck, mix at the end of the shakers, and the resulting bird's-eye is conducted by chutes to the loading pocket. The slush, or material which passes through all decks, is conducted to a separate building for further treatment.

All slate from the jigs passes over slate shakers (*L*) to reclaim the fine breakage. The material going over these shakers passes to the slate bank; that passing through them joins with the slushings from the jigs. This mixture then passes over the slush shakers (*M*). The material passing over a $\frac{3}{4}$-in. mesh goes into the main conveyor line (*E*) underneath the breaker. The material going through these slush shakers passes to the plant for the treatment of the slush.

Lip screenings from all the loading pockets (Fig. 6)

FIG. 4
Jig Floor Marvine Breaker

This shows the long line of jigs that wash broken, egg, stove, chestnut, pea and buckwheat coals free of their impurities. This floor gives evidence on its face of systematic layout, making it easy for employees to move from jig to jig, and of being light enough to make their inspection effective. Perhaps it is permissible again to call attention to the adequacy with which every place of danger is guarded.



go to the main conveyor line under the breaker. The slush-treatment plant, which receives all the slush from the breaker, consists of a Dorr thickener, in which the slush is settled out of the water: that which overflows contains only the smallest particles of the suspended solids. The thickened material from these machines is fed to eight concentrating tables and the coal from these passes to four Dorr separators, where a large percentage of the water is removed. The coal is then conveyed to a stock pile or a loading pocket for shipment. Pyrite from the concentrating tables may be recovered or discarded as desired. The water from the Dorr thickener and separator passes out of the plant.

The Hudson Coal Co. has given the following details of its fireproofing practice at the Marvine breaker. In building new breakers and adjacent structures for the past several years this company has taken steps to render such buildings fireproof. The precautions taken to this end may be summarized briefly as follows:

In new breaker structures the framework has been built entirely of steel. As far as possible, the design has provided for complete accessibility to all main members for the purpose of frequent inspections and painting. For protection of the steel against corrosion by acid water, deterioration from rust and the like, adequate painting with a suitable vehicle (asphalt and carbon chiefly) is relied upon exclusively.

The roofs and side walls, or sheathing, of these buildings have been made of asbestos-protected metal, attached to steel girts and purlins by means of the usual straps and clips. All window openings have been provided with steel sash, glazed with factory-ribbed wire glass, and fitted with top hinged or pivoted ventilator sections. Practically all door openings have been provided with steel door frames and doors made up of a structural steel framework covered with asbestos-protected metal.

All floors have been constructed of reinforced-concrete slabs, practically continuous over the entire floor area; these vary in thickness from 4 to 6 in., in accordance with expected loads and character of service. In building these floors a self-furring lath, such as Hy-Rib or self-centering, has been laid directly on the floor beams

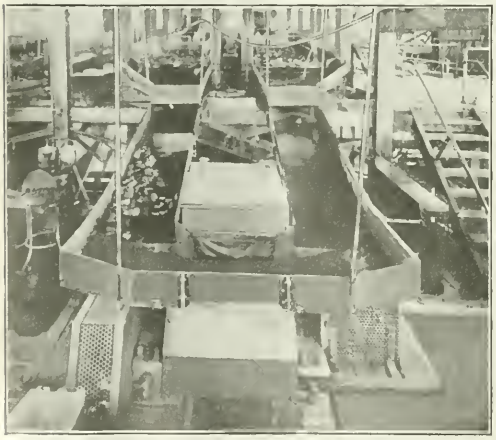


FIG. 5. GRATE AND EGG SHAKERS

This illustration was made from a photograph taken when construction work was being done, as will be noted by the forge on the left and two pails hanging from their bails. The gears, however, are well housed.

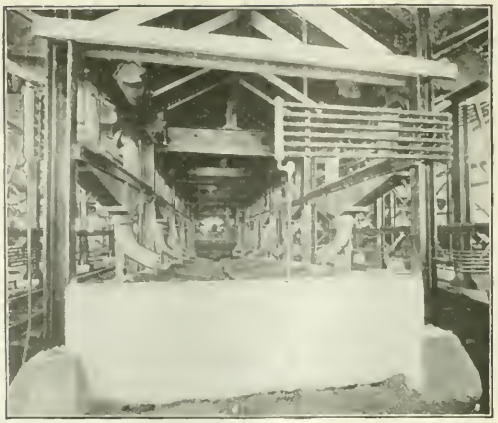


FIG. 6. UNDER THE LOADING POCKETS

The lip screenings at the pockets are spouted onto a conveyor. A scraper conveyor takes this coal, the condemned coal, the steamboat-and-under from the railroad cars and the material from the rock houses to the hopper at the top of the breaker.

and fastened in place with suitable clips. The concrete has then been poured on top of this lath, without the use of wooden forms. The under side of the floor is back-plastered with a cement gun and hand-floated to a suitable finish. In addition to the metal lath, small-diameter bars provide further reinforcement, so that the possible, although unexpected, deterioration of the lath will not necessarily impair the structural strength of the completed floor.

All stairs have been built of structural-steel stringers without risers, and with 2-in. plank treads. The use of wooden stair treads is not thought to add any serious fire risk, and except several special and expensive forms of treads it is considered the safest and most satisfactory construction. Pipe hand railing has been used on stairs and throughout the entire structure, except where angle-iron handrails and supports have been thought more suitable.

All loading pockets in the breaker have been built on steel stringers, framing into the steelwork of the breaker. The pocket floor, side walls and partitions have been constructed of reinforced concrete in practically the same manner as that followed in the erection of the floors, except that hollow tile has been used to some extent for partitions between pockets. This construction is illustrated in Fig. 7. These pockets have been waterproofed by liberally coating the inside surface with an asphalt mastic, and laying in it the wood lining necessary to protect the pocket floors and side walls from abrasion by the coal and the effects of acid water. The lip screens, chutes, hoppers and troughs have been built entirely of cast iron and steel, the only wood entering into their construction being the gate levers.

Pockets under shaking screens, in the rear of jigs, and the slush troughs under jigs have been built of almost identically the same construction as the loading pockets of the breaker except that it has not been necessary to build them of equal strength. By the use of concrete floors, pockets and slush troughs a continuous monolithic covering is provided over the entire breaker area, level with the tops of the pockets, the only openings being those provided for access by stairs and elevators. This in itself affords obvious advantages from the

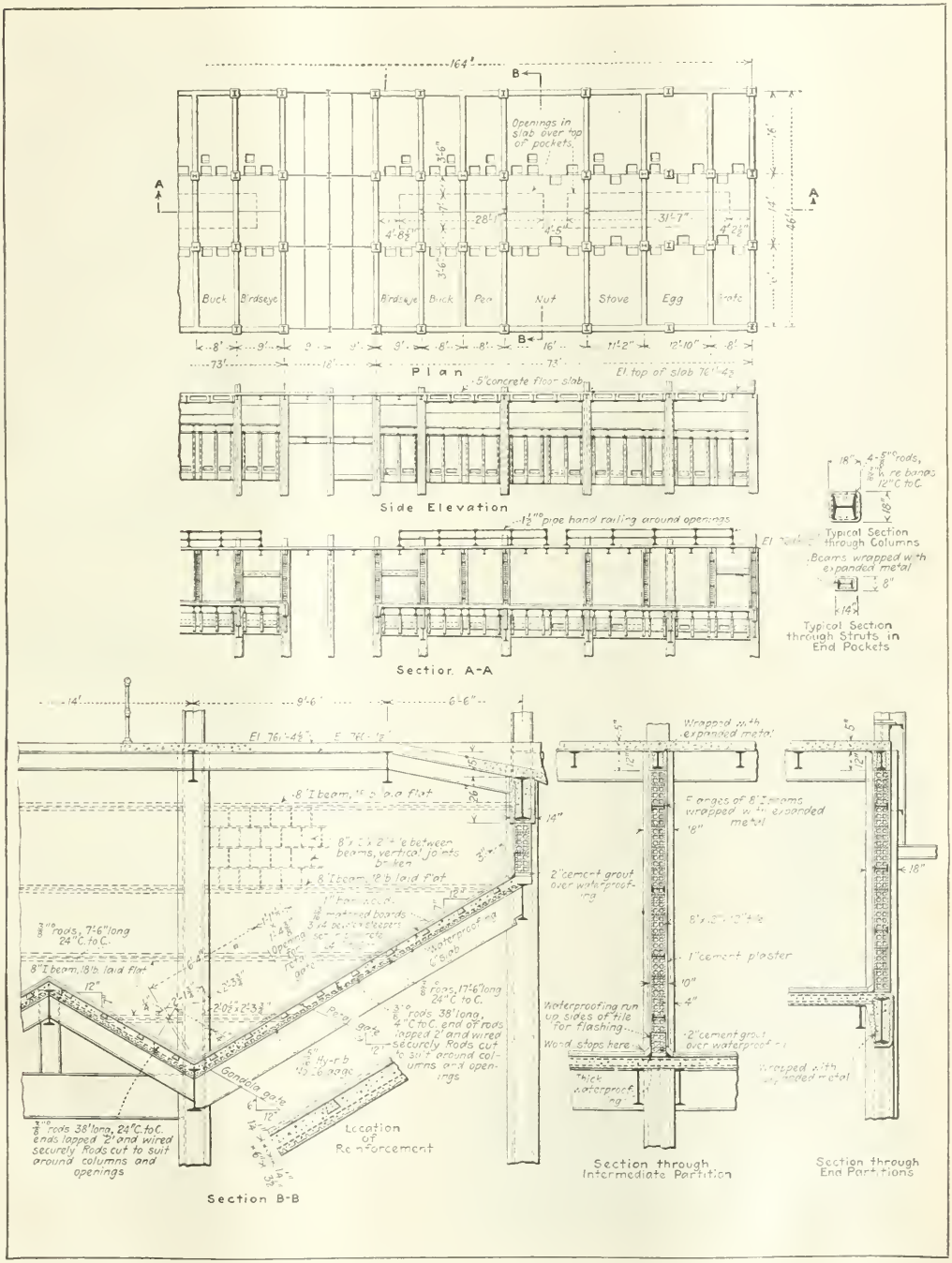

Openings in slab over top of pockets
Buck
Bi'dseye
Bi'dseye
Buck
Pea
Nut
Stove
Egg
Brite
Plan
El. top of slab 761-4½
5" concrete floor slab
Side Elevation
1½" pipe hand railing around openings
Section A-A
4-5/8" rods, 12" C. to C. horizontal bands
Typical Section through Columns
Beams wrapped with expanded metal
Typical Section through Struts in End Pockets
8" I beam, 16 lb. a.o.a flat
8"x 2¼" x 2¼" tee between beams, vertical joints broken
8" I beam, 12 lb. laid flat
1" bar a.c.c.
3/8" rods, 7'-6" long 24" C. to C.
8" I beam, 18 lb. laid flat
3/8" rods, 17'-6" long 24" C. to C.
3/8" rods, 38' long, 4" C. to C. end of rods lapped 2' and wired securely. Rods cut to suit around columns and openings
Gangplank gate
3/8" rods 38' long, 24" C. to C. ends lapped 2' and wired securely. Rods cut to suit around columns and openings
Location of Reinforcement
Section B-B
Wrapped with expanded metal
Edges of 8" I beams wrapped with expanded metal
2" cement grout over waterproofing
1" cement plaster
Waterproofing run up sides of tile for flashing
Wood stops here
Section through Intermediate Partition
Section through End Partitions

FIG. 7. SECTION THROUGH POCKETS OF MARVINE BREAKER SHOWING FIREPROOFING METHODS

All the loading pockets are built on steel stringers framed into the steelwork of the breaker. Their floors, side walls and partitions are of reinforced concrete, but hollow tile has been used between the pockets, which are waterproofed by a thick coating of asphalt mastic on the inner side. The wood lining which is necessary to protect the pocket floors and side walls from abrasion by the coal and the effects of acid water is set in the mastic.

standpoint of fire-protection as well as from that of adequately heating the structure.

The use of wood in the newer structures has been confined to the jig tanks, pocket linings and other points already noted. Heavy planking for the bottom and sides of flight conveyors has not been entirely eliminated, because of the impracticability of fastening the conveyor trough and side plates to any other structural material. In some instances heavy plank flooring is still used, as it has great strength in proportion to its weight and affords a better footing. Furthermore, it will withstand vibration and flexure without impairment. It is intended, however, to eliminate entirely the use of wood in this connection.

Fireproofing in connection with electric-motor drives in breakers need cover only the control equipment and the wiring to the motor, the motor proper needing no fireproofed inclosure. The policy followed has been to inclose each oil circuit breaker in a fireproof cell with all such breakers and control equipment concentrated in one room, which is made entirely fireproof. The wiring to the motors is incased in a steel conduit for protection against abrasion, and to eliminate the possibility of short-circuits between conductors.

The most pronounced step in the direction of obtaining a fireproof breaker structure is the elimination of all boards and light woodwork, it being a well-recognized fact that heavy timber and planking is ignited with extreme difficulty, whereas boards and wood of light weight or small cross-section catch fire with ease.

While discussing fireproofing it may be added that the older structures have been renovated with the idea of eliminating the greater and more obvious risks. The motors, together with their control apparatus, have been housed in small fireproof compartments that provide ample space for the attendant to work in and for ventilation of the equipment, but preclude the possibility of the spread of any fire that might possibly originate in the controlling apparatus, particularly the oil switches. Roofs of breaker buildings, particularly those exposed to sparks and embers from passing locomotives, have been re-covered with asbestos shingles or sheet-asbestos roofing. Practically all permanent additions and repairs to the adjacent structures have been roofed with asbestos material.

Chutes, hoppers and other exposed woodwork have been fireproofed by applying metal lath, or in some cases chicken wire, and covering this with cement plaster applied either with the cement gun or by hand. Metal lath and gunite are to be preferred to chicken wire and hand plastering. In other instances similar woodwork has been protected by sheets of light-gage steel (No. 24 or 26); this method yields effective and durable results.

Small frame buildings or portions of buildings housing important machinery have been effectively fireproofed by the application of metal lath and cement plaster inside and out, together with the use of asbestos shingles for roofing.

Powdering Coal Without First Drying It

ONE of the costs of the pulverization of coal has been the drying of the fuel—and one of the dangers also. In this process it may be heated too much and so catch fire. Recently some concerns have been pulverizing the coal without preliminary drying.

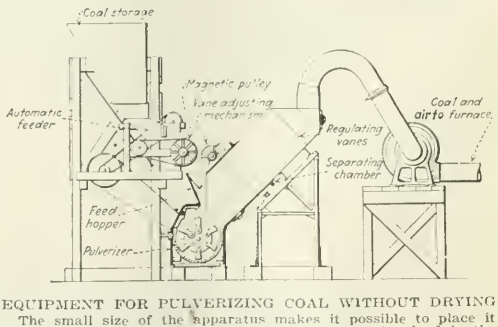
There are some large advantages in using coal in powdered form, among them flexibility and easy control of the fire. In this the fuel strongly resembles gas. It is a smokeless and, if properly conducted, a complete combustion that this fuel affords. The use of this product is well beyond the experimental stage and the opportunity to sell it is large, it being used already in the heating of houses, apartments, business and public buildings, for generation of power and steam at central stations and industrial plants, for open-hearth metallurgy and for the manufacture of cement.

In order to obviate drying difficulties the apparatus shown in the accompanying illustration has been devised and placed on the market. This is known as the Pulverburner and is intended to pulverize the fuel and feed it direct to the burner of the furnace regardless of the purpose to which the heat is applied.

The apparatus as shown consists of a feeder, an impact pulverizer and an air separator feeding the pulverized product to the burner nozzle. No drying of the coal either before or after pulverization is necessary. Air drawn through the pulverizing chamber at low velocity by means of the fan carries away the fine coal but allows the larger pieces to remain for further reduction in size. The velocity of the air determines the size of particle that it will carry. The fineness of coal fed to the burner may thus be easily regulated.

It is asserted by the manufacturer that because of its simplicity and compactness this machine represents a much smaller investment than that required for the type of equipment heretofore available. Its small size permits its installation within, say, the boiler room without requiring the construction of a separate building. It will handle any one of a wide variety of fuels and renders those of low grade available for efficient consumption. It affords positive regulation of the rate of feed, the fineness of pulverization as well as of the volume, velocity and pressure of the air at the nozzle. Its simplicity affords strength while the design is such as to render all parts readily accessible for inspection and repair. The pulverization elements can be easily adjusted to compensate for wear.

No accumulation of powdered coal occurs where this machine is employed, obviating the fire hazard usually present. If desired, however, the pulverized material may be separated from the fan discharge by means of a suitable dust collector and stored for transshipment or for future use at the plant. This machine is made by the K-B Pulverizer Co., Inc., of 92 Lafayette St., New York, N. Y.



EQUIPMENT FOR PULVERIZING COAL WITHOUT DRYING

The small size of the apparatus makes it possible to place it in an existing building, thus saving the expense involved in the construction of a separate pulverizer house.

Systematic Methods and Daily Accounting Keep Down Cost of Producing Coal at Indianola Mines

Standards of Mining Exist at Every Mine—Should Be Those Established by Management—Four Section Foremen at Mine—Each Makes Daily Report of Labor and Material Cost—Car Record Kept

By Alphonse F. Brosky*
Pittsburgh, Pa.

IN ORDER to obtain efficiency and thus reduce cost per ton in coal-mine operation one must not only know what system means but must have both a knowledge of the methods by which system may be attained and the ability to achieve it. Knowing how a thing should be done does not guarantee an individual's being able to do it. Other factors besides possession of the necessary working knowledge are vital to the fulfillment of such a task. For instance, the prospective operator must possess the ability to handle men.

Results may be achieved both by those who are stern and those who are lenient. Others may possibly reach the same ultimate goal by systematization. Without it something is too often lacking and the work does not progress with the same smoothness as is obtained with a properly guided organization. In manufacturing fields the intrinsic value of proper organization was realized long ago. Most large manufacturing concerns have spent much energy and money in installing, or attempting to install, a system. Many such firms have engaged efficiency engineers whose business it is to search out the rough spots in the working of their industrial plants. Unfortunately, the managements of a large majority of the coal companies have not even approximated a system.

Difficulties in Organizing Underground

It is generally conceded that underground conditions make the working out of organization extremely difficult. In the factory the operative always is under the surveillance of an overseer who is able to direct his effort to the best possible advantage. Here, also, the men work in small quarters, so that many individuals may be directed by one man. Being in close contact with his men, such a boss has a good chance to gain their confidence. The direct result is co-operation and better organization.

Underground, however, the miners are scattered over a large territory. At best, a foreman or section boss can make only periodic inspections of the work being done by the miners at their several working places. As these visits are of short duration and occur at widely separated intervals, the miner is placed to a great extent upon his own resources. The natural result is that a wide diversity of method exists for any particular operation. When men work together the tendency of each is to watch the other and acquire his way of doing things. After a while each individual of a group unconsciously performs a given operation in the same manner as the others. A means must be afforded to overcome at least partly this great obstacle of scattered working places.

Granting that the surface management about a mine is satisfactory, an additional step would be to inculcate the proper spirit of efficiency and organization in the mine bosses. Probably the easiest way to bring this about is to place a certain amount of executive responsibility upon each of these supervisors. By dividing a mine into sections, each of which is intrusted to one man, a move is made toward a closer approach to system. Because the foreman is held directly responsible for the efficiency of the men in his charge, he in like manner will hold these men directly responsible for their work.

At the Indianola mine of the Inland Collieries Co., located at Indianola, Pa., twelve miles northeast of Pittsburgh, an excellent opportunity is afforded for a study of mine management. At this plant not only is everything done in a methodical manner but a complete record is kept of the costs, materials used, and the number of men on a job. A full record of the division of labor is maintained. Thus in giving the number of men required for a certain job a tabulation also is made of the occupational grouping or number of each man. Wherever possible, records are kept of individuals. This

VIEW OF THE HEADFRAME AND TIPPLE AT THE HOISTING SHAFT

On the left is an experimental washer and a small chemical laboratory where daily analyses are made. About once a month samples are taken for analysis at three points in the mine, the results being plotted on the mine map.

*Bituminous editor, *Coal Age*.

Order as an Aid to Economy

With order of this kind an inventory is easily made, safety is assured, there is no waste of time hunting for material and morale is sustained. The derrick in the foreground is a handy means of lifting heavy material. Something of this kind should be at every plant.

procedure is followed in keeping the records of motor crews, machine men and foremen. Such records afford comparison of the qualities of men holding similar jobs.

The underground workings at this mine are divided into four sections, each of which is placed under the care of a section foreman. This official is required to make out a daily report of the costs, the number of men on the job, the kind of work done and the material consumed. At first thought it might appear that such a plan is hardly feasible. In order to maintain uniform records that may be filed, printed report sheets are provided. These tabulate all the items to be covered in the report. The foreman need only fill in the blank left after each item, and, where necessary, make a few arithmetical computations.

Individual costs also are itemized. A price list is given to each of the men concerned, and should a change in price occur for any of the material used, he is notified immediately. Before going home in the evening each foreman knows the cost of mining a ton of coal in his particular section. Even though the cost per ton must inevitably vary in the different sections of the mine, because of differing conditions, as well as the amount of company work necessary, these daily reports provide a sound basis for judging who is the best man. When this system was first installed the men were reluctant about adopting it, saying that they were not office clerks. Now they take it as a matter of course, and after a little practice only an extremely short time is required to compile the necessary data.

Records are kept of the daily output of the two trolley-locomotive crews employed in the main haulage. As a loaded trip comes into the "Big Bottom" the cars composing it are counted. A record also is made of the number of empties removed in the outgoing trip.

On the surface also daily reports are handed in by

Men Checking Out

The checkhouse lies between the man-and-material shaft and the bathhouse. On the left is the pipe rack. This illustration is convincing that even a mining plant with a big tonnage may be kept free of rubbish. The headframe is the same as the nearer of the two shown in the foregoing illustration.

the bosses. The costs are not included in these reports, however. The expense of doing surface work is figured and compiled in the office. Here also highly complete records are kept of the plant operations.

Records and statistics are kept on equipment also. One notable detail of this system is the procedure followed in keeping tab on the mine cars. Railroad companies number all their cars. Any work done upon any one of them is charged up to the account kept of that particular car. In the same way the Inland company has numbered all its mine cars. No greasing of journals is done underground. If a car needs repairing, it is sent to the surface shop, where the necessary work is performed upon it and charged against the car by number. Periodically, on an average of once every six months, each car is greased and inspected. The lubricant is applied on the surface by a skilled mechanic. At the same time a general inspection is made of the car and any defects it may possess are remedied or proper adjustments made.

A semi-annual inspection of the records discloses which cars have not been greased and inspected. These are sent for, and the necessary work done upon them. The results achieved prove this scheme to be ideal for the maintenance of mine rolling stock. Out of the original 300 mine cars which were installed four years ago, only one has been lost, this occurring through a wreck. All the remaining cars are in excellent condition and giving highly satisfactory service. The type used has a composite frame of wood and steel, with sheet-steel body, and a capacity of three tons. All cars are equipped with Hyatt roller bearings.

The office building has been well located, and its convenience to all operations facilitates the keeping of complete statistics and accounts. It stands on the outer edge of the surface-building group within a few hundred feet of the shaft. The interior of this building is as modern and complete as can be found anywhere. It contains four rooms, namely, the general superintendent's office, the reception room, the general office and the engineering office. The engineering corps when not employed underground may work on mine maps and layouts. Should certain information required for the work in hand be unavailable, it is an easy matter for the corps to obtain it without going any great distance. Likewise, clerks compiling records may readily obtain information needed to complete them should any item be missing.

Ball Mills Pulverize Coal Almost Without Repair and Attendance Costs and with Minimum Power

Mill So Made That Large Balls Crush Coarser Material and Small Balls Finer Particles, Saving Power — Oversize Screened and Returned to Mill — Fines May Be Floated Away by Air — Tramp Iron Not Harmful but Useful

MINING PLANTS are beginning to pulverize and burn such coal as is too fine or too impure to suit the demands of the distant consumer. Coal also is being pulverized for the market, which is rapidly awakening to the value of atomized fuel as a material that burns almost without attention and with maximum economy.

For many years the metal industry, ferrous and nonferrous alike, the cement and lime manufacturer and even the railroad industry has seen the advantages of pulverized coal. Apartment houses, office and public buildings are using it. It is being used under boilers. Perhaps no one is slower to see what it means to industry than is the coal man. He is letting the business slip from his fingers; he is not even utilizing powdered fuel at his plant, where by its use he could make available the bone coal which the market rightly refuses as too low a grade of product upon which to pay transportation charges and too expensive to handle because of the high costs of ash removal.

The difficulties and cost of pulverizing have been potent causes for the slow advances in the use of pulverized coal, though they have not measurably retarded the advance in the metal, cement and lime industries or hindered noticeably the development of the practice of pulverizing coal for sale.

It had been thought until recently that the finer the fuel was pulverized, the more efficient would be the burning. While this may be theoretically true, other conditons occur in the process of burning which make extremely fine pulverizing a waste of energy. It has been found that bituminous coal need not be pulverized finer than about 90 to 95 per cent through 100-mesh and 70 to 75 per cent through a 200-mesh screen, and that anthracite coal and coke need not be finer than about 85 per cent passing 200-mesh.

The more important factor is that the pulverized coal shall contain no "coarse oversize." By that is meant particles in the case of bituminous coal coarser than 65-mesh, and anthracite coal or coke coarser than 80-mesh, for if these particles do occur, "sparking" is noted during the burning process with resultant loss of burning efficiency. By "sparking" is meant the burning of the coarse particles which appear as small sparks as they drop out of the combustion zone to the ash pit before all the combustible has been consumed. The maintenance of a uniform product, free from coarse oversize, is a point of vital importance and one which controls the combustion efficiency to a great extent.

There are some who still advocate the use of very finely pulverized fuel, say up to 95 per cent passing a 200-mesh screen for bituminous coal and 97 to 98 per cent passing 200-mesh for anthracite coal and coke. It is evident that their experience has been with methods of pulverizing that require this fineness in order to prevent the occurrence of particles of over 65-mesh to 80-mesh in the finished product.

With the use of pulverized fuel a high combustion efficiency is maintained. This is particularly evident when burning under boilers, for here it is easy to make direct comparisons with other methods of firing. Even with comparatively low grades of fuel it is possible to burn the fuel so that less than 2 per cent of combus-

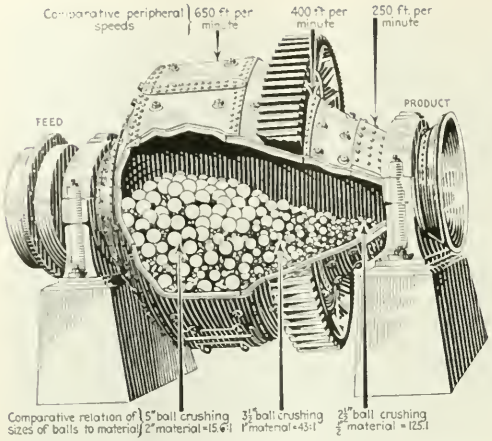

Comparative peripheral speeds
650 ft. per minute
400 ft. per minute
250 ft. per minute
FEED
PRODUCT
Comparative relation of sizes of balls to material
5" ball crushing 2" material = 15.6:1
3½" ball crushing 1" material = 43:1
2½" ball crushing ½" material = 125:1

FIG. 1. BALL MILL FOR PULVERIZING ALL KINDS OF MATERIALS

Designed for the class of materials that a stamp mill might be called upon to handle, the mill will grind up anything without breaking down. Coal, slate, sandstone, firebrick, boiler ash, tramp iron and pyrite are all alike crushable or assimilable by this mill. If the material is large, heavy and unbreakable it is only another ball in the mill and will direct itself unerringly to that part of the machine where it is best fitted to crush other material to dust.

tible matter is lost in the ash with bituminous coal and less than 5 per cent with anthracite coal. This is done with only 10 to 15 per cent of excess air.

Compare this with the ordinary practice, where the amount of combustible in the ash ranges from 15 to 50 per cent and the amount of excess air required is from 75 to 150 per cent in hand firing and 50 to 75 per cent with stoker firing. The fact that the amount of excessive air is materially reduced and that there is no bed of fuel through which the air must pass, with resultant drop in pressure, makes possible the use of much smaller draft equipment.

Heating of the excess air where lump coal is used is one of the causes for its lower efficiency. If a one-inch cube of coal is pulverized so that 95 per cent will pass a 100-mesh screen, more than two hundred million particles are produced and the exposed surface area is increased 700 times. This gives some idea of why so little excess air is required and why it is possible to get such complete combustion. Boiler efficiencies of more than 85 per cent are being maintained by using pulverized fuel.

Lower grades of fuel can be economically burned and in many cases at a considerably lower cost than a higher grade of coal used in lump or slack form. This is true even with all drying and pulverizing costs charged to the burning of the lower-grade fuel. This low-grade fuel has in many cases been substituted for oil and gas. The ability to pulverize and efficiently burn low-grade fuel opens up an enormous field and will make it possible for large concerns to cut their power costs to a marked degree.

The principal low-grade fuels which are usually considered waste or are inefficiently burned, but which are rendered available for efficient use after being pulverized, are lignites, very low grades of bituminous coal, anthracite culm and coke breeze. The quantities of these low-grade fuels that are available is astounding.

The operation of any pulverized-fuel equipped boiler, kiln or furnace is very flexible. This is particularly advantageous in boiler firing where it may be desirable to vary the load on short notice. The "stand-by" losses are much less than with the equivalent stoker installation. In fact there will be no appreciable loss in pressure during "stand-by" periods for several hours after the burner has been shut off. By closing up all dampers and inlets the radiant heat from the furnace brickwork is sufficient to maintain the pressure.

On the other hand, the main trouble with pulverized-fuel systems has been in the pulverizer itself. Several methods employed necessitate complicated mechanisms which require skilled mechanics to keep them in running condition. A loss in total operating time of 25 per cent is not unusual. Repair costs when grinding several grades of fuel, particularly anthracite coal and coke, have been so great as to cause operators to douot the commercial practicability of burning fuel in pulverized form. It was with this knowledge that the engineers of the Hardinge Co. developed the Hardinge mill, operating at comparatively slow speed, of rugged construction, with low unkeep, specially designed for grinding fuel.

Grinding is a process which must be carried out in a logical manner to produce results commensurate with the energy expended. Authorities on methods of pulverizing materials recognize: (a) That reduction should be effected in steps or stages. (b) That material which is sufficiently fine should be removed as soon as reduced to this fineness. (c) That the force exerted should be proportioned to the work required.

In grinding, the particles undergoing reduction should be kept from becoming imbedded with other particles already pulverized. If the particles insufficiently ground are not kept separated, more energy will be required to effect their reduction, as it will be necessary to beat through the mass until the few large remaining particles have been reduced and the fine material is apt to cushion the coarser on its lower side. On the other hand, if the fine material has been removed and the larger particles exposed, their reduction will then be a simple matter.

As an example of proportionate power, compare the crushing of a large rock and a particle of sand. A heavy weight dropped from a considerable height is necessary to break the rock, but a tack hammer will easily reduce the particle of sand to an impalpable powder. Reversing this action, the tack hammer will never be able to break the large rock, whereas the heavy weight, although pulverizing the particle of sand, will consume far more energy than necessary. In other words, the law of economical grinding is simply a case of proportioning the energy to the work to be performed.

The Hardinge mill operates on the principle of a multiplicity of grinding bodies rolling in a rotating conical drum supported on hollow trunnions, through which the material passes into and out of the grinding zone. The grinding bodies in rolling and dropping grind and crush the material.

Owing to the conical shape, a condition exists in the mill which causes a natural segregation of both the grinding media and the material being ground. The coarse material on entering the mill through the hollow feed trunnion is crushed by the large balls (or pebbles) which always remain near the feed end, where the diameter is largest, owing to the classifying action of the cone.

As the particles are broken down they automatically

FIG. 2. LYTLE PLANT OF THE SUSQUEHANNA COLLIERIES CO. NEAR MINERSVILLE, PA.
Ball mills of the type described are used in the power plant of this colliery for the crushing of anthracite. The powdered coal thus manufactured is consumed under the boilers of the power plant.

work their way forward, being subjected to a gradually diminishing breaking and crushing effect as they decrease in size. The particles undergoing reduction reach the required degree of fineness and the discharge opening at the same time. This automatic classification of both the materials being reduced and the grinding media, proportions the energy expended to the work required; in other words, the fundamental principle of grinding is being obeyed.

This classification of material undergoing reduction, as well as of the grinding bodies, is illustrated in Fig. 1. This shows that in the largest diameter of the mill the incoming feed is crushed by the largest balls or pebbles, as the case may be, with the greatest superincumbent weight, with the greatest height of fall and highest peripheral speed. As the discharge opening is approached, the crushing force is gradually diminished, as the grinding media are smaller and are dropped from a lesser height. The material undergoing reduction travels toward the discharge end as fast as it is reduced, thus allowing the full force of the heavy blows to fall upon the coarser particles behind without being partly absorbed by fine material, as is the case when automatic segregation does not occur.

Where a very uniform product or high capacity is required it has been found more economical to use a classifier rather than to rely solely upon the classifying action of the cone. This classifier, when used, is so arranged as to operate with the mill as one unit and requires little attention.

There are two distinct types of Hardinge mills—the ball mill and the pebble mill. The ball mill is designed to use forged-steel or cast-iron balls as grinding media and the pebble mill to use flint pebbles or other similar grinding bodies. Both types are used for either wet or dry grinding. The general shape of the two types is the same, and they are built in nearly the same sizes. The construction differs to some extent because of the difference in character of the work which each is designed to perform.

The ball mills are built in a number of standard sizes. The shell or drum consists of two plate-steel cones joined base to base with a short cylindrical wrapper piece, rolled, flanged, butt-strapped, riveted and caulked. The feed and discharge trunnions are made of cast steel and are machined on the inside faces of their joints with the plates before being riveted to the cones, insuring a perfect fit. This construction produces a cylindrical truss of great strength.

All rivet holes are drilled in the trunnion castings and countersunk on the inside of the shell, the rivets being flattened, leaving a smooth surface for the lining. When completely assembled and riveted, the drum is swung in a lathe, centered, the trunnions turned and polished and the gear ring turned true. This method of construction with the extreme care exercised in the plate work insures absolutely true alignment of gear and trunnions and produces a balanced, smooth-running machine requiring minimum power. All seams and joints of the shell are thoroughly caulked to insure an absolutely water- and dust-tight mill.

The main bearings are of ball-and-socket self-aligning construction and are amply large for any load which may be encountered in practice, thus insuring a low bearing pressure. They are bored to gage in order that all parts may be interchangeable. The countershaft bearings are adjustable by means of set screws so as to take up any wear of the gear and facilitate the aligning.

The feeder for handling dry coal is of the screw type, of special dustproof design. It is easily adjusted to control the amount of feed to the mill. Where the mill is used for wet grinding, a scoop feeder is supplied, which is simple in operation and requires no attention. The lining consists of a combination of chilled charcoal-iron plates and alloy-steel wearing bars. This combination is considerably less expensive than an all-steel lining and has a life well in excess of five years when the mill is used for grinding coal or coke dry. Either forged-steel or cast-iron balls are used as grinding media. In all cases the ball charge is designed to fit the actual work to be performed.

The ball mill is a slow-speed machine, namely, with

20 to 28 r.p.m. as a maximum for the large sizes; has no complicated mechanisms and, aside from balls, has few wearing parts. There is practically nothing to get out of order. When properly set up and adjusted it requires little attention and should run for several years without requiring repairs, aside from the addition of a few balls from time to time.

For fuel pulverization the ball mill is used primarily where it is desired to grind from sizes up to 2 in. to the desired degree of fineness. It usually is operated in conjunction with an electrically vibrated screen or an air separator. It is a compact self-contained unit, and has a large capacity for the floor space required.

As the name implies, the Hardinge pebble mill uses as grinding media pebbles of flint or similar material harder or much larger than the material being ground. The lining is also non-metallic, being composed of silica blocks.

The construction of the pebble mill is similar to that of the ball mill, but is considerably lighter, owing to the greatly decreased weight of grinding media and lining. The power required and the capacities obtained also are considerably less, as would be expected. The pebble mill is being extensively used for grinding many classes of materials, but its field, in the case of pulverized fuels, is confined to special problems.

The advantages of the conical mill are: (1) Power is saved, the energy being proportioned to the work performed. (2) The range of efficient grinding for a given size is large, owing to the segregation of the different sizes of grinding media and material. (3) The capacity for a given unit is large, owing to the rapid circulation of the ground material by the classifying action of the discharge cone. (4) The wear of both grinding media and lining is light, owing to the classifying action and circulation in the mill and the trunnion discharge. (5) The conical shape results in extreme rigidity and simplicity of construction. Mechanical troubles during operation are almost unknown. (6) The physical characteristics and fineness of the product can be readily varied owing to the many different methods of controlling the operation of the conical mill. (7) The floor space and headroom required for a conical mill installation are unusually small, owing to the compact method of driving and the fact that the mill is self-contained.

(8) Owing to the truss construction of the conical mill, a great weight of metal is not required to insure sufficient strength. This lighter construction saves in the cost of transportation; also lighter foundations may be used. (9) The conical mill operates at slow speed, has few moving and wearing parts, and requires relatively little lubrication. The number of parts subject to possible replacement are few and inexpensive. (10) The mill is watertight when used for wet grinding and dusttight when used for dry grinding. (11) Where large capacities are required, few conical mills need be used, as large capacity units are built, thus eliminating the necessity of a large battery of small units. (12) The use of magnetic separators to remove tramp iron from the feed is unnecessary. The admittance of such material to the mill will do no damage; in fact will actually aid in the grinding.

The arrangement of a typical pulverized fuel plant designed by Hardinge Co. engineers for firing cement kilns, furnaces, boilers, etc., is substantially as indicated in Fig. 3. From the cars the coal is dumped into a track hopper, thence fed directly to a crusher to reduce it to 1 in. or smaller, and thence elevated by bucket elevator to the Ruggles-Coles drier storage bin. The crusher is equipped with a bypass making it possible for fine coal to be fed to the elevator without operating the crusher. From the drier storage bin the coal is fed to the drier and dried to a moisture content of approximately 1 per cent. It is then elevated to the separator, where the fine material passes directly to the distributing system and the oversize goes to a small storage bin ready for feeding to the Hardinge conical mill. No magnetic separator need

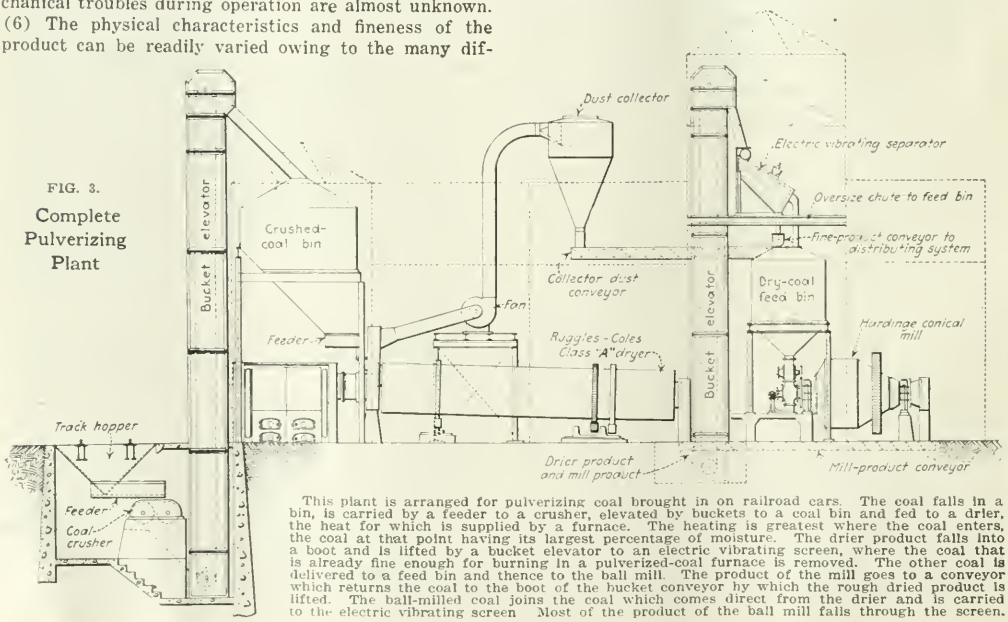


FIG. 3. Complete Pulverizing Plant

This plant is arranged for pulverizing coal brought in on railroad cars. The coal falls in a bin, is carried by a feeder to a crusher, elevated by buckets to a coal bin and fed to a drier, the heat for which is supplied by a furnace. The heating is greatest where the coal enters, the coal at that point having its largest percentage of moisture. The drier product falls into a boot and is lifted by a bucket elevator to an electric vibrating screen, where the coal that is already fine enough for burning in a pulverized-coal furnace is removed. The other coal is delivered to a feed bin and thence to the ball mill. The product of the mill goes to a conveyor which returns the coal to the boot of the bucket conveyor by which the rough dried product is lifted. The ball-milled coal joins the coal which comes direct from the drier and is carried to the electric vibrating screen. Most of the product of the ball mill falls through the screen.

be installed ahead of the mill to remove small pieces of tramp iron. This saves from 1 to 2 kw. in power, and is a considerable saving in installation cost. It also eliminates the necessity of supplying direct-current.

From the feed bin the coal passes through the mill, is pulverized and discharged to conveying equipment for returning to the separator. This separator is either an electrically-vibrated screen, of novel construction to insure large capacity per unit and long life, or an air separator. From the separator the oversize is returned to the feed bin of the mill for regrinding, while the finished product, free from coarse particles, is conveyed to storage. If the distance between this storage and the burners is short, ordinary screw conveyors are used to transport the pulverized fuel; otherwise, pneumatic conveying is employed. Ahead of the burners the coal is diverted to small bins under which are feeders which accurately control the exact amount of fuel that will be admitted to the burners.

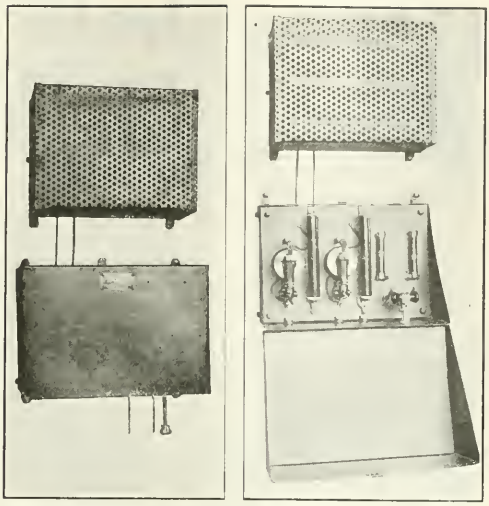
Attention is called in particular to the arrangement of the Hardinge mill and separator. This arrangement is particularly advantageous when the coal is in a fairly fine state as delivered from the drier. Separation ahead of the mill increases the capacity of the unit and also increases the grinding capacity of the pulverizer. When the electric separator is used with this arrangement, a two-surface screen is desirable, the first surface being a fairly coarse screen which removes coarse material and acts as a protector for the fine screen underneath. The two-surface screen increases the efficiency of operation as well as the life of screen cloth. While the air separator saves in some cases the installation of another elevator, more power is required to operate the system than with equivalent electric separators.

To exhibit how easy it is to operate these mills it is only necessary to say that in a mill grinding material much harder than coal, sixty-four of these conical mills 8 ft. in diameter are being attended by only two men, which is equivalent to thirty-two mills per employee.

Automatic Starter Guards Small Motors From Burning Out Should They Stall

AUTOMATIC STARTERS controlling direct-current motors of 10 hp. or less often are installed in relatively remote or inaccessible places where the operating conditions are by no means of the best. In many instances such places are damp or filled with fumes that corrode metal surfaces. Furthermore through lack of attention it frequently happens that the equipment to be driven becomes clogged, jammed or blocked in some manner that prevents the motor from operating when the automatic starter functions. Adverse atmospheric conditions cause the equipment and especially the starting resistance to deteriorate. If the machine to be driven is blocked, the resistance or the motor or both are burned out. Demand has, therefore, been created for a starter able to withstand these adverse conditions.

To meet them the Automatic Reclosing Circuit Breaker Co., of Columbus, Ohio, has developed and placed on the market what it designates as its type SS automatic direct-current motor starter. This device is designed for 250 or 500-volt service and is built in capacities of 3, 5, 7½ and 10 hp. It is of the counter e.m.f. type with one step of resistance, which is automatically cut out when the motor comes up to speed. This resistance is made of nickel and chromium-alloy wire, which is strongly resistant to corrosion and is of such value that it limits the starting current to that taken by the motor at full load yet is of such capacity that it will carry this full-load current indefinitely.



STARTER FOR SMALL MOTORS THAT CAN BE SAFELY OPERATED FROM A DISTANCE

Anyone who starts a small fan in an office, pullman car or his own apartment knows how apt it is to stick. All small motors tend to act that way, and if the current is left on, the motor may burn out, the electricity which should do the work merely making heat. This starter obviates that possibility.

These details of design give this starter the ability to protect both itself and the machine to which it is attached against burning out should the motor fail to start its load. It also assures the longest possible life under adverse atmospheric conditions.

This starter can be applied satisfactorily in all cases where the starting torque does not exceed the full-load torque of the motor. In most of the installations of motors of this capacity it is found that the starting torque always is the smaller. Especially is this true of motors driving pumps, blowers and rotating apparatus not possessing excessive static or starting friction upon which the load builds up with the acceleration or appears only after the motor has come up to speed.

The starting resistance in the device being described is completely housed within a perforated sheet-iron box provided with feet for separate mounting on wall, posts, cross arms, or in some other convenient place. Connections between the starting panel and resistance are made at the time of installation. The cover and the box which together house the panel are provided with lugs so that they can be padlocked and the contents made secure against molestation by unauthorized persons. Fig. 1 shows the panel box with the cover closed and Fig. 2 shows it with the cover open.

All constructional details of this starter are rigid and substantial and all current-carrying parts are of ample capacity. The primary object in designing this device was to produce a trustworthy and durable starter without sacrifice of either reliability or durability. This has been attained by employing an ample amount of material assembled with the best quality of workmanship.

Problems of Operating Men

Edited by James T. Beard

Judgment in Interpreting Mining Laws

Importance of Adequate and Efficient Ventilation in Mines Generating Gas — Need of Clear Interpretation of Mining Laws—Menace of Individual Judgment — Common Practices in Violation of Law

GOOD ventilation in mines has been aptly referred to as the "Foundation of Economic Production," in the excellent letter of George Edwards, *Coal Age*, Oct. 27, p. 685. In previous issues of *Coal Age*, other writers have offered the suggestion that mines generating gas in dangerous quantities require the employment of a ventilating engineer to insure safety and efficiency in operation.

Our mining laws make no mention of the employment of a ventilating engineer. But, to my mind, the suggestion is not far out of the way. Experience in the gaseous mines of the anthracite region has proved that the most important problem, in the ventilation of those mines, is maintaining a proper supply of pure air at the working faces.

It will be generally claimed that any mine foreman of experience should be capable of arranging an adequate plan of ventilation that will be both practical and efficient. At the same time, it cannot be denied that the duties of a foreman in charge of a large mine are so numerous and varied that he should receive all the assistance that can be given him, in respect to making the mine safe and a healthful place in which to work.

Qualified Assistant Foremen

Every anthracite mine, today, employs a number of assistant foremen who are qualified men and expected to look after the circulation in their several districts. However, the ventilation of the working faces is only one item of the many they must look after and arrange. It is quite probable that these other duties may frequently cause them to overlook some important matter relating to ventilation that should have immediate attention.

It is not my idea that a ventilating engineer or inspector should be clothed with authority to over-ride the foreman whom the law makes responsible for all matters pertaining to the ventilation of the mine. My thought is that the importance of ventilation is so great it should receive special attention, and a ventilating engineer would be in a position to criticise and suggest plans to the foreman which that official would appreciate.

In this connection, let me say the mining law relating to ventilation should always be clear and explicit. It frequently happens, however, that it is capable of a varied interpretation, according to the judgment of the person. I regret to say that there are many men employed in our mines who seem to regard themselves privileged to interpret the law in any way that best pleases them.

In support of this statement, allow me to refer to the anthracite law relating to the building of stoppings. The law requires (Art. 10, Sec. 8) that all crosscuts between main intake and return airways, in every district, shall be permanently closed with substantial stoppings of brick or other suitable building material laid in mortar or cement whenever practicable. The law forbids the use of planks for that purpose, except temporarily.

Disregard of Law a Frequent Cause of Accident

In too many instances, the disregard of this law, by building such stoppings in a haphazard manner, has caused accidents that should have been avoided. Many seem to consider the law relating to stoppings as having a wide scope, and have taken advantage of the provision made for the temporary use of planks to close an opening, for a time, where proper ventilation will later require a substantial stopping.

At times I have observed as many as ten or fifteen of the so-called "temporary stoppings" of planks, on a heading where the air at the working face was deficient. This condition would not be possible if the law specified the length of time a temporary stopping should be permitted to stand.

Again, where the law requires (Sec. 11,) two main doors to be so adjusted that when one is open the other will be closed, would any one be justified in understanding that one wooden door and one canvas door could be employed without violating the statute?

In working a panel of chambers turned off a heading, the question of maintaining an adequate supply of air at the faces of those chambers should not be left to the judgment of men who are willing to interpret the law according to their own inclinations. Many instances could be mentioned in which the personal judgment of the man in charge has proved extremely dangerous.

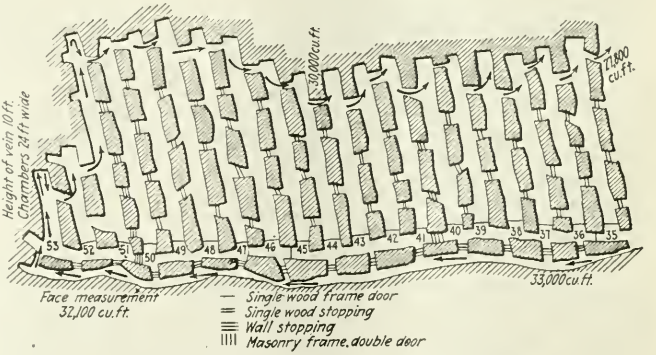
Efficient Mine Ventilation

In strong contrast with this careless interpretation of the law, I enclose a sketch of an efficiently ventilated mine where gas was generated in large quantities. Only the last twenty chambers are here shown, on a heading where fifty-three chambers have been turned. It will be noticed, however, that a line of substantial stoppings is maintained at every tenth chamber, and a double door is hung on the gangway at the mouth of that chamber.

The purpose of this plan was to gather up the air that would leak through the temporary stoppings and force it to travel the faces of the chambers. At this particular mine the foreman would not tolerate any chance individual judgment, but carried out the meaning of the mining law in a way to insure the highest degree of safety.

Judgment in Respect to Need of Safety Lamps

The question of the exercise of judgment as to whether it is necessary to supply miners, in some districts of the anthracite mines, with safety lamps offers another menace to safety, since man's judgment varies with the individual. It should be distinctly understood that the law specifies (Art. 12, Rule 9) "Where there is likely to be an


Height of vein 10 ft.
Chambers 24 ft wide
20,000 cu.ft.
27,800 cu.ft.
53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35
33,000 cu.ft.
Face measurement 32,100 cu.ft.
Single wood frame door
Single wood stopping
Wall stopping
Masonry frame, double door

SHOWING PORTION OF A WELL VENTILATED MINE

accumulation of explosive gases, or in any working in which danger is imminent from explosive gases, no light or fire other than a locked safety lamp shall be allowed or used."

When superintendents and foremen come to realize the importance of rigidly observing these important clauses of the law, we can look forward to making some progress in reducing accidents in mines. The fact that men are not expecting to encounter gas has been the cause of more accidents than would be believed.

Places Reported "Free of Gas" May Generate Gas Quickly

Because working places are reported by the fireboss as being clear of gas, in the morning, does not justify the assumption that the place will remain free from gas throughout the day. It is my opinion that wherever a fireboss is employed to examine the mine workings for gas, in the morning, the miner should have a safety lamp with which to make a similar examination of his place before starting to work and before and after firing a blast, in order to fully comply with the law.

The fact that gas has accumulated in a working place and been cleared out by brattice makes it safe to say that more gas will accumulate in that place, in a short time, again. Anything may occur to short circuit the air current, temporarily, with the result that the place would become unsafe for work before ventilation is restored.

Some years ago, I recall, that a certain superintendent considered it an unnecessary expense to provide each miner with a safety lamp, as long as the fireboss reported the workings clear of gas. Things went along all right for about three months, when a fall of rock broke down an air bridge. This short-circuited the air and an explosion followed at the working face where the miners were unwarned of the condition. Several of the men were burned and others badly shaken up.

These are questions of special interest to the anthracite mines and, in my opinion, there is growing need of a conference of state mine inspectors, superintendents and foremen to consider and interpret the meaning of the mining law in many of these respects, where the language of the law is vague. Only in this way can we hope to eliminate individual judgment, which is now so largely practiced.

Joseph R. Thomas.

Plymouth, Pa

Passing of the Flame Safety Lamp

Resolutions adopted by the Mine Inspectors' Institute of America—Electric cap lamps to replace safety lamps, except in testing for gas.

With deep interest I read the resolutions adopted by the Mine Inspectors' Institute of America, at its meeting in Charleston, W. Va., last July. A report of this meeting, together with the resolutions adopted, appeared in *Coal Age*, Aug. 25, p. 306.

While these resolutions cover a number of important points relating to the safe mining of coal, I will refer only to that relating to the use of flame safety lamps. After referring to the general introduction of electric cap lamps in mines, the resolution expresses the conclusion and belief of the mine inspectors that the flame safety lamp "should be discarded and no longer used, except for the purpose of testing for gas."

The average coal miner will not be sorry to learn that the days of the safety lamp, as used to give him light in his working place, are fast being numbered. When in use the safety lamp must be carried in the hand, hung to a post if that is convenient, or set on the floor.

Not only is the light given by a safety lamp much inferior to that of an open light, but the lamp itself is heavy and cumbersome. If set on the floor it is liable to be knocked over and injured by a stroke of the pick or otherwise and when hung on a post it gives a poor light by which to work.

At the best, the use of the lamp is a menace to the safety of the miner, without special care on his part. The resolution continues to urge, instead, the use of electric lamps approved by the Federal Bureau of Mines, as working lamps, "provided the regular and frequent inspection of the working places is made by competent safety inspectors, by means of gauze safety lamps."

Assuming that the miners working in a mine are equipped with a standard type of electric cap lamp and are further assured of protection from danger of gas in their places, by the presence of a reliable and competent safety inspector, who makes frequent tests for gas and sees that the necessary amount of air is in circulation, they would feel safe and work to better advantage.

Men Work Better When Feeling Safe

Under such conditions, there is no doubt but that every miner would soon find he could accomplish more, in less time, than with either the open flame lamp or the safety lamp, either of which require more attention than the electric lamp. It is my honest belief that there would be fewer accidents occurring at the face, because the miner would be provided with a better light and able to detect danger quicker than when working in a dim light.

Let me suggest, here, that it would be wise to have all trusted company men, including timbermen, entrymen and pumpmen, carry a flame safety lamp in addition to the electric cap lamp. Even when the mine examiner reports "no gas" above a big fall, timbermen would feel safer if they made the examination for themselves when working in that region.

Experience has taught me that a flame safety lamp, in use every day in a miner's working place, impairs his eyesight. He is blinded by the glare of the light, which is continually in his eyes. Also, safety lamps require careful cleaning and inspection by competent lampmen, at the close of each shift, which costs more than the care and recharging of electric lamps and batteries.

In a mine where I worked some years ago, I was required to test my lamp after it was handed me by the lampman. Then an overseer tested it again before I was allowed to leave the lamphouse. Again, another inspector would test the lamp before I entered the cage. All this required time. Finally, another inspection was made at the bottom of the shaft and, frequently, through the day the lamp was examined by the overseer.

Our lamps were assembled in such a way that the bonnet was screwed over the standards and had to be removed in order to inspect the gauze of the lamp, which was held secure by the standards. I am greatly in favor of the use of electric cap lamps and believe that every miner should be equipped with such a lamp, which will make his work safer while he is in the mine.

Gaston F. Libiez.

Peru, Ill.

Smelling the Gas

Faculty of smelling odors an important requirement of mine foremen and firebosses—How the miner is able to detect the presence of marsh gas by smelling explained.

Referring to the question asked by an inquirer, in *Coal Age*, Sept. 29, p. 497, concerning whether a man who is unable to detect odors is competent to serve as a mine foreman, assistant foreman or fireboss, let me say that I heartily agree with the editor in the view expressed that such a person is unfit for any of the positions named.

In several instances, to my knowledge, the mine foreman or his assistant has been able to detect a mine fire from the odor borne on the air current. In each case, the odor was carefully traced to the point where fire was found and extinguished before it had assumed dangerous proportions.

Without this acute sense of smell on the part of a mine official in charge, it would frequently happen that a gob fire would remain undiscovered, until it had gained such headway as to require much labor and expense to prevent damage and loss. On the other hand, the peculiar odor of a fire smoldering in the mine makes it readily detected by one whose faculty of smell is unimpaired.

How the Miner Smells the Gas Burning in His Lamp

This reminds me of the question that has been so often argued in reference to whether it is possible for a miner to detect marsh gas by the sense of smell. Authorities on mine gases and ventilation say that methane or marsh gas (CH_4) has no smell and cannot be detected in this manner, which is undoubtedly true of the gas itself. But the conditions under which a miner becomes aware of the presence of this gas involves the burning of the gas in his lamp.

Strange as it may seem at first sight, a miner of long experience in mine gases, can detect the odor arising from the burning of a small percentage of marsh gas contained in the air entering his lamp. This percentage is so small that the presence of the gas cannot be detected by observing the flame of the lamp. No visible cap is formed to indicate the presence of gas in the air.

While it may be argued that so small a percentage of gas in mine air is not dangerous under ordinary conditions, it must be admitted that it is not good practice to ignore the fact that gas is being generated in the place. A wise foreman will immediately take steps to increase the circulation of air in a place where he knows gas is being generated, however small the quantity.

In my opinion, the best argument that can be advanced in support of the claim that a good miner can detect the presence of a small percentage of gas by the smell due to its burning in his lamp, is to say that a piece of cloth has no smell until it is burned, when the presence of the burning cloth is quickly detected.

Foreman Finds Small Amount of Gas by the Smell

Some time ago, one of my firebosses reported a place as generating some gas. An hour elapsed before I was able to visit the place and I could not then detect any gas by observing the flame of the lamp. However, its presence was easily detected by the odor coming from my lamp and I arranged at once to increase the air in that place.

Let me say in closing, many mine officials under such circumstances would have ignored the claim of the fireboss that he had found gas in the place. But, to my way of thinking, only this kind of co-operation between mine officials will produce results and prevent the disasters that we have experienced during the last thirty years. Let every mine foreman trust his firebosses and act on their word promptly with confidence.

In my opinion, no man should be given a place of responsibility underground whose sense of smell is defective in any degree. Such a one is wholly unfit to be made responsible for the lives of men working in the mine.

Johnstown, Pa. Foreman.

Ventilating Two Seams

Mention made of ten seams of coal ventilated by a single fan—Cause of trouble in the ventilation of two seams ascribed to size of shaft being too small.

REFERRING to the question asked by "Master Mechanic," *Coal Age*, Oct. 6, p. 542, regarding the ventilating of two seams of coal by a single fan, it appears to me there should be no difficulty experienced in this undertaking. The fan is said to be capable of producing 150,000 cu. ft. of air per minute, which should be ample for the ventilation of the two mines under ordinary conditions.

Some time ago I worked in a mine, in the old country, where a single fan ventilated ten different seams all of which pitched from 20 to 80 deg. As far as my knowledge goes, there was no trouble in securing a good circulation of air in each of the seams. The air was conducted down the shaft to the lowermost level, a portion of the current being taken off, at certain levels, and each split circulated through two or more of the seams.

Air Shaft Believed Too Small

In the present instance, it seems to to me that the trouble described by this inquirer arises from the fact that the second shaft sunk to connect the two mines has too small a sectional area. He states that this shaft is only 5 x 10 ft. in section and 260 ft. deep.

My opinion is that this shaft, for the purposes of ventilation, should have been at least 8 x 12 ft. in section and have had a tight division wall in the center. That would provide two air compartments, each 6 x 8 ft. in section for the return currents.

I would operate the fan as a blower, forcing the main current down to the lower seam, but splitting the air in the downcast, so as to provide two currents, one to ventilate the upper seam and the other circulating through the lower seam. Use the two compartments of the connecting shaft for the return air current from each respective seam.

If this plan is followed, I am convinced there will be no trouble in getting good ventilation in each mine, if the air is properly handled by an experienced man. Mine Foreman.

Collinsville, Ill.

ANOTHER LETTER

WITH a large shaft and a fan capable of producing 150,000 cu. ft. of air per minute, there should be no difficulty in ventilating two seams of coal, the one overlying the other. Indeed, the air column that would form in a shaft connecting two seams and 260 ft. deep would furnish almost sufficient natural ventilation for both of these mines.

In regard to the suggestion of installing a booster fan in the upper seam, let me say that it would only add to the expense for equipment and, as stated in the reply to this inquiry (p. 542), could not be expected to be of much assistance in securing better ventilation.

Although the inquirer does not state that this is a drift mine, I am inclined to think that these two seams are opened, separately, as drift mines and that the shaft sunk later to connect the two seams was intended to improve the ventilation in each.

Assuming that to be the case, my plan would be to make the connecting shaft the upcast for both mines. I assume that the fan is located at the top of this shaft and if operated on the exhaust principle it should give good results. The air would enter each mine by the drift opening and, after circulating through the workings would pass up the fan shaft, which would be the return for both mines.

In order to proportion the air according to the requirements in the two mines it will be necessary to install a regulator in one of them. I would drive the airways in the upper seam so as to give them a larger sectional area than those in the mine below. All airways should be kept free from obstructions.

———, Tenn. Foreman.

Inquiries Of General Interest

Reporting Work of Cutting Machines

Report to Show Time of Starting and Finishing Each Cut—Height of Coal, Width and Depth of Cut Also Given — To Make Report Complete, Number of Cars Loaded and Make of Machine Important

BEING desirous of securing a form of report best adapted for showing the work performed in cutting coal with machines, I am writing to ask if *Coal Age* and its practical readers can suggest something along this line. We believe this would be helpful not only to ourselves but to many others in the tabulation of results.

Superintendent.

Ramage, W. Va.

After some correspondence with large coal companies using machines, in different states, we have secured the following form of tabulating the work of coal cutters, which appears to give very complete results in machine mining.

The report shows not only the time of starting and finishing each cut, but the height of coal, width and depth of cut and the number of cars loaded, using 2½-ton cars. The form of report follows:

The time spent in taking the measurements and recording them will be amply repaid by the information gained from the later study of the report.

We shall be glad to have the suggestions of others in reference to reporting the work of cutting machines. It is readily understood that the speed of cutting will depend much on the hardness and purity of the coal or other material in which the cut is made.

RECORD OF JEFFREY COAL-CUTTING MACHINE

——— Coal Co.

June 1, 1921 ——— W. Va.

Start	Finish	Place	Height of Coal	Cut—Depth	Cut—Width	Cars	Time
7:00	7:11	Main entry, traveled 20 ft.	7′ 1″	8′	15′	12	11
7:12	7:20	Breakthrough, traveled 100 ft.	7′ 3″	8′	17′	14	8
7:28	7:43	Breakthrough, traveled 75 ft.	7′ 1″	8.3′	14′	11	15
7:45	8:00	Main air course, traveled 50 ft.	7′ 2″	8 0′	15′	12	15
8:10	8:25	Breakthrough, traveled 40 ft.	7′ 2″	8 2′	14′	11	15
8:28	8:40	Breakthrough, traveled 250 ft.	7′ 3″	8 0′	15′	12	12
8:48	9:05	No. 1 room, fuse burned out	7′ 2″	7 0′	21′	14	17
9:10	9:15	Started again, traveled 70 ft.					
9:20	9:28	Changing bits					
9:28	9:43	No. 2 room, traveled 90 ft.	7′ 9″	7.9′	22′	20	15
9:50	10:07	Breakthrough, traveled 180 ft.	7′ 3″	7 0′	15′	10	17
10:15	10:37	No. 3 room, traveled 240 ft.	7′ 0″	8 2′	21′	16	22
10:39	10:45	Changing bits					
10:45	11:00	No. 4 room	7′ 3″	8.0′	21′	16	15

In this connection, it is interesting to state that a recent test, with a Jeffrey machine, showed a total of 1,560 tons of 7-ft. coal cut in 12½ hr., or an average of 125 tons of this coal per hour.

Examination Questions Answered

Alabama First-Class Examination Birmingham, July 25-28, 1921

(Selected Questions)

QUESTION — *Where collars and mudsills are required in timbering a slope, what precaution should be used in bracing them to prevent their slipping when taking the weight?*

ANSWER—Where mudsills are used as cross-sills, in timbering a slope, they should be hitched into the rib on each side of the track. The posts standing on the sills should be given a slight inclination up the pitch and the mudsill should be tilted in its bed to correspond and give a good footing to the posts. In order to prevent the posts from splitting when taking the weight, cap-pieces of soft wood and of sufficient size to completely cover the head of the post are used; or the latter should be notched into the collar in a manner that will give the head of the post a good

bearing. Two forms of such notches are shown in the accompanying figure. The foot of the post should also be notched or boxed into the mudsill.

QUESTION — *Name and explain the different methods employed for artificially keeping a mine in proper damp condition and humidifying the ventilating current.*

ANSWER — At times, water cars are used for sprinkling the roads. More efficient practice, however, is to install a pipe system for sprinkling or spraying the roads and working places. For the purpose of humidifying the mine air, the exhaust steam of an engine or pump is often discharged into the intake air-course. Of these different methods, the pipe system for spraying the roads and air-courses is the most effective.

QUESTION — *What percentage of moisture in the ventilating current would you recommend as necessary for safe operation?*

ANSWER — While an air current of 100 per cent humidity would exert no drying effect in the mine and would therefore reduce the danger of a dust explosion, such a degree of humidity would be much too great for the health of the workmen. Better results are obtained when the humidity of the mine air ranges from 60 to 70 per cent.

QUESTION—*What practical and everyday test would you employ to determine if the dust in a mine is in a safe condition or not?*

ANSWER—The tests of the Bureau of Mines have shown that to render dust incapable of being blown into the air, it must be sufficiently wet as to be plastic when squeezed in the hand. In practice, however, this condition is seldom realized throughout the mine. In order to reduce the danger from dust to a minimum, more reliance must be placed on cleaning up the roads and working places and allow no accumulations of dust in them. In addition to that, all roads and other openings should be well sprinkled at regular short intervals.

QUESTION — *Explain the use of hose for watering mine workings and state how, when and where this should be used.*

ANSWER — Hose are used with good effect for watering the roads and working faces in rooms and chambers, provided there is a good pipe system on the entry or gangway. The hose being attached to a nozzle at the mouth of each room, permits the face of the coal to be thoroughly watered. This should always be done previous to firing a shot in the place.

QUESTION — *What methods or plans other than watering or wetting are used to overcome or remove the danger of dust?*

ANSWER — Strict rules and regulations should be made and enforced in regard to blasting. The kind and amount of powder to be used and the depth and location of the hole should be clearly specified. The best practice is to employ competent shotfirers to examine, charge and fire all shots that in their judgment are safe. No undue accumulation of dust or fine coal should be permitted in any working place or on the roads.

QUESTION—*In a mine where the roof is fairly good, what distance apart and how near the face would you have room timbers set?*

ANSWER—Here again, conditions must determine the distance apart of the timbers, and how near to the face the first row should be stood. Under fairly good roof and floor in a practically level seam, the distance apart of room timbers may vary from 4 to 6 ft. In machine mining, the general practice is to set the first row of timbers at a distance from the coal face sufficient to allow the machine to pass without withdrawing the timbers. This distance will vary with the type of machine in use.

QUESTION—*How would you set entry timbers in a 3½-ft. seam when shooting down the top for mule height?*

ANSWER—Much will depend on the nature of the roof strata to be taken down and the kind of roof above it. Only sufficient of the old timbers should be drawn, before the shot is fired, to permit the roof to fall. The new timber should follow up the work as closely as practicable, in order to furnish the needed protection for the workmen. Whether post timbering or double timbering should be employed, must be determined by conditions in the roof and floor.

QUESTION — *Explain fully what is meant by the term "humidity," as applied to coal-mining operations.*

ANSWER—The word "humidity," in mining, refers to the degree of saturation of the mine air with moisture. When the air is but half saturated, its humidity is 50 per cent. The weight of moisture a given volume of air will absorb depends on the temperature of the air. For example, air that is fully saturated at 40 deg. F., will contain about the same weight of moisture as air that is only half saturated at 60 deg. F., volume for volume. The term does not, therefore, refer to the amount of moisture in the air, but to the degree of saturation.

QUESTION—*How would you set timbers on a double track slope pitching 30 degrees?*

ANSWER — In timbering a double track slope, it is of the greatest importance to avoid standing posts between the two tracks to support the center of the crossbars. It is of advantage also to avoid setting posts at the side of the track, if possible. Where the coal is hard a good plan is to hitch the cross-

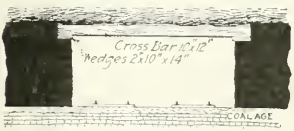


FIG. 1. CROSSBAR HITCHED INTO RIBS

bars into the ribs on either side of the road, as indicated in Fig. 1. Heavy crossbars are used and wedged tightly by both wedges driven underneath each end of the bar.

Where this method cannot be employed, owing to the coal being soft and pliable, the legs supporting the two ends of the crossbar can generally be set back in the ribs so that they will not be knocked down by a derailed car. In setting posts on a pitch of 30 deg., a foothole should first be cut in the floor and the posts should lean up the pitch at a slight angle, as shown in Fig. 2. In this position, it is held secure by driving a good wedge between the roof and the top of the post. The post is then said to be "underset." When a post is underset in this way, any movement of the roof down the pitch tends to tighten the post, which would otherwise be loosened and fall out. If the bottom is hard, making it difficult to cut footholes in the rock, a good plan is to cut hitches in the rib and lay crossbars on the floor of the seam in front of the posts. These crossbars will furnish a good support for the posts and the track, which has a tendency to slip down the slope.

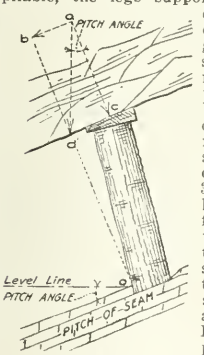


FIG. 2. TIMBER SET IN A SLOPE

$10,000,000 Power and Atomizing Plant Is Projected in Ohio

THE Allied Power Industries, a $10,000,000 trust estate, organized by L. W. Winchester and Robert S. Fletcher, with offices in Columbus, Ohio, has started the erection of an immense power and atomizing plant at Gnadenhutten, in Tuscarawas County, Ohio. The trust is a consolidation of the Gnaden-Goshen Coal Co., the Atomized Fuel Industries and the Ohio Gas & Power Co. L. W. Winchester and Robert S. Fletcher are the trustees of the estate, which is authorized by the Court of Chancery of Franklin County, Ohio.

The estate owns a tract of approximately 3,300 acres of coal land on the Pennsylvania R.R. near the town of Gnadenhutten. The mines have been in operation but little coal has been produced for commercial purposes in the past few years. A siding of a mile and a half is being built from the main line of the Pennsylvania and the coal plant will be the first unit to be erected. This will consist of an atomizing plant which will prepare the coal for the furnaces of the projected power plant.

Three distinct steps are taken in the preparation of the coal. First it is ground to the fineness of large shot and then dried to a point where but one-half of one per cent of moisture is present in the ground coal. This eliminates the danger of spontaneous combustion. Then the ground fuel is placed in the atomizer, where it is ground to the point where 98 per cent passes through a 200-mesh screen.

The electrical plant as planned provides for a number of units and the cost will be from $10,000,000 to $12,000,000. The first unit will be completed in a year and will generate approximately 15,000 kw. of current. The ultimate plans provide for a production of 70,000 kw., which will be the largest electrical plant in the country.

The trustees assert that electrical power can be transported distances up to 300 miles from the plant with a loss of only 10 per cent. All of the development will be at the mouth of the mines, which will have a capacity of approximately 1,000 tons daily.

Admixture of Wall Rock in Alaska Coal Makes Availability for Navy Uncertain

OWING to the activities of the Navy Department, coal mining in Alaska is attracting much attention at this time. While considerable development has been undertaken by the Navy Department it has not been established that Alaska can be made the source of large supplies of coal of navy grade, in the opinion of George S. Rice, chief mining engineer of the Bureau of Mines, who has recently returned from first-hand contact with the mining industry in that territory. The coal being developed at the Chicaloon mine is similar to that of the Pocahontas vein and unquestionably is of very high grade. The difficulty is that it is very badly admixed with wall rock and there is the danger that the continuity of the beds, of which there are several, will be interrupted by eruptive intrusions. Because of these conditions, extensive prospecting and development will be necessary to prove the value of these coal deposits. This prospecting is amply justified, Mr. Rice believes. The strategic importance of developing a naval coal supply on the Pacific Coast is great. Even from the standpoint of cost, there is a large leeway due to the fact that Pocahontas coal must be transported many thousand miles to Pacific bases.

The Eska mine has been developed to a point where it can furnish the requirements of the railroad and the other demands along the railroad's line. In fact, the output of the Eska mine can be trebled if the demand for the coal should develop. The quality of the coal will be improved with the completion of the government's washery. Private development of coal in the vicinity of the Eska mine also is in progress.

Several of the developments in the Behring River coal field were closed down recently. Apparently conditions are not considered propitious at this time to construct a branch of the Copper River R.R. into that field. The coal in that region is of a semi-bituminous character. The beds are very contorted and their development depends upon the extension of the railroad.

Coal Men in Central Pennsylvania Combine To Establish Safety-Service Stations

THAT central Pennsylvania will have a safety-service station located in Johnstown which will reach all points in Cambria and surrounding counties is practically assured by reason of the interest manifested by the various coal and industrial concerns, according to John C. Mattern, originator of the plan.

During the past month Mr. Mattern has circulated a petition among coal operators, merchants and other industrial heads with the result that sufficient capital has been pledged to warrant definite action in instituting the scheme. He has received bids on automobile ambulances and on first-aid equipment, such as bandages, splints, stretchers, pulmotors and lungmotors.

It has been decided to establish stations at Altoona, Cresson, Clearfield, Somerset and Hooversville. Mine operators in these places have pledged themselves to lend financial aid in organizing and equipping these stations which would act as auxiliaries to the central offices, which would be located in Johnstown. The organization will be known as the Safety-First Association. Each mine operator, manufacturer or merchant or other person becoming affiliated will contribute a pro-rata share of the initial cost of the equipment for the station. For the money thus expended the members will be protected with adequate first-aid and ambulance service during the fiscal year.

After the initial cost of the station is defrayed the materially reduced maintenance cost will be borne by the members of the association. In addition to being assured of adequate service when such service is needed, those who contract for the service will be furnished first-aid instructions for all employees for whom they may desire it. Mr. Mattern expects the stations to be established by Dec. 1.

IRA C. COCHRAN

Traffic manager American Wholesale Coal Association

The new traffic department of the association began its activities on Sept. 1.

Selling the Coal Industry to the Public*

Clarifying Conceptions and Eliminating Misconceptions of the Voter About Coal Paramount in Averting Restrictive Legislation—Policy of Delay Has Put Industry on Defensive and Added to Ultimate Cost of Educational Campaign

By C. E. Lesher†

BECAUSE the people have no confidence in the coal industry should be no cause for us to despair. Coal is not alone in this respect. Throughout this country—throughout the world—there is a growing discontent with the whole fabric of our social order. Three-quarters of the populace is reaching for new isms—expressions of dissatisfaction with our social institutions. The Plumb plan, the Calder, Frelinghuysen and Kenyon bills, the packer legislation are but the manifestations of this discontent.

We are prone to think and speak of ours as a capitalistic system. It is anything but that; it is an individualistic system. The lowliest coal digger can, has, and we hope always will, have the opportunity to rise to mine owner and operator. Some of you may have started that way. We all know those who did. And we know that some have risen to be thrust back again because they were not of the timber that can carry the load that is the burden of the man at the top.

Because ours is the best and greatest social system in the world, we should assay the spirit of unrest and, where we can reach the cause, correct it, each within his province and industry. There falls on those who can keep clear heads these days the fundamental necessity of protecting the foundations of our institutions, of seeing the country through this winter, and the next few years, if need be, until sanity returns.

No One Will Take Initiative in Deflation

What has all this to do with coal and with selling the coal industry to the people? Just this: The people who burn coal are dissatisfied with the price. The country is thoroughly sold on the idea that we must get down to a steady, normal basis, and proceed as usual, but no one is willing voluntarily to take his medicine. The man whose income is from his money and the man whose income is from his labor alike are seeking some way to justify keeping their levels up while the other fellow takes the decrease. Collectively we are anxious to hurry the process of deflation; we know it must be consummated before we can resume a satisfactory rate of business. The delivered price of household anthracite is about double that of pre-war times, that of bituminous for domestic use is but little lower relatively if the coal comes from union fields, but it is much lower if it comes from non-union mines.

It is price and price only that is at the root of the public's questioning of this industry. The demand is for lower price. The consumer cares little how that price be lowered; he is demanding that it come down. In this we must appreciate that it is the ultimate consumer, the man who cannot pass on the cost of fuel—the householder, in other words—that we are considering. For him coal is an inescapable necessity and to him the cost in dollars of his winter's coal is an item of greater magnitude than for any other thing save food he buys outright.

When we say that we should sell the coal industry to the public we mean that we want to show the people that certain conceptions are misconceptions. For instance, the individual consumer with whom we are concerned, and who burns one in six of the tons of all kinds of coal produced in the country, thinks that the price of coal is controlled in the interests of the coal man. He knows the coal industry only through his contact with the retail dealer. He knows what is a fact in most cities, that there is one price no matter from whom he orders. He harks back to the old days when there was an anthracite trust, just as there were combines in many other industries, and when the railroads were unregulated and indulged in unwarranted practices. Not only the average person but 99 per cent of the people in the country know nothing about the coal industry. The men in it know altogether too little. We all have just begun to find out the activating causes of the big movements of price and distribution—marketing, in other words. The man why buys coal for his home is just as suspicious of the coal industry as you and I are likely to be when we buy a pair of shoes at a price as high now as the highest during the war.

Public Lacks Clear Knowledge of Coal Industry

The public has no conception of the difference between the hard- and soft-coal industries. We know that what we can say about one is the opposite of what can be said about the other. In the domestic sizes, hard coal is non-competitive as compared with all bituminous coal trade. Both are labor-ridden, but one more than the other, for the anthracite miners do not have the check-off. Yet the coal-consuming public in the East that uses hard coal is forming one opinion of the industry and the coal-consuming public in the West, which largely uses soft coal in its homes, is forming its opinions about coal on another set of facts.

So as a first requisite to selling the public the coal industry I should put the necessity of a realignment of our thought as to how the industry should be divided. Instead of the anthracite and the bituminous operators, whose problems of production, distribution and price are widely different, we should look at the problem as divided between the marketing of domestic coal and of industrial coal. We know that big business—the railroads, the packers, the industrials, even the public utility plants—are able in the long run to take care of themselves. They use coal as a raw material, just as they use iron, steel, copper, lumber. They are able to pass on the ultimate consumer in the price of their finished product whatever price they have to pay for coal. Unless they can, they are not successful in their enterprises.

But the householder takes coal as a finished product. Furthermore, to him it is an essential—so essential that there is a powerful sentiment favoring the idea that coal is charged with public use. Perhaps coal for the householder is charged with public use, perhaps in so far as coal is the fuel that keeps the houses of our people warm, it is a public utility. Certainly not beyond that point, any more than other basic commodities, as iron, steel, metals, lumber and oil. But the great difficulty is to separate the two kinds of coal, the raw material and the finished product, in our own minds and in the minds of the public and to get treatment and consideration for each befitting its merits.

How the Public Manifests Dissatisfaction

The disturbing legislative proposals that continually bob up in Congress and in our state Legislatures do not originate with the legislators, except possibly as to form. They are manifestations of the public discontent with the price the voters have to pay for the coal that goes into their cellars. In the past year I have talked with many large industrial executives, and I have yet to find one who did not discuss coal from the standpoint of his own personal coal bill rather than from the standpoint of his business.

Therefore our problem is to get to the voter with the story of coal, the coal he puts in his cellar. Until quite recently there has been no effort to stem the tide of hostile legislation except at the final stage. You remember the harrowing details of the great Dayton flood in 1913; how a vast torrent of water inundated that fair city and caused untold loss of life and property. When the rains that caused that historic flood started to fall there was no way under

*An address delivered at the twenty-fourth annual session of the American Mining Congress, Chicago, Ill., Oct. 18, 1921.

†Editor, *Coal Age*.

heaven to prevent a catastrophe. What have the people in the Miama Valley done since then to prevent a recurrence of such a flood? They have gone back up the valley to the farthest limits and built dams; dams across dry valleys, if you will, but dams that will catch the next flood before it starts. I am not sure but that it is too late to stop a catastrophe in the coal industry, but it is surely worth while trying while the weather is fair. There is no basis of permanent peace for the coal industry in pursuing a policy of waiting for the bogey of restrictive legislation to bob up in our legislative halls and there to strangle it. The place to set the coal industry straight is back home where sentiment originates.

Why Anthracite Producers Are Advertising

There is and can be no basis of fact for the regulation and control of the coal industry in so far as the steam and industrial trade is concerned. Selling coal, both hard and soft, on this market is so highly competitive that there is nothing to be gained by such a course and much to be lost. The danger lies in the other direction. The anthracite producers have more at stake here than the bituminous men, for their business is in domestic coal. Steam coal to them is a troublesome byproduct. It is not surprising, therefore, that they have been the first to go before the individual consumer through the medium of the newspaper with their story. And they started only a few weeks ago. They have reached a point where although a natural monopoly, they are asking the public for the right to live as individuals.

This campaign of the anthracite operators is a tremendous step forward. So far it has been disappointing to me in that the story they are giving to the public falls short of satisfying because it tells but one-third of the story to the reader. Coal at the curb is what interests the voter. The anthracite operators' advertisements carry the story no further than the mine and breaker. The reaction I have noted is, briefly: "Well, I cannot see how it can cost nearly $8 to mine a ton of coal, but even if it does, someone along the line after it leaves the mine is gouging us."

The anthracite operators evidently are proceeding on the assumption that they will tell the story of why it costs so much to mine and prepare their coal and then let the railroads tell why it costs so much to transport it and in turn the retail dealers will advise their customers that they in turn have troubles and high costs. But if the railroads and the retailers fall down on their end, there is no assurance that the voter will be satisfied and let the producers alone. So far the public is getting explanations. The industry is on the defensive.

Take Care of Quality and Service; Ignore Price

The second step in selling the coal industry to the public, therefore, is to get on the offensive. Recognizing that the discontent is on price, the producers of all coal should go before the individual consumers in an extensive campaign not to explain the price but to make them satisfied with the price. You know that it is not price that sells coal. It is quality and service. I thought I had seen the greatest expression of confidence when recently I read a letter to a coal company directing the shipment of coal and saying that the matter of price would be left to the shipper. But yesterday a producer told me that he had customers who merely ordered coal and never even mentioned price. Confidence first, then quality and service, and price will cause no tirade in Congress.

Confidence must start and largely end with the dealer with whom the buyer comes in contact. He is your ambassador. I can see no hope of your educating the retailer in the way that he should go. There is another—surer—way, and that is to educate the people and they will force the retailer into line. Tell the public the whole story from mine to curb, set up standards of merchandising, raise the level of the coal industry, as the public sees it, from dirty back-alley quarters to the dignity of State street. Tell the people what to expect in the way of service and quality and they will demand and get it.

Forget your troubles and concern yourselves with the troubles of the public with coal. Gain confidence and then when you have difficulty the public will listen to you. You can go into the office of the buyer of coal for big business and set him straight but you cannot reach the festering sore of public discontent that way. It will cost a million dollars a year to do what I propose, and it will reach but a small portion of the total trade in point of tonnage, but failure to do it is jeopardizing the entire industry.

Canada's January-June, 1921, Coal Output 14 Per Cent Less Than Last Year

PRODUCTION of coal in Canada during the first six months of 1921 declined to 36 per cent of the amount produced during the corresponding period of 1920 but was 5 per cent in excess of the output for the same period of 1919. With the exception of New Brunswick, none of the provinces showed an output equal to the 1920 record. New Brunswick produced 104 per cent of its 1920 output and the other provinces follow in the order named: Saskatchewan, 94 per cent; British Columbia, 91 per cent; Nova Scotia, 87 per cent; Alberta, 79 per cent.

The following table compiled by the Mining Branch of the Dominion Bureau of Satistics, shows the output, shipments and value of shipments of Canadian coal produced during the first half of this year. A part of the data included in the table has been estimated and the figures are therefore subject to revision. The total value of coal shipped during the period amounted to $32,882,953 and the average selling price reported from the different coal-producing areas ranged from $2.43 a ton for lignite coal in Saskatchewan to $8.53 a ton for anthracite in Alberta. The average for the dominion was $5.75.

PRODUCTION OF COAL IN CANADA, JANUARY TO JUNE, 1921.
(In Net Tons)

Provinces	Output	Shipments	Total Value	Average Value per Ton
Nova Scotia				
Bituminous	2,750,319	2,257,261	$14,536,760	$6.44
New Brunswick				
Bituminous	69,230	65,768	377,508	5.74
Saskatchewan				
Lignite	145,394	136,670	332,108	2.43
Alberta				
Anthracite	46,402	10,357	$88,419	$8.53
Bituminous	1,261,080	1,172,804	5,711,555	4.87
Lignite	1,125,312	979,021	4,405,594	4.50
Total for Alberta	2,432,794	2,162,182	$10,205,568	$4.72
British Columbia				
Bituminous	1,385,323	1,094,405	$7,431,009	$6.79
Total for Canada	6,783,060	5,716,285	$32,882,953	$5.75

Canada as a whole imported 104 per cent of the amount of anthracite coal brought in during the same period in 1920, and 132 per cent of the bituminous. Quebec was the only province which imported less anthracite during the six months than during the corresponding period of 1920, but even then imported 96 per cent of the anthracite coal received in the half-year of 1920, an increase of 12 per cent over the figures for 1919. Manitoba and the Head-of-Lakes imported 169 per cent of the 1920 quota of anthracite; Nova Scotia, 140 per cent; New Brunswick, 128 per cent; Prince Edward Island, 108 per cent and Central Ontario, 107 per cent. In every case these figures show that more anthracite was imported during the past six months than in the corresponding six months in 1919.

Bituminous coal entered at Fort William and Port Arthur and the customs port of Manitoba amounted to 235 per cent of the 1920 figures. Nova Scotia imported 224 per cent as much bituminous as during the same period of the previous year but the entire quantity was only some 1,500 tons. Quebec was more fortunate in the matter of bituminous than in the previous year and during the first six months received 179 per cent of the amount which was brought in during the first six months of 1920. Central Ontario obtained 115 per cent as compared with importations in the first half of 1920.

The output from Canadian mines plus the amount imported and less the quantities exported leaves an amount which may be called the "coal supply." This figure for the six months of 1921 was 14,233,302 tons, as compared with 13,419,021 tons in 1920 and 12,130,794 tons in 1919.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

THAT there is a real basis for the general statement of improved business already issued by the Department of Commerce is revealed by the detailed departmental survey for October, just released. This publication, the third number of "The Survey of Current Business," shows the trend of all important industrial movements at the first of October.

A careful study of the figures presented shows that, considered as a whole, business and industry have moved forward. In the majority of industries production and consumption increased and stocks declined.

Iron and steel showed a steady gain. The building industry indicated improvement. Textile consumption figures continued to advance and exports of raw cotton were substantially larger than a year ago. The unemployment problem, while still far from disposed of, showed a decided change for the better.

Loading of revenue freight on the railroads of the United States totaled 829,722 cars during the week ended Nov. 5, compared with 952,621 cars during the previous week, or a reduction of 122,899, according to reports by the American Railway Association. This was 85,893 cars less than were loaded during the corresponding week in 1920 but 2,998 cars more than were loaded during the corresponding week in 1919. While there was a reduction in the loading of all commodities compared with the week before, the principal decrease was in coal and merchandise and miscellaneous freight, which includes manufactured products. The decrease in traffic was in the main due to the observance of two church holidays during the week.

The subjoined paragraphs summarize the actual movements in each of the important industrial lines.

Building and Construction Soars

Reports on contracts awarded in the 27 northeastern states showed a gain in value of 11½ per cent over August in place of the usual seasonal decline. The total floor space showed a gain of 18.4 per cent. The September total in value is the largest monthly total this year and is the largest September total on record. The most marked feature of the month was the amount of residential construction, which was 39 per cent of the total contracts awarded, and which showed an increase of 165 per cent over last year in value, and 164 per cent over last year in square feet.

Production of Newsprint Declines

Newsprint production declined 3.4 per cent and shipments dropped 5.7 per cent in September. Stocks of newsprint gained 11.5 per cent. Paper other than newsprint gained 10.6 per cent in September and shipments increased 12.8 per cent. Stocks declined 6.1 per cent for the month. Production, consumption and stocks of mechanical wood pulp declined in September. Chemical pulp gained 4 per cent in production and 6.5 per cent in consumption and shipments, while stocks declined 8.1 per cent.

Rubber Consumption Shrinks

Imports of crude rubber increased 4.4 per cent in September and were 23.9 per cent greater than for the same month of 1920. Consumption of crude rubber by tire manufacturers made the seasonal decline amounting to 36.5 per cent in September and tire and tube production dropped correspondingly. Domestic shipments of tires and tubes also showed a seasonal decline of from 25 to 30 per cent. Production is from 60 to 200 per cent above the average of the six months November, 1920, to April, 1921.

Textiles Show Marked Improvement

Statistics of the wool industry reflect improvement; consumption increased in September by 6.9 per cent over August, while the last report of stocks showed a decline.

Cotton consumption increased 4.1 per cent during September. The export movement both of raw cotton and cotton cloth also improved during September, with an increase of 5.9 and 10.5 per cent, respectively, over August, 1921, and of 132.3 and 14.3 per cent over September, 1920. More cotton spindles were active than in August by 2.8 per cent.

In finished cotton goods the activity again increased. Orders, billings and operations increased from 5 to 6 per cent over August, goods in storage were 7.5 per cent larger, while shipments were 13.9 per cent greater. Finishing mills operated 75 per cent of capacity in September, the highest percentage attained in any month this year.

The silk industry reflected a declining demand during September: imports declined by 10.1 per cent, consumption was 4.6 per cent less, while stocks increased by 20.7 per cent. The condition of this industry is greatly improved over last year, with increases in imports of 133.3 per cent, in consumption of 89.1 per cent and a decline in stocks of 55.7 per cent from September, 1920.

Fewer Business Failures Reported

Business failures declined in number by 6 per cent, and in extent of liabilities by 13.8 per cent, from August. New incorporations were 15.7 per cent less than in August. September, however, provided an increase of 48.5 per cent in new capital issues, the largest month since April. Dividend and interest payments in September were 50 per cent greater than both August, 1921, and September, 1920.

Metal Industries on Upturn

The iron and steel industry evidenced a slight improvement in production during September, with pig iron 2.7 per cent greater than in August and steel ingots 1.9 per cent greater. Exports and imports of iron and steel increased, by 24.2 and 35.1 per cent, respectively. An increase in unfilled steel orders marked the turn from a long decline.

Copper production turned upward, with a slight increase in August. An increased foreign demand is noted for this metal, with September exports 44.1 per cent larger than August and, with one exception, the largest monthly shipment since May, 1920.

Zinc production continued to decline, but at a descending ratio; the September decline was only 2 per cent. Stocks declined 6.1 per cent.

To Avert Economic Loss, Coal Producer Must Get $1 Per Ton Above Labor-Material Cost

By Thomas T. Brewster*

THE proposition that essential industry is charged with public interest is acceptable if accompanied with the co-relative proposition that capital is entitled to preservation and a fair return for its use, because it is obvious that, if the natural-resources industries are not maintained in a healthy and self-perpetuating condition, the commonwealth is impaired.

A recent bulletin of the Census Department states the capital invested in the bituminous coal industry to be $1,904,450,123, and, assuming this to be a correct basic premise, pro rated on an annual production of 500,000,000 tons, we have a capitalization of $3.81 per annual ton.

Adhering to the proposition that capital is entitled to preservation and a fair return for its use, and with regard to the fact that dividends are subject to surtaxes, a current annual dividend rate of 8 per cent on capital invested in coal is as low as can be effective in keeping capital in the industry. And, as the corporate income will be subject to an income tax of 15 per cent, in order to derive a current distributable profit of 8 per cent the coal industry must have net earnings equivalent to 9.412 per cent per annum upon the capital invested, or $179,246,845 of annual profit, which, pro rated on 500,000,000 tons, demonstrates an interest charge equivalent to 35.849c. per ton.

Assuming that one-third of the stated invested capital, or $634,816,717, represents investment in reserve and undeveloped coal lands, and the balance, $1,269,633,416, represents investment in coal, development and equipment of operating mines of an average life of, say, twenty years, and therefore must be replaced during that time, and without regard to the fact that the expense of development and equipment of such new mines will be much greater than that of those now exhausting, we are faced with the necessity of providing an annual replacement fund of, say, 5 per cent on the capital invested therein, or say $63,481,670, which, pro rated on 500,000,000 tons, demonstrates 12.69c. as the necessary reserve to replace current depreciation and depletion. This, added to the above demonstrated interest charge, gives 48.539c. as necessary to preserve capital and pay a fair return thereon.

To the above should be added a provision for administration and selling expenses, which may be moderately stated as an average requirement of 25c. per ton, making a total of 73.67c. per ton. This is exclusive of state and local taxation, of losses from bad debts, of any reserve for abnormal catastrophe, and contains nothing to cover indemnity for killed and injured workmen. Hence, if the basic premise be correct, it is obvious that to conduct the coal industry without great ultimate economic loss, the managers of coal properties, as trustees for the capital intrusted to them and as trustees for the public good, must collect at least $1 per ton over and above the current expenses for labor and material.

*President and general manager, Mt. Olive & Staunton Coal Co., St. Louis, Mo.

International Chamber to Meet Next Year In Rome; Will Study Fuel Economy

ANNOUNCEMENT was made Oct. 21 by the American section of the International Chamber of Commerce that the second annual meeting of the International Chamber will be held in Rome, Italy, during the week of Sept. 18, 1922. At the first annual meeting, held last June in London, more than 200 American business men, representing virtually every industry in the United States, attended. The date for the next meeting was decided upon at a meeting of the Council of the International Chamber just held in Paris. The United States was represented at the council meeting by Owen D. Young, vice-president of the General Electric Co.; E. A. Filene, president, William Filene's Sons Co., Boston, and Elliot H. Goodwin, vice-president of the U. S. Chamber of Commerce.

Great interest is being shown by American business men in the formation of committees which are to represent the United States in important matters which will come before the international body. Among the numerous subjects which are to be studied by the international committees are export credits, foreign exchange, reciprocal treatment of foreign banks, bills of exchange, economy of fuel, international bureau of statistics, international commercial arbitration, international protection of industrial prosperity, unification of tariff nomenclature, reciprocal treatment of commercial travelers, reform of the calendar, through freight trains on great international traffic routes, uniformity of ships' tonnage measurement, combined rail and ship bill of lading, uniform ocean bills of lading, uniform interpretation of meaning of trade terms, and uniform passport regulations.

British Power Station Makes Comparative Test of Oil and Coal for Fuel

TESTS of oil for fuel in comparison with coal were conducted in Yorkshire, England, during the recent coal strike, according to reports to the Department of Commerce. Oil was used to generate power at the Leeds Tramways power station at Crown Point, apparatus being specially fitted to the boilers. Much interest was aroused by the test in view of the poor quality and high prices of coal at present available for manufacturing purposes. The financial result was presented to the Tramways committee, showing that oil fuel only was used on eight boilers, seven of which are fitted with the Gretna type burner, two on each boiler, and one fitted with the Johnson type with four burners. Ten tons of oil were used and 11,300 units of electricity generated, giving a consumption of 1.98 lb. at a cost of 1.115d. per unit, against coal consumption of 2.859 lb. at 0.56d. per unit of last year's prices.

The report stated that to make a fair comparison, several deductions should be made from the works cost if oil fuel only is used. It stated that if oil fuel only were used there would be a saving of £3,876 ($18,862 with the dollar at par) now expended for repairs and renewals, stoker gear and firebars, etc.; coal elevator repairs, wages of five firemen, three elevator men and four laborers. The saving in oil for 71,265 units would be £331 ($1,611 at normal exchange), saving in cost of removal of ashes would be £179 ($871) and saving in cost of boat hire £72 ($350). These amounts and in addition seventy-one units of electricity would be saved which are now expended in operation of stoker gear and coal elevator. The comparison of power expenses calculated on the year ended Mar. 31 last showing the difference in cost of oil fuel against coal fuel are given, the cost in coal being given at £48,771 ($237,344 with the dollar at par) and oil £80,957 ($393,977).

Coal is figured at last year's prices and oil at $25.55 at par per long ton. The report says the price of oil would have to be $13.87 per ton to compete with good coal at $8.75 or $14.35 to compete with coal at $9.12 per ton.

A COMPREHENSIVE REPORT on employment in the bituminous coal mining industry will be one of the outgrowths of the recent conference on unemployment, Commerce Secretary Hoover promises. He states, however, that it probably will be six months before this report can be completed. It is understood that the material for this report will be drawn from various sources. The sub-committee which drafted the bituminous coal report covering emergency unemployment has been dissolved but certain members of that committee are expected to contribute to the report on permanent methods of reducing the fluctuations in employment at coal mines.

THE GOVERNMENT PURCHASES COMMITTEE of the National Coal Association was to have met Nov. 23 with the coal section of the government's committee on co-ordination of purchases. The committee which is to co-ordinate coal purchases for the government is now making a survey of all the departments and compiling the data which it will be necessary to have at hand to buy coal in the most intelligent manner.

N.C.A. Executive Committee Meets in Cincinnati; Coal Statistics, Traffic and Freight Rates Discussed

NEARLY a hundred coal operators and mine owners were attracted to Cincinnati for the meeting of the executive committee of the National Coal Association, which was held at the Hotel Gibson on Nov. 18. The meeting, which was the first held since the summer meeting in Chicago, had been postponed because of the illness of J. G. Bradley, of Dundon, W. Va., president of the association.

The trade situation, taking in labor conditions and their relation to general stabilization, was summed up by Mr. Bradley in his opening address. In part he said:

"The first thing on the program is for me to report to the board the activities of the association since we last met in Chicago, July 15. During that time the country has made more or less progress toward stabilization. The coal business today, I think, probably reflects very accurately the progress which the country has made, and while I do not think any one of our particular coal districts is doing any better than any other district, each one is in a very good position to know how far the country has progressed on the road to recovery. It is one of the functions of an organization of this sort, representing an industry as widely distributed through the country as this and doing business originating its product in as many states as we do, to help to restore the country to normal.

"We can do much more collectively when we attempt that than we realize. Only last week Mr. Hoover pointed out what our coal industry can do toward assisting the steamship interests to get back to the position where they could really carry American commerce to the far parts of the world. I want to say that, representing this association, I found Secretary Hoover not only in accurate touch with the conditions in our industry but the conditions in other industries, and that to my mind he has a grasp of the situation as a whole which he is willing to put at our disposal of other industries and which is refreshing and encouraging and gives me optimism as I look to the future.

Convincing Progress Made in Helpfulness

"We have made great progress, I think, in the last six months in convincing official Washington that what we are trying to do is to be really helpful. We have made great progress in the last six months in securing co-operation from other industries, and I do not suppose there is any country in the world where the individual industries are so isolated as they are here in America.

"Now, the facts of the coal industry have been pretty well disseminated among ourselves. We have made a little progress in getting the true facts of the bituminous coal industry to the people generally. There is a better understanding of it in Washington than there was, but we must put these facts to the country as a whole. We must see that our next-door neighbor understands our business, because there is a public influence upon the politician in office which is going to affect us in the end.

"All the other producing industries of this country except ours have made material progress in adjusting their labor situation. Ours has not. That adjustment must come. We know that it is coming and we are doing everything to force it. We must let the public know that that is what we are doing; that there is no collusion between us and the miners to maintain a wage which puts a burden upon every householder. We must make it known that we are back of the railroads in their effort to reduce their labor costs so that they can reduce rates. Some will say that that is no business of this association, but in a time like this we would be cowardly indeed if we did not stand for a reduction of an absurd labor cost in our industry.

"The facts are there. They stare us in the face. They are known to people in the industry and out of the industry, and I say that we should go out from this meeting with the determination that the cost of producing coal must come down for the benefit of the public; the cost of transportation must come down for the benefit of the public, and both must come down for the ultimate adjustment of business and to lay the foundation for the prosperity which is ahead of us. Now, the quicker those readjustments are made, the better. Other industries must stand with us in our time of trial. The people of the United States must be back of us, but we cannot expect them to be back of us if we do not tell them the truth."

The executive committee took cognizance of a matter that was recently dealt with editorially by *Coal Age* when Alfred M. Ogle, of Indianapolis, brought to its attention the question of the continuation of the publication of statistics gathered by the Geological Survey. Mr. Ogle declared that this was a matter in which the general and business public was vitally interested and one of the means by which it could keep informed as to the volume of coal that was being produced and its effect upon market conditions.

The resolution pointed out that funds were not available through the appropriations made by the Department of the Interior for the continuation of the publication of these reports, and as the money could be provided by the Department of Commerce the directors urged President Harding to transfer the work of the Geological Survey to the Department of Commerce so that there would be no stoppage of this valuable source of information.

Improvements in Cost Accounting Approved

T. T. Brewster, as chairman of the committee in charge of the question of cost accounting, reported on the results that were obtained through the meeting of the secretaries and members of his committee held in Cincinnati in September. He said that other than a few minor changes that had been suggested in the forms that had been submitted and which a sub-committee that had been appointed had passed upon, the movement in that direction had general approval.

Chairman Bochus, of the publicity department, reported upon the progress that has been made with the *Coal Review* and the policies that were being followed there.

T. H. Watkins, of the Pennsylvania Coal Corporation, of New York City, submitted a report of a committee of which he is the head, representing the raw materials interests of the country, which met with Secretary Hoover of the Department of Commerce. Mr. Watkins related the difficulties attending the present-day export situation and outlined the suggestions made by the Secretary as a means to help the export business and restore the equilibrium of trade. Secretary Hoover, he said, pointed out the assistance these producers could give in co-operation with ship owners, who were bending every effort toward removing the obstacles to American trade abroad.

J. D. A. Morrow went into the problems of production which have to be faced, while counsel for the association took up the matter of publication of values of coal and, citing authorities, again declared that he could see no reason why this should be illegal.

On Thursday evening a number of traffic men and others met with John Callahan, the traffic expert of the association, and went over the transportation problems that have to be faced. Much interest was evinced in what Mr. Callahan had to say in regard to the possibility of reductions in freight rates.

Hudson Coal Co. Considers Purchase of Coal Under Wilkes-Barre River Common.—C. Dorrance, vice-president and general manager of the Hudson Coal Co., has expressed a desire to look over the proposition of the City of Wilkes-Barre as to the coal under its River Common, the price offered for which by the Lehigh Valley Coal Co. and the Glen Alden Coal Co. being regarded by the city councilmen as ridiculous, was commented on editorially by *Coal Age* recently. A tender similar to that offered the Lehigh and Glen Alden companies will be made to the Hudson company.

Howat, Kansas' Mine-Worker Ex-President, Expelled from Union

IN EXTENSION of the open fight between the insurgent unions in Kansas and Illinois and the United Mine Workers of America, Alexander Howat, for twenty years a figure in the labor controversies of Kansas and president till reduced from that post by the International Executive Committee, was expelled Nov. 17 from the organization. Included in the order of expulsion were all those who have recently been suspended from office.

Howat and August Dorchy, the latter the deposed vice president, are in jail in Columbus, Kan., under sentence for having refused to end strikes in an industry essential to the public on demand of the Industrial Relations Commission of the state. Van A. Bittner, formerly president of District No. 5, Pittsburgh, Pa., has been appointed special representative in Kansas of the International Union. He had declared it his intention to suspend 4,000 mine workers who refused to return to work. The insurgent organization in Kansas now has as its head John Fleming, who has declared that no threats of expulsion will move any of his men to go back to work.

Meanwhile the Illinois mine workers, careless of threatening expulsion, have sent $60,000 worth of provisions into the district, according to William Orr, traveling auditor of the Central States Wholesale Co-operative Association, which has been furnishing supplies and extending credit to the strikers. John H. Walker, president of the Illinois State Federation of Labor, will address the strikers soon to hearten them in their determination to continue to defy the law and the union.

Martial Law in Huerfano County, Colorado

PURSUANT on a reduction of wage at the mines of the company, where the majority of the votes taken had been favorable to a wage decrease, the Colorado Fuel & Iron Co. with the approval of the State Industrial Commission on Nov. 16 declared a reduction of wage of 30 per cent to take effect Nov. 17 at thirteen of its twenty-six mines in Colorado.

Henry Capps, sheriff of Huerfano County, wrote Governor Shoup saying that the situation appeared too dangerous to be left in the hands of the county authorities and recommended the state to assume control. "Threats have been made freely," he wrote, "that company property would be destroyed and that any miner who would attempt to work under the new wage scale would be killed, his home burned and his family subjected to all manner of indignities. It is my conviction that many of these threats will be carried out unless a force far larger than I can command is placed in this county."

In consequence of this communication Governor Shoup decided to do what has almost never been done before in the United States when industrial trouble threatened. He declared martial law in Huerfano County and backed his action by sending in the State Rangers and such units of the National Guard as he deemed necessary. Much of the trouble hitherto arising has come from letting the mischief be done and then sending in the militia to guard the burned buildings, superintend the burial of the killed and maintain the status quo which the violence has created. This is the explanation of the violence which is so common and so deplorable in the sparsely-settled and poorly-policed areas of the country.

Adjutant General Hamrock will take charge of the enforcement of law and order and he has already ruled that he will have no tent colonies such as made so much trouble at Ludlow. This particular colony President McLennon of district No. 15 proposed to re-establish.

The company declares that in Las Animas County 50 per cent of the men are working, and in Huerfano only about 25 per cent. The union says the strike is general. When efforts were made to prevent the sale of arms and ammunition it was found that at Walsenburg the entire stocks of arms had been sold out.

Letters threatening the death of Superintendent E. H. McClary, of the Oakdale Coal Co.'s mine at Oakview, were turned over to the State Rangers, and a detachment under Sergeant Christensen was accordingly sent to guard the mine and the superintendent's house. Adjutant General Hamrock asserts that he can prove that at a miners' meeting Nov. 15 eight men volunteered to kill the Amiti brothers, whose cabin had been bombarded the night before. A letter to McClary read "Get out of the camp tonight or you'll get killed."

C. M. Roehrig Resumes Engineering Work

CLIFFORD M. ROEHRIG has decided to return to his former occupation of consulting and mining engineer, with main offices located in Huntington, W. Va. He will engage in general engineering work pertinent to the coal-mining industry, personally specializing on report and appraisal work.

Mr. Roehrig first entered into engineering work with the Consolidation Coal Co., being later associated with the Davis Coal & Coke Co., Madeira Hill anthracite interests and in 1912 joined the consulting forces of Cunningham & Conner in Huntington. In December, 1917, he was offered and accepted the newly created position of secretary of the Northeast Kentucky Coal Association, remaining in this special work until June, 1920. In the summer of 1920 he became connected with the Tuttle Corporation, an export company of New York City, in the capacity of manager of production.

C. R.R. of N. J. Sells Lehigh & Wilkes-Barre Coal Stock; Consideration, $32,500,000

AFTER a meeting of the directors of the Central Railroad of New Jersey, Thursday, Nov. 17, it was announced that the company had sold its 169,788 shares of Lehigh & Wilkes-Barre coal stock to a syndicate composed of the Burns Brothers interests, minority stockholders of the coal company and some independent coal interests.

The total consideration to be received by the seller is, in round figures, $32,500,000, according to the statement of the company. The dates of payment of the instalments are Dec. 6, 1921; July 1, Aug. 1, Sept. 1 and Oct. 1, 1922. The first payment to be received by the selling company will be about $10,000,000.

On April 26, 1920, the U. S. Supreme Court sustained the government's contention that the Reading Company controlled railroads and coal companies in violation of anti-trust laws, and ordered the dissolution of the combine, which included the Lehigh & Wilkes-Barre Coal Co. A committee composed of Robert W. de Forest, Edward T. Stotesbury and Daniel Willard was appointed on Sept. 29, 1921, to dispose of the Jersey Central's coal stock before Dec. 11.

Will Pay Million Dollars to Enemy Aliens

MORE than $1,000,000 in claims for workmen's compensation, held up by the Alien Property Custodian during the world war, is awaiting claimants and will be paid as soon as President Harding proclaims peace.

Clifford B. Connelley, Commissioner of Labor and Industry of Pennsylvania, has announced that there are 628 cases for which petitions have been filed with the Federal Government and affecting $1,200,000 of Pennsylvania compensation. The cases are those of enemy aliens who left this country at the outbreak of the war or who, having worked or lived here prior to that time, were in enemy countries during the war. Much of the money will go to families of men injured or killed in Pennsylvania, and numerous cases are those of former miners.

Coal-Tax Decision Not Expected This Year

THE test case attacking the constitutionality of the Pennsylvania anthracite coal tax probably will reach argument before the State Supreme Court in Philadelphia in January.

The case will be argued in the Dauphin County Court, Harrisburg, on Nov. 25, and it is expected that a decision will be rendered during December, when an appeal will be carried at once to the appellate court with the request that the case be placed near the head of the argument list.

Railways Make 10 Per Cent Cut in Freight Rates on Agricultural Products; Reductions Sought on Coal

AN IMMEDIATE 10-per cent cut in the freight rates on all agricultural products was announced Nov. 16 following a meeting of the Association of Railway Executive in New York City. The reduction will mean a saving of $55,000,000 annually to shippers. The executives will not wait for any relief in the form of wage reductions, and through a special arrangement with the Interstate Commerce Commission the usual thirty-day requirement for new rate schedules will be waived, making the lower rates effective inside of ten days.

This is the first nation-wide freight rate reduction since the period of Federal control. The reduction is to hold for six months, by which time it is expected the U. S. Railway Labor Board will have adjudicated the wage cut cases so that additional rate reductions may be made.

The lower rates will be effective throughout the country except in the New England district, where an exception was made because of the weakness of many of the carriers.

This, in substance, is the proposal made by the railway executives to the Interstate Commerce Commission Nov. 12 after an all-day conference called by the commission to determine on methods by which freight rates could be reduced. It is an earnest of good faith of the roads' intention to pass to the public any saving they might obtain through wage reductions, according to several executives, and in no way affected their demand for such reductions.

Formal notices have already been posted by the railroads in the Eastern and Western districts calling for conferences to consider a cut in wages, and the lines in the Southeastern and Southwestern territories are expected to make their announcements within a week. The fifty-two Eastern roads made their declaration on Nov. 15. More than 1,650,000 railroad workers in the country will be affected by the wage cuts.

The Interstate Commerce Commission apparently received with favor the program for a 10 per cent reduction in freight rates on agricultural products. The reductions probably will be made effective not later than the middle of December.

The Transcontinental Freight Bureau at Chicago on Saturday, Nov. 19, announced rate reductions on lumber, shingles and lumber products from Pacific Coast points to the East and New England. The Interstate Commerce Commission has been asked to authorize publication of the new tariffs.

Renewed efforts are being made by representatives of the coal-mining industry and of the iron ore producers to obtain a reduction in freight rates on those commodities. Since the railroad executives have announced their intention to apply for permission to reduce by 10 per cent all rates on agricultural products there has been a noticeable falling off in orders placed for coal. A telegraphic survey of the situation made by George H. Cushing, managing director of the American Wholesale Coal Association, leads him to believe that consumers generally will withhold orders as long as possible in the hope that further shipments may come under the reduced rates which they expect to see put into effect in the near future.

In that connection, however, it is pointed out at the Department of Commerce that it is likely to be some time before the railroad officials complete the collection of information they are now gathering of the coal-rate situation. For that reason it may be some weeks before the railroads are in a position to act, and even then considerable time must be lost in the formalities of obtaining the permission of the Interstate Commerce Commission. The statutory requirement is thirty days before the new rates may be put into effect, although the commission has the power to act specially and put them into effect on less than the statutory notice. For these reasons it is pointed out that it is unlikely that reduced rates on coal can be made effective before the middle of January, with the probabilities pointing to even a later date.

Wilkes-Barre Coal Strikers Resume Work

EMPLOYEES of the Pennsylvania Coal Co. and the Hillside Coal & Iron Co. in the Pittston District, who went on strike Monday, Nov. 14, voted to return to work Nov. 21. The action was taken after the pump runners, engineers and firemen had refused to join the walkout. Approximately 12,000 men and boys were affected.

The strike was caused by the refusal of a mine superintendent to promote a blacksmith's helper and by alleged violations of the contract miners' agreement. The operators refused to consider the grievances until the men returned to work.

Idle Freight Cars Gain; First Since April

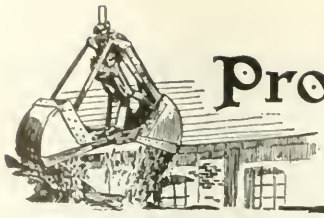
FREIGHT cars idle because of business conditions totaled 277,669 on Nov. 8, compared with 264,700 on Nov. 1, or an increase of 12,969 cars, according to reports by the American Railway Association. The increase in the number of such cars was the first to be reported since the week of April 7 last, when the peak was reached and at which time there were 618,007. Of the total number of cars idle because of business conditions, 93,172 were surplus or serviceable freight cars immediately available for use if business conditions warranted, while the remaining 184,497 were freight cars in need of repairs.

Federal Trade Commission Files Complaint Against Bernice Coal Co.

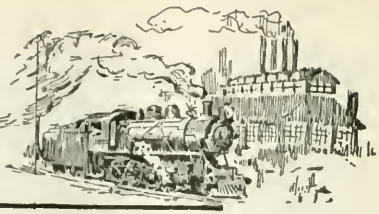
THE Bernice Coal Co., of Chicago, Ill., is named respondent in a formal complaint issued by the Federal Trade Commission. The respondent is charged with passing off goods by adopting the name "Bernice Coal Co." as a trade name, thereby leading purchasers falsely to believe that the respondents sell genuine "Bernice coal," which latter name has been descriptive of a certain coal produced in Pope County, Ark., for so long a time that it has become associated in the minds of consumers and producers with the high-grade coal produced in that county and with no other coal.

Simon Levy, who carried on the business of the Bernice Coal Co., has admitted that confusion has arisen over his adoption of the name Bernice Coal Co., and asserts that he has ceased to sell his coal under the name of Bernice coal. Thirty days are given respondent in which to answer charges in the complaint, after which the case will be tried on its merits.

DURING THE DEBATE in the House of Representatives in which that body agreed to the Senate amendment to the tax revision bill fixing the maximum surtax rate at 50 per cent, Representative Parker, of New Jersey, favored a lower rate, saying men of wealth could earn more by putting their money in undeveloped coal mines. Representative Browne, of Wisconsin, favored the higher rate, charging that coal companies and others "have always made excessive profits." He quoted Senator Kenyon, of Iowa, as saying that one coal company last year paid excess profits taxes of $1,000,000. He referred to the Treasury Department report of 1917, which he said showed that some coal companies were making excess profits and that profits as high as 100 per cent were not uncommon on capital stock. He said the Treasury report showed that of 404 coal companies reported upon, 185 earned profits for their capital stock of 100 to 7,856 per cent for 1917. "In other words," said Mr. Browne, "nearly half of the coal companies paid profits equal to their entire capital stock and one of the mines paid profits equal to 78 times its capitalization."



Production and the Market



Weekly Review

BUYERS and shippers are catching their breath as an aftermath of too much artificial stimulation of demand. During the last thirty days buying increased out of all proportion to requirements when the rail and miners' strikes loomed. As a consequence, reserves are topheavy and much unsold coal "on track" has gone at distress prices to avoid demurrage—November's coal was sold in October.

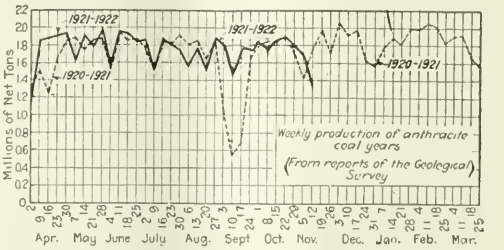
In some regions, especially smokeless, operators have curtailed their running time, preferring to remain idle rather than to dig coal that must be placed on the bargain counter to be moved. More contracts are being revised downward in an attempt to put prices more nearly in line with current quotations, and at the same time keep as much coal as possible out of the spot market. *Coal Age* index of spot bituminous coal prices stands at 88 on Nov. 21, a decline from 91 on Nov. 14, and the most notable break since the end of June.

Buyers Interested Only in Attractive Prices

Buyers everywhere, aware of the flattened markets, refuse to listen to sales talk unless the price is extremely attractive. Stocks of domestic bituminous coal in the Midwest are so heavy and solicitors have so actively combed the territory for orders that many dealers refuse them entrance and have posted signs on their doors to that effect.

The action of the railroads in reducing rates on agricultural products has been hailed as a good omen by coal buyers and sellers alike and one which many are led to believe presages a reduction of coal rates. The commission has been petitioned to reduce freights on coal, and uncertainty as to what action will be taken is disconcerting to the trade. Sober counsel prevails among the operators, who realize the plight of the roads and anticipate no general rate decrease until wages again come down.

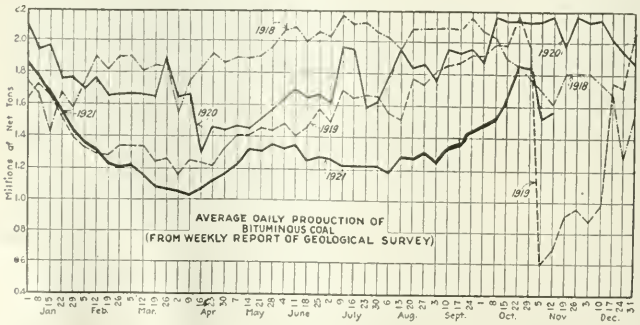
Warm weather also is slowing up the anthracite retail trade, to the detriment of the premiums that independent operators have been receiving. Considerable distribution is now certain to be spread over the winter, as buying by the householder has lagged all season, due to the financial stringency which made small-lot purchasing popular. Steam sizes are again hard to move and much of this coal is going to storage.


Millions of Net Tons
1921-1922
1920-1921
1921-1922
1920-1921
Weekly production of anthracite coal years
(From reports of the Geological Survey)
Apr. May June July Aug. Sept Oct. Nov. Dec. Jan. Feb. Mar.

Furnace demand fails to sustain the recently increased rate of production of beehive coke. The immediate future is less promising. With the addition of 630 ovens to the active list the Frick company now has 2,000 ovens in commission. There is no market activity and prices have softened.

BITUMINOUS

Production of bituminous coal in the second week of November was 8,466,000 tons, a decrease of more than 800,000 from the previous week and 2,500,000 from the last week of October. Election on Nov. 8 and Armistice, Nov. 11, account for the magnitude of the drop, the Geological Survey estimating that the 9,600 cars of coal loaded on Nov. 11 represented but one-third of a working day. Information available the early part of the present week indicates that in the week of Nov. 19 production took a further slump, for which holidays and strikes are not accountable. The market is full of coal but buying seems to have largely ceased until possibly after the Thanksgiving holiday.


Millions of Net Tons
1918
1920
1921
1919
AVERAGE DAILY PRODUCTION OF BITUMINOUS COAL
(FROM WEEKLY REPORT OF GEOLOGICAL SURVEY)
Jan Feb. Mar. Apr May June July Aug. Sept. Oct. Nov Dec.

Estimates of Production

(Net Tons)

BITUMINOUS COAL

Week Ended:	1921	1920
Oct. 29 (*b*)	10,956,000	12,407,000
Nov. 5 (*b*)	9,315,000	11,429,000
Nov. 12 (*a*)	8,466,000	12,132,000
Daily average	1,590,000	2,178,000
Calendar year	355,990,000	472,349,000
Daily average calendar year	1,336,000	1,763,000

ANTHRACITE

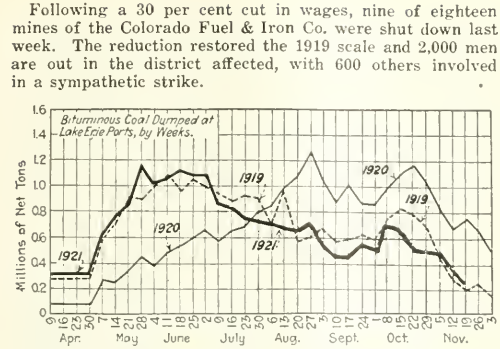
Oct. 29	1,780,000	1,743,000
Nov. 5	1,716,000	1,429,000
Nov. 12 (*a*)	1,373,000	1,770,000
Calendar year (*b*)	77,203,000	76,123,200

COKE

Nov. 5 (*a*)	116,000	385,000
Nov. 12 (*b*)	103,000	389,000
Calendar year	4,715,000	18,462,000

(*a*) Subject to revision. (*b*) Revised from last report.

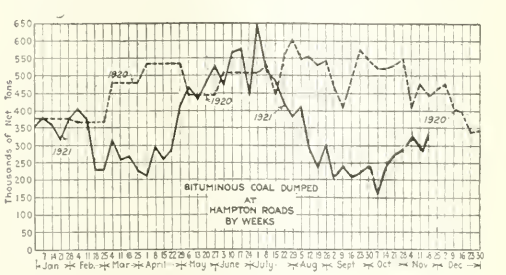
Following a 30 per cent cut in wages, nine of eighteen mines of the Colorado Fuel & Iron Co. were shut down last week. The reduction restored the 1919 scale and 2,000 men are out in the district affected, with 600 others involved in a sympathetic strike.



The all-rail movement of coal to New England declined in the week of Nov. 12; being 3,032 cars of anthracite, a decrease of about 300 from the previous week, and 3,459 cars of bituminous, a decrease of 100 cars. Anthracite was 50 per cent more than a year ago and bituminous about 75 per cent of last year.

The Lake movement is nearly completed. With the docks well stocked there will be more than the usual number of winter cargoes tied up. Lake dumpings were 264,530 net tons during the week ended Nov. 21—253,685 cargo and 10,845 vessel fuel—as compared with 711,844 tons in the corresponding week in 1920. Movement for the season to date is 22,616,536 tons, as compared with 22,452,818 in 1920.

Hampton Roads dumpings in the week ended Nov. 17 were 290,433 gross tons, an increase of nearly 40,000 tons over the previous week. This variation is not unusual and is not due to market causes.


Thousands of Net Tons
1920
1921
BITUMINOUS COAL DUMPED AT HAMPTON ROADS BY WEEKS
Jan Feb. Mar. April May June July Aug. Sept Oct Nov. Dec.

ANTHRACITE

Production of hard coal was affected by local elections and the observance of Armistice Day. The output was

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

	Market Quoted	Oct. 24, 1921	Nov. 7, 1921	Nov. 14, 1921	Nov. 21, 1921†
Low-Volatile, Eastern					
Pocahontas lump	Columbus	$4.70	$4.85	$4.75	*$4.25@$4.50*
Pocahontas mine run	Columbus	2.65	2.55	*2.25@ 2.50*	
Pocahontas screenings	Columbus	1.60	1.75	1.60	**1.50@ 1.85**
Pocahontas lump	Chicago	4.75	4.75	4.75	*4.25@ 4.50*
Pocahontas mine run	Chicago	3.15	3.15	2.85	*2.25@ 3.00*
*Smokeless mine run	Boston	4.90	4.80	4.80	4.75@ 4.90
Clearfield mine run	Boston	1.95	1.95	1.95	*1.60@ 2.00*
Cambria mine run	Boston	2.45	2.45	2.45	*2.10@ 2.60*
Somerset mine run	Boston	1.90	1.90	1.90	*1.50@ 2.00*
Pool 1 (Navy Standard)	New York	3.40	3.20	3.05	2.90@ 3.25
Pool 1 (Navy Standard)	Philadelphia	3.15	3.15	3.15	3.00@ 3.30
Pool 1 (Navy Standard)	Baltimore	2.90	2.65	2.70	2.60@ 2.75
Pool 9 (Super. Low Vol.)	New York	2.60	2.50	2.40	*2.25@ 2.50*
Pool 9 (Super. Low Vol.)	Philadelphia	2.45	2.45	2.45	2.25@ 2.60
Pool 9 (Super. Low Vol.)	Baltimore	2.45	2.35	2.40	2.35@ 2.45
Pool 10 (H. Gr. Low Vol.)	New York	2.30	2.15	2.15	*2.00@ 2.15*
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2.15	2.15	2.15	2.00@ 2.25
Pool 10 (H. Gr. Low Vol.)	Baltimore	2.20	2.10	2.10	2.10
Pool 11 (Low Vol.)	New York	1.85	1.85	1.90	*1.80@ 1.95*
Pool 11 (Low Vol.)	Philadelphia	1.85	1.85	1.85	1.75@ 2.00
Pool 11 (Low Vol.)	Baltimore	2.00	1.85	2.00	2.00
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.80	1.65	1.70	1.60@ 1.75
Pool 54-64 (Gas and St.)	Philadelphia	1.75	1.70	1.70	1.65@ 1.80
Pool 54-64 (Gas and St.)	Baltimore	1.70	1.65	1.65	1.50@ 1.80
Pittsburgh 6c'd gas	Pittsburgh	2.65	2.65	2.65	2.60@ 2.70
Pittsburgh mine run (St.)	Pittsburgh	2.15	2.15	2.15	2.10@ 2.20
Pittsburgh slack (Gas)	Pittsburgh	1.65	1.65	1.55	*1.30@ 1.50*
Kanawha lump	Columbus	3.50	3.25	3.30	*3.00@ 3.50*
Kanawha mine run	Columbus	2.15	2.05	2.00	*1.75@ 2.00*
Kanawha screenings	Columbus	1.15	1.10	1.15	*0.90@ 1.15*
Hocking lump	Columbus	3.30	3.25	3.25	*3.00@ 3.30*
Hocking mine run	Columbus	2.10	2.10	2.10	*1.90@ 2.10*
Hocking screenings	Columbus	1.10	1.10	1.10	*0.90@ 1.05*
Pitts. No. 8 lump	Cleveland	3.25	3.25	3.25	3.00@ 3.25
Pitts. No. 8 mine run	Cleveland	$2.20	$2.15	$2.10	*$2.00@$2.05*
Pitts. No. 8 screenings	Cleveland	1.70	1.60	1.35	*1.30@ 1.35*
Midwest					
Franklin, Ill. lump	Chicago	3.95	3.65	3.65	**3.50@ 4.05**
Franklin, Ill. mine run	Chicago	3.00	2.90	3.15	*2.50@ 3.25*
Franklin, Ill. screenings	Chicago	1.90	1.60	1.50	**1.15@ 2.00**
Central, Ill. lump	Chicago	2.50	3.50	3.50	*3.00@ 3.75*
Central, Ill. mine run	Chicago	2.25	2.50	2.65	*2.00@ 3.00*
Central, Ill. screenings	Chicago	1.75	1.85	1.60	*1.00@ 1.75*
Ind. 4th Vein lump	Chicago	2.95	3.55	3.55	*3.00@ 3.00*
Ind. 4th Vein mine run	Chicago	2.55	2.90	2.80	*2.60@ 2.90*
Ind. 4th Vein screenings	Chicago	1.85	1.75	1.95	*1.50@ 2.00*
Ind. 5th Vein lump	Chicago	2.70	2.70	3.05	*2.60@ 3.00*
Ind. 5th Vein mine run	Chicago	2.50	2.45	2.45	2.25@ 2.60
Ind. 5th Vein screenings	Chicago	1.70	1.75	1.90	*1.25@ 1.75*
Standard lump	St. Louis	3.65	3.35	3.10	3.00@ 3.25
Standard mine run	St. Louis	2.00	1.95	2.05	*1.90@ 2.00*
Standard screenings	St. Louis	0.90	0.75	0.90	**0.85@ 1.00**
West. Ky. lump	Louisville	2.90	3.25	3.00	2.75@ 3.25
West Ky. mine run	Louisville	2.40	2.20	2.00	*1.75@ 2.00*
West Ky. screenings	Louisville	1.25	0.85	0.95	**0.60@ 1.40**
South and Southwest					
Big Seam lump	Birmingham	3.75	3.75	3.75	3.25@ 4.25
Big Seam mine run	Birmingham	2.15	2.15	2.15	*1.75@ 2.25*
Big Seam (washed)	Birmingham	2.30	2.30	2.30	2.15@ 2.40
S. E. Ky. lump	Louisville	3.90	3.75	3.90	*3.50@ 3.75*
S. E. Ky. mine run	Louisville	2.20	2.30	2.10	**2.15@ 2.25**
S. E. Ky. screenings	Louisville	1.35	1.30	1.45	*1.10@ 1.25*
Kansas lump	Kansas City		5.50	5.50	*5.00*
Kansas mine run	Kansas City		4.25	4.25	4.25
Kansas screenings	Kansas City		2.50	2.50	2.50

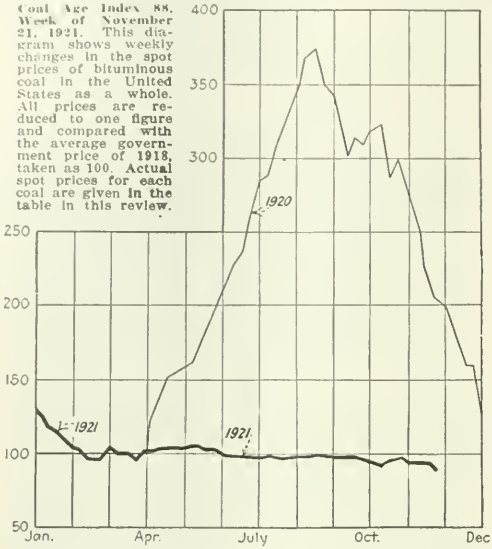
*Gross tons, f.o.b. vessel, Hampton Roads.
†Advance over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	Nov. 7, 1921 Independent	Nov. 7, 1921 Company	Nov. 14, 1921 Independent	Nov. 14, 1921 Company	Nov. 21, 1921† Independent	Nov. 21, 1921† Company
Broken	New York	$2.61		$7.60@$7.75		$7.60@$7.75		$7.60@$7.75
Broken	Philadelphia	2.66	$7.60@$8.20	7.75@ 7.85	$7.60@$8.20	7.75@ 7.85	$7.60@ $8.20	7.75@ 7.85
Broken	Chicago	5.63		13.40*		12.80*		
Egg	New York	2.61	8.00@ 8.25	7.60@ 7.75	8.00@ 8.40	7.60@ 7.75	*8.00@ 8.25*	7.60@ 7.75
Egg	Philadelphia	2.66	8.10@ 8.35	7.75@ 7.85	8.10@ 8.35	7.75@ 7.85	8.10@ 8.35	7.75@ 7.85
Egg	Chicago	5.63	13.40*	12.80*	8.00**	7.15**	8.00**	7.15**
Stove	New York	2.61	8.50@ 9.00	7.90@ 8.10	8.75@ 9.25	7.90@ 8.10	8.75@ 9.25	7.90@ 8.10
Stove	Philadelphia	2.66	8.50@ 8.75	8.00@ 8.35	8.75@ 9.00	8.00@ 8.35	8.75@ 9.00	8.00@ 8.35
Stove	Chicago	5.63	13.40*	12.90*	8.50**	7.40**	8.50**	7.40**
Chestnut	New York	2.61	8.50@ 9.00	7.90@ 8.10	8.75@ 9.25	7.90@ 8.10	8.75@ 9.25	7.90@ 8.10
Chestnut	Philadelphia	2.66	8.25@ 8.75	8.05@ 8.25	8.50@ 9.00	8.05@ 8.25	8.50@ 9.00	8.05@ 8.25
Chestnut	Chicago	5.63	13.40*	12.80*	8.25**	7.40**	8.25**	7.40**
Pea	New York	2.47	5.75@ 6.00	6.05@ 6.45	5.50@ 6.00	6.05@ 6.45	*5.50@ 5.75*	6.05@ 6.45
Pea	Philadelphia	2.38	5.00@ 5.50	6.15@ 6.25	5.00@ 5.50	6.15@ 6.25	5.00@ 5.50	6.15@ 6.25
Pea	Chicago	5.63	12.40*	11.15*	6.60**	5.80**	6.60**	5.80**
Buckwheat No. 1	New York	2.47	2.75@ 3.25	3.50	2.50@ 3.25	3.50	*2.50@ 3.00*	3.50
Buckwheat No. 1	Philadelphia	2.38	3.25@ 3.50	3.50	2.75@ 3.25	3.50	2.75@ 3.25	3.50
Rice	New York	2.47	2.15@ 2.40	2.50	2.00@ 2.40	2.50	*1.75@ 2.25*	2.50
Rice	Philadelphia	2.38	1.75@ 2.25	2.50	1.75@ 2.25	2.50	1.75@ 2.25	2.50
Barley	New York	2.47	1.25@ 1.50	1.50	1.25@ 1.50	1.50	*1.00@ 1.25*	1.50
Barley	Philadelphia	2.38	1.10@ 1.25	1.50	1.10@ 1.25	1.50	**1.00@ 1.50**	1.50
Birdseye	New York	2.47		2.50		2.50		2.50

*Prices and freight rates, net tons; quotations f.o.b. cars, Chicago.
†Advances over previous week shown in **heavy** type, declines in *italics*.
**Net tons, f. o. b. mines.

1,373,000 net tons, as against 1,942,000 tons in the latest full-time week. The decrease did not exceed what might have been expected from experience and does not suggest a slackening demand.


Coal Age Index 88. Week of November 21, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.
400
350
300
250
200
150
100
50
1920
1921
1921
Jan.
Apr.
July
Oct.
Dec

Cumulative production to Nov. 1 is 74,400,000 net tons. This is 1,200,000 tons ahead of 1920 and well in excess of 1919, but is about one and one-half million tons behind 1913 and 1914. October production was 7,580,000 tons, an increase over September of 456,000 tons.

COKE

Beehive coke production decreased slightly during the week ended Nov. 12, when 103,000 net tons were produced, according to the Geological Survey. During the preceding week the output was 116,000 tons. While the Frick company is increasing its production in the Connellsville region more independents are putting out their ovens as the demand grows weaker. Prices have softened and now stand at $3@$3.15 for furnace and $4@$4.50 for foundry. Both byproduct and beehive coke production increased during October.

MONTHLY OUTPUT OF BYPRODUCT AND BEEHIVE COKE IN THE UNITED STATES
(Net Tons)

	Byproduct Coke	Beehive Coke	Total
1917 Monthly average	1,870,000	2,764,000	4,634,000
1918 Monthly average	2,166,000	2,540,000	4,706,000
1919 Monthly average	2,095,000	1,587,000	3,682,000
1920 Monthly average	2,565,000	1,748,000	4,313,000
July, 1921	1,285,000	181,000	1,466,000
August, 1921	1,402,000	248,000	1,650,000
September, 1921	1,423,000	289,000	1,712,000
October, 1921	1,734,000	416,000	2,150,000

(a) Excludes screenings and breeze.

Coal consumption by the coke industry has slumped sharply. The October total was only 49 per cent of the average monthly consumption of coal for coke manufacture in 1920, representing a reduction of 3,000,000 tons per month.

ESTIMATED MONTHLY CONSUMPTION OF COAL FOR MANUFACTURE OF COKE
(Net Tons)

	Consumed in Byproduct Ovens	Consumed in Beehive Ovens	Total Coal Consumed
1917 monthly average	2,625,000	4 354,000	6,979,000
1918 monthly average	3,072,000	4,014,000	7,086,000
1919 monthly average	2,988,000	2,478,000	5,466,000
1920 Monthly average	3,685,000	2,758,000(a)	6,443,000
July, 1921	1,846,000(a)	286,000(a)	2 132,000
August, 1921	2,015,000(a)	391 000(a)	2,406,000
September, 1921	2,044,000(a)	456,000(a)	2,500,000
October, 1921	2,491,000(a)	656,000(a)	3,147,000

(a) Assuming a yield in merchantable coke of 69.6 per cent of the coal charged in byproduct ovens, and 63.4 per cent in beehive ovens.

Foreign Market And Export News

South American Tonnage Increases; Hampton Roads Feels Coastwise Slump; Prices Unchanged.

Export business was somewhat improved last week with thirteen foreign cargoes cleared and a number of other vessels awaiting cargo. Much of this is being sold on the spot market, with some little business still under contract. Only one cargo cleared for Europe, South American ports being the active markets for shippers.

The coastwise business was somewhat duller than usual, with a number of barges and schooners waiting here on the spot to take loads at somewhat lower rates than have obtained during the last few weeks. The generally quoted rate to New England is $1, with some charters being made a little under that figure.

Pools 1 and 2 are monopolizing the business, very little demand being found for the lower grades of coal. Prices remain approximately the same, with some reductions being made on specific cargoes in the case of coal that is on demurrage, or threatened with the expiration of its free time at port.

The Newport News piers of the Chesapeake & Ohio have shown a remarkable decrease in dumpings, doing about one-third the business of the Virginian piers, and less than one-third of the Norfolk & Western dumpings.

The tone of the market is still very dull. The outlook for foreign business is somewhat brighter than at any other time within the last two months, and hope is held out for a certain stimulus in this trade as winter progresses. Exporters are watching closely developments in the British mining industry. The feeling is beginning to prevail that the labor unrest there may again cause trouble and give American shippers a chance to regain markets which have been lost to the British.

United States Coal and Coke Exports and Imports During October

While exports of bituminous coal, in October, increased slightly over those of September, the volume moving to other countries is considerably less than one-third of the figure for October, 1920. Details, which are those of the Department of Commerce, covering exports and imports of coal and coke, in October, 1921, and the revised figures for October, 1920, are as follows:

	Oct., 1920	Oct., 1921
Anthracite	444,391	307,873
Bituminous	4,580,169	1,328,513
Exported to:		
France	852,190	480
Italy	119,106	33,012
Netherlands	221,514	....
Sweden	123,694	....
Switzerland	189,635	....
Canada	1,994,832	1,122,927
Panama	10,741	19,229
Mexico	20,557	10,377
British West Indies	17,109	10,201
Cuba	115,380	43,328
Other West Indies	12,954	7,827
Argentina	268,053	23,936
Brazil	98,240	15,892
Chile	44,998	1,017
Uruguay	33,187	....
Egypt	....	12,385
Other countries	457,979	27,902
Coke	103,353	22,256
IMPORTS		
Anthracite	534	65
Bituminous	90,867	120,390
Imported from:		
United Kingdom	1,637	375
Canada	81,742	99,348
Japan	....	5,589
Australia	7,223	14,771
Other countries	265	307
Coke	2,463	3,110

Hampton Roads Pier Situation

	Week Ended Nov. 10	Week Ended Nov. 17
N. & W. Piers, Lamberts Pt.:		
Cars on hand	2,223	2,033
Tons on hand	124,544	114,431
Tons dumped	111,633	125,818
Tonnage waiting	10,250	14,500
Virginian Ry Piers, Sewalls Pt.:		
Cars on hand	1,533	1,556
Tons on hand	76,650	77,800
Tons dumped	109,991	129,239
Tonnage waiting	10,670	5,198
C. & O. Piers, Newport News:		
Cars on hand	1,191	1,418
Tons on hand	59,850	70 900
Tons dumped	30,337	35,376
Tonnage waiting	2,000	3,500

Reparation Coal Shipments Diminish as Heavy French Stocks Break Previous Records

French Market Shows No Improvement—British Coals Vainly Offered at Attractive Prices—Slight Drop in British Production—Large Tonnage of Unsold Coal on Track

The general situation is unchanged. Demand for industrial coals continues very poor, but the setting in of cold weather has slightly improved the movement of house fuels.

The poor market makes the position at the mines worse from month to month. Stocks at the French and Saar district mines operated for French account have, during the month of September, increased by approximately 750,000 tons.

Stocks at the French mines in August were 1,505,101 tons; in September, 1,700,990 tons; stocks at the Saar mines in August were 45,640 tons, and 608,164 tons in September. Total August stocks were 1,550,741 tons, compared with 2,309,154 tons in September.

These record stocks are due to the lack of orders as total production for September was only about 2,000 tons in excess of August. The very important stocks of coals, mainly British and German, existing at the various French ports, should be added to the above figures.

The September output was practically equivalent to the August production. French mines, including Lorraine, produced 2,402,719 tons in August and 2,432,148 in September. Saar mines produced 930,762 tons in August and 903,698 in September. Total August output was 3,333,481 tons as compared with 3,335,846 in September.

British coals are being vainly offered at heavy discounts. Buyers still cling to the idea that prices can go down still further and only purchase to cover their most urgent requirements. Because of the slow demand, deliveries of German indemnity coals diminish from month to month.

The modification of railway rates, which amounts to about 12 fr. per ton, is materially extending the radius of Saar coals in France. Reductions in the price of metallurgical coke are expected at an early date.

British Quotations Still Dropping

Production in the United Kingdom shows a slight drop. The output during the week ended Nov. 5 was 4,182,000 gross tons, as compared with recent weekly figures of around 4,250,000 tons.

Home and export markets are somewhat improved for the South Wales operators. Heavy tonnage on track still remains, however and colliery owners are still engaged in stiff price competition.

A statement that as a result of the reduced wages many collieries would be enabled to export large steam coals in December at 20s. f.o.b. and still make a profit has drawn a denial from the South Wales Coal Owners' Association. This organization gives details, showing that with wages at a minimum of 13s. other costs would bring the total to 26s. 3d., making no allowances for profit or capital charge.

Alexander V. Dye has been appointed an American commissioner with headquarters at London. He will devote particular attention to the coal situation. He has been instructed to pay a personal visit to the British coal fields and report on his observations. Mr. Dye formerly was with the American International Corporation.

The National Federation of Colliery Enginemen and Boilermen — a body with 22,000 members—has decided by an overwhelming majority to secede from the Miners' Federation of Great Britain, according to advices to the Department of Commerce from the American Consulate General in London. The enginemen in South Wales similarly broke away in August. The action of the enginemen is an outgrowth of the strike. The miners' leaders ordered all "safety men" to cease work. This would have flooded the mines and resulted in great damage and would have prevented the return of thousands of miners when they were ready to resume work. The safety men state that they are ready to enter into a working agreement with the miners' federation, but will not subject themselves to dictation from that body.

Coal Paragraphs from Foreign Lands

GERMANY—Ruhr production during the week ended Nov. 5 was 1,545,000 metric tons, according to a cable to *Coal Age*, as compared with 1,776,000 tons in the preceding week. The output of Ruhr coal for the first nine months of 1921 is estimated at 70,000,000 tons, as against 64,000,000 in 1920 and 87,000,000 in 1913.

ITALY—Best Cardiff steam is quoted 39s. 6d., Genoa, according to a cable to *Coal Age*. The general electrification of the railroads of Italy already is resulting in a saving of coal. From Sept. 1, 1920 to June 30, 1921, electrification took place on five roads totaling 234 kilometers. During the present year a total of 434 kilometers of road will be electrified. The savings in coal resulting from the projects amounted to 160,000 tons at the end of June.

Pier and Bunker Prices, Gross Tons

(Foreign Bunker Quotations by Cable to Coal Age)

PIERS

	Nov. 12	Nov. 19†
Pool 9, New York	$5.65@$5.75	*$5.85@$5.75*
Pool 10, New York	5.45@ 5.50	*5.40@ 5.60*
Pool 9, Philadelphia	5.70@ 5.90	*5.50@ 5.80*
Pool 10, Philadelphia	5.50@ 5.65	5.50@ 5.65
Pool 71, Philadelphia	6.00@ 6.10	*6.00*
Pool 1, Hamp. Rds.	4.75@ 4.90	4.75@ 4.90
Pools 5-6-7 Hamp Rds.	4.25	4.25
Pool 2, Hamp. Rds.	4.50@ 4.75	4.60@ 4.75

BUNKERS

Pool 9, New York	$6.05@$6.15	*$5.95@$6.15*
Pool 10, New York	5.85@ 5.90	*5.80@ 5.90*
Pool 9, Philadelphia	6.00@ 6.20	*6.00*
Pool 10, Philadelphia	5.75@ 6.00	*5.75@ 5.90*
Pool 1, Hamp. Rds.	5.05	5.00@ 5.10
Pool 2, Hamp. Rds.	4.75	4.75@ 4.85
Welsh, Gibraltar	45s. f.o.b.	45s. f.o.b.
Welsh, Rio de Janeiro	65s. f.o.b.	65s. f.o.b.
Welsh, Lisbon	52s. f.o.b.	52s. f.o.b.
Welsh, La Plata	60s. f.o.b.	60s. f.o.b.
Welsh, Marseilles	125 fr.	125 fr. f.o.b.
Belgian, Antwerp	40s.	40s. f.o.b.
Welsh, Genoa	45s. t.i.b.	45s. t.i.b.
Welsh, Madeira	45s. f.a.s.	45s. f.a.s.
Welsh, Teneriffe	45s. f.a.s.	45s. f.a.s.
Welsh, Malta	47s. 6d. f.o.b.	47s. 6d. f.o.b.
Welsh, St. Michaels	60s. t.i.b.	60s. t.i.b.
Welsh, Las Palmas	45s. f.a.s.	45s. f.a.s.
Alexandria	48s. f.o.b.	48s. f.o.b.
Bombay	35 rupees	35 rupees
Capetown	42s. 9d.	42s. 9d.

C.I.F. Prices, American Coal

(In Gross Tons)

	Nov. 12 Low Vol.	Nov. 12 High Vol.	Nov. 19† Low Vol.	Nov. 19† High Vol.
French Atlantic	$8.90	$8.65	$8 90	$8 70
West Italy	8.80	8.60	**8 90**	**8 70**
The Plate	9.60	9.35	*9.00*	*8.80*
Rio Janeiro	9.20	9.00	*9.00*	*8.90*
Havana			7.00	6.75

These quotations are purely nominal and as far as can be learned, no business is being done in these markets.

Current Quotations British Coal f.o.b. Port, Gross Tons

	Nov. 12	Nov. 19†
Cardiff		
Admiralty, Large	26s. 9d.	*26s.@ 26s. 6d.*
Steam, Smalls	19s	18s 6d.@ 19s. 6d.
Newcastle:		
Best Steams	22s. 9d	**23**s.
Best Gas	24s. 3d.	*24s.*
Best Bunkers	23s. 3d.	*23s.@ 23s.*

†Advance over previous week shown in heavy type, declines in *italics*.

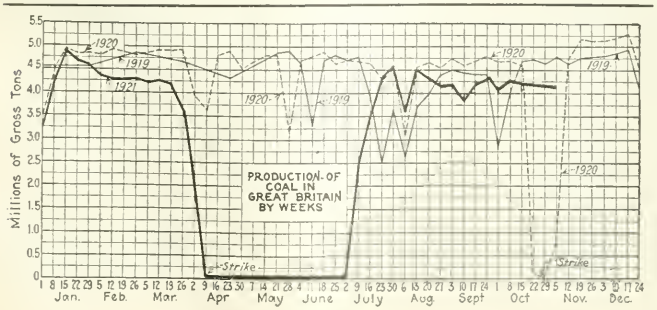
Export Clearances, Week Ended, Nov. 17, 1921

FROM HAMPTON ROADS

	Tons
For Argentina:	
Br. SS. Clifftower	4,710
Nor. SS. Torlak Skogland	4,246
For Atlantic Islands:	
Nor. SS. Bowden, for Kingston	1,038
For Brazil:	
Jap. SS. Kasha Maru, for Porto Ferreira	6,729
Am. SS. Robin Hood, for Rio de Janeiro	8,497
For Canada:	
Russ. SS. Tobolsk, for Bathurst	2,110
For Cuba:	
Am. SS. Levisa, for Banes	1,231
Am. SS. Mariana, for Havana	4,115
Am. Schr. Laurie Annie Barnes, for San Juan	1,088
For Italy:	
Ital. SS. Caprera, for Genoa	9,902
For Peru:	
Br. SS. South America, for Lima	551
Am. SS. West Catanace, for Bremerton	7,819
Nor. SS. Cissy, for St. Thomas	3,324

FROM PHILADELPHIA

For Cuba:	
Nor SS. Gran, for Havana	1,152


Millions of Gross Tons
PRODUCTION OF COAL IN GREAT BRITAIN BY WEEKS
1920
1919
1921
Strike
Jan. Feb. Mar. Apr May June July Aug. Sept Oct Nov. Dec.

Reports From the Market Centers

New England

BOSTON

Buyers Indifferent—Price Cuts More Common—Continued Accumulation at Hampton Roads—Operators Curtail—Anthracite Shows Signs of Slowing up.

Bituminous—Steam demand is more ragged than ever. Factors are bringing to bear such pressure on buyers that the latter show little interest, and in cases where there is inclination to buy the consumer knows that by shopping around he can get a low price. Not only are several middle houses striving to sell on commission what the agencies themselves are trying to dispose of to the same trade, but market cargoes are still going forward.

These conditions do not promote stability and naturally advantage is taken of the generally mixed situation. While there continue to be scattered indications of better business, the improvement is so gradual that no reaction is looked for now until 1922.

Operations on the B. & O. have again sold down to $1.50 per net ton and grades that were listed as Pool 9 have sold as low as $2.25 per gross ton f.o.b. mines. Distress coal from Hampton Roads has sold at materially less than the $6.25 figure on cars Boston which continues the general asking price on Navy acceptable grades. For the most part, however, quotations are on the same level as a week ago.

A prediction like this rests on the fact that several smokeless operators have already bowed themselves out from active competition. One group of New River mines, for instance, has put into effect a rigid curtailment to one day per week, realizing that present net returns do not justify digging coal on costs as they now prevail. We expect to see this policy followed by others, and it will be interesting to watch the record of accumulations at Hampton Roads the next two or three weeks.

While Pocahontas agencies seem to be moving their output in better volume it is pretty certain the aggregate dumpings for November will show something of a falling off from October tonnage. Some of the interests on the N. & W. have reduced prices on contract in order to insure a better flow of coal on old obligations and thereby leave the producer with less dependence on the spot market. In one instance, the net ton price f.o.b. mines has been reduced to $2.25 ($2.52 gross) for Western and line trade.

The outlet for the Pennsylvania districts remains much restricted. The market for trans-shipment at all the ports as well as the very largest share of New England is practically wiped out for the present, due to the commanding position occupied by the smokeless shippers. Even the most favorably known quality grades are being absorbed with difficulty and since there is no prospect of early improvement in this respect it seems certain the Pennsylvania operators are facing a very slow winter season.

Anthracite—While there is still pressure to secure stove and chestnut, there are signs that demand is easing off. Doubtless much of this is due to mild weather, but back of it also is a real shortage of ready money on the part of householders. Reports show not only a general dullness among consuming trade, but also a disposition not to buy until actually needed.

A considerable tonnage that in other years was distributed during the summer and early fall is now to be spread over the winter months. Prolonged cold weather or any newspaper discussion of possible interruption would of course stiffen present inquiry, but in the absence of such considerations, retailers look for only a minimum winter business.

Tidewater—East

NEW YORK

Weather Conditions Affect Market—Anthracite Buying Slow—Bituminous Market Quiet—Considerable Coal at Piers—Operators Consider Contract Making.

Anthracite—There is no briskness in the trade. Weather conditions have been completely the reverse of what is usually expected at this time and the falling off in buying has been increased by the extra purchasing indulged in when there were threats of railroad and other labor troubles.

Stove and chestnut are moving without any difficulty but even in these coals there does not seem to be the desire that prevailed recently. Dealers seem able to procure the major part of their supply from the companies but the independents are not having any trouble to dispose of their product. What they lack in demand for chestnut here is easily overshadowed from the northern section of the state where this size is largely used.

Egg coal is not easily moved and is accumulating rapidly. The average quotation for independent egg mixed with either stove or chestnut was around $8.25 although some sales were reported at $8, or 25c. above company circular.

Steam sizes were plentiful. Many loaded boats were waiting for buyers and quotations for these have about reached the low-water mark. Local retail yards contain all they can hold of these coals and dealers are not anxious to add to their stocks. Buckwheat No. 1 sold slowly, rice and barley moved easier. Quotations for these coals at local piers the middle of the week ranged at around $5.50 for buckwheat, $4.50 for rice and $1 less for barley.

Bituminous—Conditions fail to show any improvement. There is no desire to purchase and industrial plant buyers are apparently keeping out of the market. The nearness of the time when transportation troubles are to be expected seems to have no terrors for consumers as they display no tendency to fill their bins.

Salesmen generally fail to see any bright spots on the horizon, some predicting scarcely any improvement this winter while others, more optimistic, do not expect any big rush of business. The repeated assertions of both government and railroad officials that there is little likelihood of any reduction in coal freight rates at present does not deter some large consumers from clinging to their belief that rates are to be cut and for this reason many buyers are purchasing nothing but their immediate requirements.

There was plenty of coal at the local docks to meet requirements, estimates running as high as 2,000 cars, of which it was believed about one-half was for public utility needs. Demand was slow however, and the free coals were hard to move. Regular customers with contracts were hard pressed to find space for taking their ordinary shipments and in some instances requested operators to withhold shipments, although scarcely more than the normal tonnage was being sent here.

Operators were more inclined to consider contracts than a few weeks back. Inquiries were received by some shippers regarding weekly deliveries up to April 1 and quotations under $3 were reported as having been made on high-grade coals.

PHILADELPHIA

Anthracite Market Feels Unseasonable Weather—More Cutting of Retail Prices—Steam Sizes Slow—Bituminous Fails to Gain—Spot Prices Fairly Firm.

Anthracite—The retail trade is sluggish, with no immediate prospect of betterment. With a spell of abnormally warm weather, buying is almost reduced to the midsummer minimum. There is not the least question that it will take severely cold weather to put any real life into the trade. The number of canceled orders received by the shippers increased this week, although not in sufficient volume to cause curtailment of operation.

Retailers are shading their figures and unless a sudden change in the weather arrives a price war is not at all unlikely. The old-line retailers continue to ask $14.50 for stove and nut, but from this point prices shade down 25c. a time until in a few cases $13.50 has been reached.

Nut is the only size that is really in demand now, and with some shippers stove is actually reported to be somewhat heavy, although not to the same extent as pea and egg. It is becoming a more frequent occurrence to sell pea under the $6 mark, and some of the larger independents have recently made sales at $5.50@$5.75, with some other shippers even 25c. lower.

Yard stocks are almost at capacity, and pea is reaching the point where some dealers are showing a tendency to move this size quietly at drastic cuts. Retail prices of $10.50@$10.75 are quite common to the consumer who tries more than one dealer before placing his order.

Bituminous—The present week has been as dull as any since the first of September. Inquiries have dropped off almost completely. The weather naturally holds back the demand and while all interests are anxious for better trading, they fear the outcome if buying is postponed much longer.

Practically nothing is heard of contract prices these days. The consumer has lost interest in protection of this kind, feeling that having gotten thus far with fuel much under the contract figure, he cannot lose now, with the chances of getting coal right to April 1 at less than $3.25 at the utmost.

In a general way we think it can be said that the iron industry within a radius of 75 miles of the city has improved within the past two weeks. Some of the largest plants which were doubtful of being active until the first of the year, recently expressed more confidence in this regard.

Spot prices have remained stable for the past week for all grades, but with an occasional tendency to a shading off on some ordinary coals, particularly in the case of sales of fair-sized blocks.

BALTIMORE

Demand Poor in All Lines of Soft Coal —Only Best Grades Salable—Hard Coal Business Slowed by Abnormally Warm Weather.

Bituminous—While the talk continues both in coal offices and in general business that the turn of the tide toward better industrial life seems at hand, the coal trade so far fails to reflect this in either a line of ordering or prices. This poor business touches all lines of coal trading.

On bunker business the best grade steam and gas coals are offering at $5@$5.20 a gross ton f.o.b. piers before trimming. On line business the prices on excellent coals running to Pools 9 and 71 are $2.35@$2.60, net f.o.b. mines, and on gas lump around $2.40@$2.50. There is little demand for the poorer grades of coal of any kind.

The general flat nature of the business is shown by the fact that the Western Maryland for the first week in November dropped 52 per cent below the figures for the same week of 1920, or a loss of revenue of $165,917.11. The figures have not been announced for the B. & O. but it is understood that the decrease for the same period was around 45 per cent.

On export business the November tonnage to the 16th inclusive was 22,028 tons cargo in five vessels, and 1,795 tons bunkers in four of these ships.

Anthracite—A high temperature has materially lessened the demand in Baltimore for hard coal. Almost summer heat has prevailed on some days.

A much improved run of coal during the month of October caught up some 20,000 tons of the gap in the normal supply deficiency at this point caused by the unusually poor deliveries over August and September. The result was that the month of November started in with the trade about 100,000 tons short of the usual amount on reserve.

BUFFALO

Bituminous Trade Quiet As Ever—Consumers Are Indifferent — Anthracite Somewhat Scarce—Coke Weaker.

Bituminous—Demand does not improve. Shippers find consumers so completely stocked up that they are quite indifferent to the market and some of them will be for months to come.

This means not only little for the shipper to do, but all sorts of trouble with the coal when it actually arrives. Rejections that lead to disputes and lawsuits are much more common now than they would be if the trade was in a normal condition. The claim that anything sold is of poor quality when prices are down or going down, that would not be made otherwise marks a dishonest purchaser and demoralizes trade.

Consumption is probably increasing, but the improvement in that direction is so slow that it does not begin to offset the overstocks that were the result of strike scares. The consumers do not need to complain, for they got the best of the trade, but the sellers are left fairly high and dry. Quotations are as before, $2.75 for Youghiogheny gas lump, $2.50 for Pittsburgh and No. 8 steam lump, $2.25 for Allegheny Valley and all mine run, and $1.50@$1.75 for slack.

Anthracite—The trade is rather quiet and if there were a little better supply of stove and chestnut, there would be no complaint.

Demand for independent anthracite, which indicates the real state of the market, shows that some consumers are willing to pay a dollar or so premium for it, rather than to wait, when once they get ready to put in their coal.

Lakes — The movement is much lighter than it usually is at this time of the year, not much more than half the summer activity taking place now. Shipments for the week ended Nov. 16 were only 38,300 tons, of which 15,000 cleared for Milwaukee, 10,000 for Duluth, 7,300 for Menominee and 6,000 for Port Arthur. Freight rates are exceedingly dull at 75c. to Menominee, 60c. to Milwaukee, 50c. to Duluth and Port Arthur. Vessels need these up-cargoes, as grain does not pay enough to enable them to go up light for it.

Coke—Jobbers report another slight reduction in the price. The local demand is as light as ever, only now and then an order being obtainable, mostly to provide for some variety of coke that happens to run short. Quotations are $4.15 for 72-hr. Connellsville foundry, $3.15 for 48-hr. furnace and $2.75 for stock.

Northwest

DULUTH

Shipments to Interior Slump — Small Sizes at Concessions — Navigation Nearly Over — Dock Fires Proving Troublesome.

Sales fell off heavily last week with a resumption of mild weather, and dock men feel that the true weakness of the market has been revealed, and that only necessity will compel the consumer to fill his bins. Retailers are unable to relieve the situation by placing orders, because of financial conditions.

Despite the sag in trade prices are holding firm. Screenings, however, are being offered down to $4, and buckwheat, which has been consistently weak this year, has dropped $2.50 from the list price of $8.50. On the docks 5,900,000 tons are stored and only the fact that shipments are on the wane prevents a serious harbor tieup.

Last week twenty-one cargoes arrived, of which three were anthracite, but only four boats are reported on the way. Not more than twelve more cargoes will arrive before the close of navigation, according to an estimate made by local vessel owners. Ore shipments stopped Nov. 16, and little grain is in sight.

This season 1,029 cargoes arrived at the Head-of-the-Lakes, according to figures just released. Of these 842 were bituminous and 187 anthracite. This is far above the number received during 1920, and a plentiful supply is assured until long after the opening of navigation next year.

Some coal is being loaded back from the docks to steamers for winter storage. One boat has already been chartered for this purpose and others will be obtained and loaded in the near future. This has been necessitated by burning coal on the docks, and the need of obtaining more room in which to fight the fires.

MILWAUKEE

Unexpected Anthracite Reduction Causes Flurry in Coal Circles—Soft Coal Market Lifeless — Dock Fires Occur.

Coal men at Milwaukee experienced a surprise on Nov. 15, when an order came from the East reducing anthracite prices 20c.@60c. per ton. Retail prices of hard coal are now as follows: Egg, $15.70; stove, $16.00; chestnut, $15.95; pea, $14 and buckwheat, $11.50. An extra charge of 75c. is added when coal is carried in.

A cut in price at this season of the year is unprecedented, and is attributed to the action of large dealers in the East who are equalizing prices in order to meet competition. It is doubtful whether this will stimulate business, this year at least. Consumers simply won't buy until they get "good and ready," as the saying is.

Bituminous coal markets are lifeless, especially for screenings, which are practically unsalable and yards are well stocked with this grade. Fires continue to bother yard men, who are handicapped in getting at the combustion centers because of the overloaded condition of the docks.

Receipts in the first half of November aggregate 53,331 tons of anthracite, and 165,850 tons of soft coal. During the same period in 1920 the receipts were 47,255, and 216,509 tons, respectively. The season's receipts of anthracite to date total 901,376 tons, soft coal, 2,507,694 tons, against 748,618 tons of the former, and 2,145,926 tons of the latter during the same period in 1920.

MINNEAPOLIS

Buying Confined to Urgent Needs — Wintry Weather Only Slight Bolster—Less Indulgence in Price Cutting.

Those who had fond anticipations that this fall would be a replica of last year, have had some reason to amend their views. While it has not been unduly severe, there has been a little cold weather with several fairly good snowfalls. This makes it appear wintry, even though the temperature is fairly high.

With the snows and near-zero temperatures, there has been a picking up in the demand from all sources. The trend continues to be for buying in smaller quantities. It seems to be assured that for this season buying will be confined to smaller units right along.

It is true that because of the dock

source of supply, there is a stock on hand to serve for the winter. But this must run until well into April on any conditions likely to arise, or it will be compulsory to ship Eastern coal all-rail at a considerable additional freight cost. And it is confidently expected that April 1 will see a complete cessation of production when the miners' wage scale comes up for adjustment.

The bitter discontent which prevails against the high cost of coal is distributed three ways in the minds of buyers. They feel that producers get too long a margin; that miners get too high a wage scale; and that carriers get too much freight charge. They have contended against these by a buying strike which has prevailed for months. There is no ground for any belief that the public is indifferent to the wage scale nor reconciled to the present range of costs. The public is distinctly and emphatically "sore" on the entire state of things, as shown by the support which any suggestion for legislation regulating and controlling coal mining and distributing instantly receives.

The local market remains about as it has been. Buying is confined to urgent needs, which are expanding somewhat as winter draws on. Keen efforts are being made right along to induce cutting of prices on steam coal. There is no point at which buyers seem willing to admit values might stop and be reasonable. Any concession made is merely the ground from which to work for further cuts.

Canada

TORONTO

Dealers Doing Fair Business—Market Overstocked with Bituminous—Distress Prices.

There is practically no change in market conditions. Dealers are doing a fair amount of business but trade is by no means as brisk as is usual at this season. Domestic consumers apparently have no fear of a possible shortage and are not anxious to lay in supplies.

Shipments from the mines are coming forward steadily and stocks on hand are plentiful. Bituminous is little in demand and dealers who ordered extra supplies in view of threatened strikes find the market glutted. Quotations are unchanged since last report. However, there is some coal on track going at distress prices.

Inland West

ST. LOUIS

Business Unusually Quiet — Retail Stocks Topheavy — Coke Prices Increased.

There is so little domestic moving that it does not amount to anything. Dealers' yards are jammed and many of them are paying demurrage. Summer weather prevails after a few days of cold. It will take a couple of weeks of cold weather to get things going right.

Country domestic business is easy for practically the same reason as in St. Louis. A little tonnage is going to Kansas City and Omaha, but it does not move in any volume.

Steam locally is fairly active on account of the mines not working full time and steam sizes have a tendency to show better prices. Outside steam is quiet except in spots, and considerable tonnage is moving to Chicago, especially screenings.

The anthracite market is quiet and nothing is moving in the way of Arkansas or Eastern smokeless. Deliveries of coke are good and there has been an increase locally in the price of 50c. per ton. Byproduct is now $10.50 and gashouse $9.75.

DETROIT

Bituminous Demand Irregular and Shipments Light—Price Variations Are Few—Slow Retail Distribution of Anthracite.

Bituminous—Offerings of steam or domestic sizes are not arousing among buyers the degree of interest that wholesalers and jobbers believe should be developing at this season of the year. Buying demand continues inactive and irregular.

The narrow market for steam coal is believed by some of the jobbers to be due in part, at least, to a more or less general belief that there will be a lowering of railroad freight rates within a few weeks and that by holding back orders, they will be in a position to show a saving on the transportation cost of their coal. The unsatisfactory condition in general business also causes a reduction in coal buying.

Lump from Ohio mines is offered at $3@$3.25, egg is around $2.40, mine run, $1.90, nut and slack, $1.15@$1.25. West Virginia 4-in. splint is $3.25, 2-in. lump, $3.15, egg $2.50, mine run $2, nut and slack $1.25. Pittsburgh No. 8, 1¼-in. is quoted $2.40, ¾-in. $2.35, mine run $2.15 and nut and slack $1.65. Smokeless lump and egg is $2.75, mine run $2.65 and nut and slack $1.60.

Anthracite—Domestic consumers are not purchasing as freely as the retailers had expected. Distribution has been retarded, despite the temporary stimulus of lower temperature. Stocks in retail yards continue large while consumers are restricting their orders to small lots instead of taking the entire season's supply as was the custom of many in previous years.

CLEVELAND

Coal Market Strikes Snag — Prices Weakening as Distress Coal Appears—Pocahontas Grades Lower at Retail.

In the last few days the coal trade has run into what are perhaps the most unfavorable conditions of the year. It is all a result of the threatened railroad and mine strikes which never came. The prospects of suspension of coal supplies caused consumers to cover their requirements for a few weeks. The present reaction is entirely natural in view of the fact that there has been no perceptible movement away from the hand-to-mouth procedure of buying. Industrial plants are content to stand still on the stocks they have, and in some cases these stocks are sufficient to last until the first of the year.

In the meantime the bottom has been dislodged, partially at least, from the market, which is flooded with fuel. As a result, so-called "distress" coal is being sold. This is due largely to transportation considerations.

The railroads are becoming strict about furnishing empties to mines which have unmoved loaded cars on track. Operators are facing the alternative of moving or dumping the coal. Moving it means bringing it to an uninviting market and unless it can be disposed of the operator must pay demurrage. In these circumstances it is only natural that no reasonable offers are being turned down.

Retail dealers are being offered large supplies of Pocahontas and steam coal, with the result that the former has broken 25c.@50c. a ton. The delivered price for shoveled lump is now $10.75 and mine run is selling for $8.50 at some leading yards. Hard coal prices remain unchanged. The fact that there has been a minimum of cool weather so far this season has served to keep the demand light. Another factor is the gas supply which is still fair.

Bituminous coal receipts for the week ended Nov. 12, were the largest of any week during the present year, 2,087 cars were received, divided; 1,551 cars for industries and 536 cars for retail dealers—an increase of 189 cars over the preceding week. Cleveland normally requires about 1,500 cars of soft coal per week, but during much of the year 1921, receipts have averaged under 1,000 cars. The week's receipts will probably be the highest of the year.

COLUMBUS

Market Dullness More Pronounced — Mild Weather Cuts Domestic Trade — Steam Business Practically Nil—Prices Weaken.

Because of rather good stocks, accumulated during the time of threatened railroad strike and also because of continued mild weather, the Ohio coal trade is in the worst shape in weeks. The volume of business is very much reduced and has resulted in some extremely low offerings, especially of mine run and screenings.

Retail stocks in many sections are heavy. This precludes heavy buying until dealers are able to move some coal. Householders are slow in ordering but retail prices are still fairly well maintained.

Hocking lump retails $6@$6.50 and West Virginia splints around $7@$7.50. Pocahontas is $9@$9.50. Anthracite sells around $15. The fact that many dealers refused credit is curtailing business.

Steam business is slow. Many consumers have sufficient reserves for some time, especially in view of reduced consumption. Railroads are not buying to any extent. Public utilities, while pretty well stocked up are the best customers. Public institutions are also buying and bids for 125,000 tons for various state institutions will be opened soon.

Lake trading is still active but the end is in sight. The H. V. docks at Toledo loaded 97,696 tons during the week ended Nov. 12, as compared with 147,646 tons the previous week. The total loaded since the season opened is 4,393,826 tons. During the same week the T. & O. C. docks loaded 27,947 tons, making a total of 1,062,986 tons for the season.

CHICAGO

Market Extremely Depressed—Full Retail Yards Affect Domestic Production—Steam Sizes Impossible to Move.

The coal trade has fallen upon evil times, as the demand is no better today

than it was early in July. This is true both of the steam and domestic coals. Sales agents and operators have flooded the country with letters as well as sales campaigns of one sort or another. In spite of this, however, orders are not forthcoming and the market lags.

Retail dealers refuse to listen to coal salesmen, in fact, some of them have pasted signs on their office doors that calls from coal salesmen are not wanted at this particular time. These dealers report their yards loaded to overflowing and that sales are practically at a standstill. The domestic buyer has just about as much coal in his bins as he wants at the present time, and nothing can be done to stimulate the situation. Retail dealers report as many as fifteen to thirty calls a day from coal salesmen, who are combing the territory for business.

The steam market is slumping even worse than it did lately, and it is our prediction that the end is not yet in sight, unless some unforeseen development takes place in regard to the check-off controversy with the United Mine Workers. Some steam coal is being purchased by the packers, but not enough to make any material difference in the market. As the cement plants, served from the Chicago market, are all down, this has thrown an extra surplus of screenings on the trade, tending to weaken the situation still further.

Eastern coal is coming in smaller volumes than last week and, incidentally, at cheaper prices. The letdown in the coal market, brought about by the settlement of the railroad strike and temporary settlement of the check-off trouble, has affected everybody in the industry. Good Kentucky coals went down to $3.25@$3.50 in the block sizes. New River and Pocahontas prepared sizes were selling as low as $4.25, while mine run of this grade went down to $2.25 and lower.

CINCINNATI

Market Is Topheavy—Distress Coals Depress Prices—Spot Sales at Minimum.

Coal piled up at Portsmouth, Russel and Latonia in anticipation of a shortage through strikes, with "no bill" coal to be faced in quantity in the usual distributing markets dependent on the Cincinnati sales offices has played havoc with the trade. Coupled with this is an overstocked retail market that has been little drawn on for supplies through weather conditions. As a result orders have been at a minimum and with dropping prices the rejections and cancellations have been greater than for some time.

Bituminous coals have borne the brunt in the price scaling. Some Kentucky slack sold down to 60c. although the usual range is 70c.@90c. There was also a drop in lump, low grades of gas coming down to $2.25. Well-known brands from Kentucky are still $3.25@$3.50. Mine run took a drop to $1.40.

Smokeless has not been hit with such severe price cuts. Brokers have been able to get both New River and Pocahontas lump at $4 while the general trade have been paying $4.25@$4.50. Nut has dropped to $3, Mine run $2@$2.50 and slack, due to the lower prepared output is being held a little stronger or at $1.25@$1.50 for the better grades, while the low grades bring $1@$1.10.

There has been no change in retail prices.

South

BIRMINGHAM

Steam Market Extremely Sluggish—Domestic Coals Also Drag—Trade More Quiet Than Ever.

There is no coal buying worth mentioning in this market. Consumers have practically quit making inquiries and agents on the road are having little success in disposing of fuel. Reports indicate that the dullness now prevailing is about as acute as any which has been experienced this year. Industries evidently stored enough coal prior to the threatened strike to carry them for a while and will not again enter the market until compelled to do so.

Sales are extremely light in the spot market as a result. Steam quotations range as follows: Big Seam mine run, $1.50@$2.50, washed $2.15@$2.40; Carbon Hill mine run, $1.75@$2.65, washed $2.50@$2.85; Cahaba mine run, $2.50@$2.75, washed $2.50@$3.25; Black Creek mine run, $2.40@$2.75, washed $2.50@$3.25; Pratt mine run, $2.35@$2.50; Corona mine run $2@$2.50.

Domestic mines are running irregularly as there is very little demand for the output from such operations. Retailers are doing practically nothing toward reducing their stocks and therefore cannot take on additional tonnage from the mines. Weather conditions continue unfavorable to a more active market. Lump and nut quotations are as follows: Big Seam, $3.25@$4.25; Carbon Hill, $3.50@$4.25; Cahaba, $5@$7.25; Black Creek, $5@$6; Corona, $4@$4.50; Montevallo, $7.25.

LOUISVILLE

Market Dies Down—Steam Consumers Using Heavy Stocks — Domestic Sluggish with Warm Weather.

The trade is certainly feeling the light demand for coal. Retailers claim that they are selling a little steam coal, filling contracts, etc., but that deliveries of prepared are very slow. Jobbers pronounce the market as "sick." Much of the dullness is due to stocking in October against the proposed rail strike, which has resulted in consumers being protected for the time being.

That a good deal of coal was stocked in October is shown by a report from the coal traffic department of the L. & N., which broke all previous shipping records in October; when it handled 52,717 loaded coal cars.

Industrial buying is light and there are practically no consumers in the market, while at reduced prices some operators are not especially anxious to run. Following the strike agitations, the buyers and general coal trade is endeavoring to catch its second breath.

Southwest

KANSAS CITY

Warm Weather Delays Domestic Buying—Steam Stocks Topheavy—Prices Decline.

Summer weather and comparatively light operation of steam plants has resulted in practically wiping out the demand for nearly all grades of coal.

Retail dealers have, in anticipation of a heavy demand, stored coal to the limit of their capacity and in some instances rented additional storage room. When the strike threatened steam plants took in extra supplies and are now using these up, which has reduced the demand to almost the vanishing point for steam grades.

There has been some recession in prices, especially Arkansas semi-anthracite lump and Kansas lump and nut. Quotations are as follows: Kansas lump, $5; mine run, $4.25; nut, $4.50; mill, $2.75; slack, $2.50. This is a reduction of 50c. on lump and $1 on nut. Northern Missouri lump is $4.75; mine run, $3.50; washed slack, $3.25; raw slack, $2.50; Arkansas lump is $7@$7.50, mine run, $4.25; slack, $2.25. McAlester Oklahoma lump is $8.50; nut, $7; slack, $2.50.

West

SALT LAKE CITY

Market Quiet—Prices Shaved—Retail Business Hurt by New Trade Names.

Business continues rather quiet. Many consumers are still buying from hand-to-mouth. A cold day sends up the business barometer, but as soon as the weather gets a little warmer orders again drop.

Dealers in their efforts to get the public to store coal for the winter have completely demoralized the coal nomenclature of the state. Not being able to reduce the prices as the consumer demanded they should, they have given high sounding names to cheaper grades of coal and one is no longer able to judge the quality by the name alone, except where straight lump is mentioned, and this is kept in the background a great deal. The result is that the whole coal business is distrusted.

Shipments over Soldier Summit have fallen to 250 cars a day. Recently from 350 to 400 cars daily were moved.

DENVER

Miners Strike in Protest at Wage Slash —Market Is Flat—Consumers Await Lower Prices.

On Nov. 17, a strike in the mines of the Colorado Fuel and Iron Co. over the 30 per cent wage reduction resulted in martial law being proclaimed.

Mild weather has provoked an air of indifference among consumers, who, otherwise, might have purchased in anticipation of the strike. The prospect that a cut in wages might bring price reductions induces many to withhold from buying until they are down to the last few shovelfuls.

The C. F. & I. Company, in order to stimulate domestic sales and to resume operations in its steel mills, disclaims any contract with the union. Miners' officials resent the move as a violation of the agreement advanced by the Government, which does not expire until April 1.

Cancellation of orders in nearby states comes as the result of the fight made by farmers over the price of corn. They have told the large operators that it is cheaper to burn corn at 20c. a bushel than coal at $10 or $15 a ton. The use of corn as fuel in mild weather has resulted in a 40 per cent reduction in operations in some mines.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Check-off Injunction Question Holds Strike Possibilities — No Market Improvement—Consumers Apathetic.

Private advices from Chicago being to the effect that Judge Anderson's injunction against the check-off is likely to be sustained, the probability is that there will be another strike call. If buyers are in the same mood as formerly this will not greatly affect the demand, consumers being quite apathetic and disposed to take their chances rather than to stock up.

Operators are strongly inclined to the opinion that a substantial and satisfactory reduction in the wage scale for the period beginning April 1 will be obtained without much difficulty, putting Pittsburgh coal again on a competitive basis with the non-union fields, which of late have been getting nearly all of the trade. Elimination of the check-off is regarded as a decided advantage.

The market has been practically stagnant, the past week showing no noticeable improvement. Operations are confined almost entirely to the filling of contracts, which are chiefly for gas coal. Even demand for domestic is poor.

Prices are not quotably changed, being practically nominal on steam coal since there is so little buying, but being actual market figures on gas coal, which sells in a limited way: Slack, $1.30@$1.50; mine run, $2.10@$2.20; ¾-in., $2.60@$2.70; domestic 1¼-in., $2.90@$3.25.

UNIONTOWN

Weaker Market Conditions—More Frick Ovens Active—Coal and Coke Quotations Drop.

Weather market conditions and a tonnage slump featured the week in Fayette County. Production dropped as prices weakened and the outlook for the immediate future is less optimistic than for the past two months. With the addition of 630 ovens to the active list last week the H. C. Frick Coke Co. has a total of 2,000 ovens in commission.

Independents have not yet followed the Frick increase in operating units and the estimated coke production for the week will show no gain over last week's loss of some 6,000 tons.

Coke is selling at a range of $3@$3.25, with little demand. Steam coal is being offered as low as $1.35 although sales as high as $1.60 have been reported. Bringing in of some furnaces by the Steel Corporation has not tended to stiffen the market trend as yet.

CONNELLSVILLE

More Ovens Going Out—Demand Not Supporting Recently Increased Production—Foundry Coke Also Slow.

There has been additional blowing out of merchant ovens on account of demand not having developed and it is made plain that some operators were entirely too optimistic in their recent putting in of ovens. Conditions in the iron trade have not improved at all in the past 30 days. There is no inquiry for furnace coke on contract, while the furnaces in blast seem to be well supplied by old arrangements and have no occasion to buy any spot coke.

The market has grown weaker still since the last report, there being considerable accumulations of coke on track. The $3.25 price, minimum three weeks ago and maximum a week ago, is no longer anything but a nominal asking price of some operators who do not expect to sell.

Foundry coke shows lighter demand and operators are beginning to conclude that actual consumption is decreasing. Prices have suffered further from the blowing in of ovens to make furnace coke, as these ovens can offer foundry coke readily through having means of disposing of coke that is culled out in selecting foundry. Last summer there was a time when foundry coke had to be made at plants that had no furnace coke outlet and the price of foundry was naturally high. We quote spot furnace $3@$3.15 against $3.10@$3.25 a week ago and spot foundry $4@$4.50, against $4.25 @$4.75 a week ago. The *Courier* reports production in the week ended Nov. 12, at 27,570 tons by the furnace ovens and 34,960 tons by the merchant ovens, a total of 62,530 tons, a decrease of 4,870 tons.

ANTHRACITE

Strikes Affect Production — Controversies Soon Settled—Domestic Coals Strong.

Production was cut down last week due to the strike at nine of the Pennsylvania Coal Co.'s collieries. This is an outlaw strike and 11,000 men have been idle. The primary cause was the refusal of a colliery superintendent to promote a blacksmith's helper to blacksmith when the former blacksmith quit. The colliery locals have voted to go back to work.

Another strike occurred at the Nootingham colliery of the Lehigh & Wilkes-Barre Co. This strike was caused by the check-out system, which makes the men check out at certain hours. The men claimed that when they finished their work they should be permitted to leave the mine. This trouble has also been settled.

CENTRAL PENNSYLVANIA

Production Slumps—Spot Prices Below Union Production Costs—Wage Reductions Necessary.

Production has dropped back a peg since the spurt which followed the threatened strike, figures for the first week of November showing a total of 14,131 cars as compared with 17,936 cars during the last week of October.

The maximum monthly production for 1921 was in October when 3,893,325 tons were produced. This is approximately 70 per cent of the best production for October, which was in 1919. Mines that have made wage adjustments are still leading in production and, according to figures compiled by the Central Pennsylvania Coal Producers' Association, show a total output of 32,911,227 tons in ten months.

The non-union operator can produce coal for $1 per ton less than it can be mined under the union scale. Prices on the spot market are quoted at a figure below the production cost of the union mines.

Many operations are able to produce coal because of contracts entered into last spring when coal was higher. However, about 80 per cent of these contracts expire with April 1, and it is obvious that these contracts cannot be renewed then so that unless a wage settlement is made, practically all new business will go to the non-union field.

EASTERN OHIO

Production Slumps — Market Is Stagnant—Heavy Stocks Preclude Further Buying—Prices Drop.

A recession from the high point production occurred during the week of Nov. 12. Armistice Day was generally observed and the tonnage mined on that day was small. Total output amounted to 360,000 tons or 70 per cent of five-day capacity, or 58 per cent of six-day capacity. A decrease of over 100,000 tons resulted, when compared with the preceding week.

Cumulative production for the year indicates an aggregate output of 15,663,000 tons as against a potential capacity of 28,460,000 tons. The field has operated at an average of 56 per cent of capacity for the year to date. Association mines worked 52 per cent of possible worktime and produced 60 per cent of rated capacity for the five-day week.

Operators have enjoyed a good run of business during the past few weeks, but as was anticipated as a result of the artificial stimulus supplied by the impending strikes, the trade throughout this section may now be said to have about reached the saturation point. The market is draggy, and the stocking up during the past six weeks by large consumers has developed a deeper stagnation in inquiries and orders than has been experienced in some time.

Notwithstanding rumors that the carriers are suspending further shipments temporarily from some of the mines on account of being overstocked, it is estimated that about 40 per cent of the output went to the railroads for fuel during the week. Recent events have caused a softening of prices, especially on steam coals.

However, the trade is incorrigibly optimistic in the belief that colder weather and further recovery in industry will create a new demand and that the apparent indifference on the part of consumers will disappear when the present stocks of fuel now on hand are slightly reduced.

FAIRMONT AND PANHANDLE

Spot Markets Plugged—Canada Oversupplied—R.R. Coal the Mainstay of Production.

FAIRMONT

Spot markets were as sluggish as ever during the week ended Nov. 12. The bulk of production was for the railroads, although some of it has been

going to Canada. Production was well above the average on the Morgantown and Wheeling Ry. The demand for prepared sizes had dwindled, if anything, and slack coal was almost impossible to move.

Northern Panhandle

But for the large tonnage of railroad fuel loaded the output would have been small indeed. Mines found their best markets in the West, Buffalo and Canada, although heavy Dominion shipments have plugged that market. A fairly large number of inquiries were received but these had little or no bearing on business.

UPPER POTOMAC

Production Still at Minimum—Spot Market Inactive—Non-Union Competition Too Strong.

The second week of November brought no change in operating conditions. Production was at the very minimum, with the majority of mines not in operation at all. Some railroad coal was being produced, but spot prices were so low that there was nothing else to stimulate production. It was almost impossible to move Pools 11 and 18 because of the lower prices prevailing in non-union regions.

Middle Appalachian

HIGH VOLATILE FIELDS

Car Shortage Affects Production — Poorer Markets Prevail — Prices Weaken.

Kanawha

Poor markets and low prices kept down production during the week ended Nov. 12. What little demand there was existed only for good splint lump, and comparatively few mines were able to operate. Slack was being sold as low as 90c. per ton. There was no export demand, most of the coal going to Western markets.

Logan and Thacker

A car shortage was still affecting Logan production, but for which it would have been possible to load in the neighborhood of 60,000 tons a day. Prepared sizes lead the market. However, automobile concerns were taking larger steam tonnages, and there was also a favorable movement of coal down the Ohio River.

Thacker operating conditions were unchanged, the output reaching about 85,000 tons with 110,000 tons charged to "no markets." A car shortage was also noticeable. Spot sales were confined, for the most part, to prepared sizes, and the bulk of the movement was to Western points. Steam coals were still sluggish.

Northeastern Kentucky

Buying slumped after the danger of a mining shutdown ceased to be regarded as imminent, the output as a result not reaching more than 45 per cent of capacity. The steam market was unusually dull, little other than domestic coal being sold. The main movement was to Western markets. Retail buying was only slightly stimulated by colder weather.

Virginia

Although production was maintained at about 60 per cent of capacity, as during preceding weeks, yet only a small proportion of the mines were in operation. Prices were far from satisfactory, $2.25 for mine run and $1.25@$2 for slack, and this had a tendency to discourage production. For the better grades of lump a price of $3.50@$4 could be secured.

LOW-VOLATILE FIELDS

Smokeless Hard Hit by Market Slump —Slack in Distress—Car Shortage Increases—All Prices Weaker.

New River and the Gulf

Low prices prevailing on smokeless coals together with high mining costs resulted in a continuance of idleness at most of the New River mines during the week ended November 12. Even where mines did find it possible to continue they were not operating more than a day or so. There was no Tidewater buying and Inland business was quiet except on prepared coal. Slack was in an extremely poor position and sold lower than $1.

Gulf production also declined, not averaging over 50 per cent. It was possible to mark a little more coal than in the New River field, owing to lower mining costs. The general movement was to the East, although little of the coal handled was for export or bunkerage. Contract orders were largely the mainstay of production.

Pocahontas and Tug River

Although Pocahontas production was still hovering around 300,000 tons a week railroad disability losses were increasing, eclipsing "no markets" by more than 50,000 tons. The slow return of empties from Western points was largely responsible for the heavier car shortage. The only active market was in the West for prepared sizes and the other grades were hard to sell, even at the lower prices which prevailed, especially on slack.

Car shortage also affected Tug River production. Standing orders constituted the bulk of business although a Western demand for domestic supplemented such business. Eastern movement was much slower than usual, there being scarcely any Tidewater demand.

Middle West

WESTERN KENTUCKY

Demand Slow—Screenings Firmer as Result of Lower Domestic Production.

Operators are reporting slow business as continued mild weather and use of natural gas in residence heating is resulting in comparatively light domestic demand. The period of buying in advance of the threatened rail strike, and some buying when a coal strike was in sight, has made the market inactive, as there was a good deal of coal shipped, which became distress coal, where jobbers and operators had to unload to escape demurrage.

Mine run is very slow but prices are being well maintained Prepared figures are also steady. However, light production of domestic is helping to hold the market on screenings, and while some coal is selling 60c.@65c. there have been some fair orders at 95c.@$1.

Retailers in several instances report good stocks on hand, and that they will not be in the market until they reduce these stocks, except for a little steam coal now and then to fill contracts.

SOUTHERN ILLINOIS

Sluggish Market Keeps Mines Idle— No Demand for Domestic or Steam— Railroad Tonnage Light.

The situation in the Carterville field is bad. There has been no letup of domestic business except on shipments to the Northwest. Other sections take only a light tonnage. Very little coal moves through the Thebes gateway to the South, that territory being supplied principally by Alabama and west Kentucky.

The steam market is in bad shape, but has picked up in the last few days, especially screenings. Nut is still heavy and egg and lump seem to be hardest to move. Railroad tonnage shows up somewhat lighter. Mines are getting from one to three days a week, with a mine here and there doing a trifle better.

The situation is not encouraging, a light tonnage causing heavy production cost and the miners claim they are not getting enough working time. Prices still hold at $4.05 for lump and egg, and nut is about $3.50. Screenings are $1.25@1.75, with mine run $2.60@$2.90.

Somewhat similar operating conditions prevail in the Duquoin field and in Jackson County, and prices are about the same. Conditions in the Mt. Olive field are easier. Mines are working about two to three days a week. All sizes are hard to move, but steam is pretty well taken up on contract. The price on lump for St. Louis and Chicago is $3.50, country price, $3.75. A little tonnage is moving Northwest and railroad business is fairly good.

In the Standard field an unusual condition prevails. There are no screenings and the mines are blocked out on account of lump. Nut coal which has been heavy for a long time is now in demand and unobtainable. Mine run business outside of railroads is not moving. Domestic sizes are almost impossible to move at any price.

On account of the reduced working time steam as is available is moving fairly well. The market is set for better prices and nearly all operators are holding coal back anticipating a change for the better.

MIDWEST REVIEW

Steam Market Slumps—Domestic Fails to Strengthen—All Prices Weaker— Production Declines.

All through the Middle West interest in coal has suddenly ceased. Those operators who have their product to sell on the open market, either steam or domestic, are encountering great difficulty in getting any business. The weather has been cold, especially in the Northwest, but in spite of this, conditions remain extremely dull. Those operators who believed the public were holding off in purchasing domestic coal until the beginning of winter, have come to a rude awakening, because winter is here and the seasonal domestic demand is conspicuous by its absence.

Practically every dealer in the Middle West has his bins full of coal, but the bins of his customers are in an entirely different state. On account of the business depression in the small towns and the agricultural depression in rural communities, farmers and business men alike have been buying their coal sparingly. They bought in September or earlier perhaps, enough coal to run for

two months, instead of for the full winter season as normally. Until these small tonnages are consumed throughout the country, the domestic market will remain listless. In case of a prolonged disturbance in the way of a coal strike, the retail trade will find itself in poor shape, so far as domestic coal is concerned. The average dealer has his yard full, but a sharp demand, if it lasted three weeks, would see his bins swept bare. While to all appearances there is plenty of coal in the bins of the public, a prolonged strike would bring to light the fact that there is not any too much coal in this territory.

It is impossible to pick up the daily paper any day without seeing big headlines to the effect that such and such a district in the Middle West is enjoying prosperity with full working time at the factories. This may be true in one or two isolated cases, but the general industrial situation is not particularly bright at the present time, nor are the prospects for the future promising, that is, if judged by the amount of coal consumed.

By keeping an eye on the coal market, one is generally able to get a pretty good idea of the industrial condition of any territory, and the steam coal market in the Middle West is nearer to demoralization today than it has been since the middle of summer. Steam coals are selling $1@$1.50 a ton, the big majority nearer to $1.

The only thing that keeps steam coals from going lower is the fact that the domestic demand is so slow that not much steam coal is being produced. Operators prefer to keep their mines temporarily idle rather than run the risk of producing coal that will have to go to distributing centers on consignment. During the last six weeks, consignment has been found a most unfortunate and unsatisfactory procedure, and several substantial losses have been reported.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Sluggish Market Closes Mines—Stocks Heavy—Dull Period Ahead.

Cancelation of orders and little or no new business is reported. Prospects for any improvement in the near future are not at all encouraging. Even the cold snap has had little or no effect on the demand for domestic and the very dullest period of the year apparently is now being faced.

It seems that large stocks were accumulated by dealers and retailers in anticipation of the strike, and now, with some coal on hand and in the hope of getting a freight reduction soon, they refuse to buy.

It is rumored that some of the larger operations are considering a partial or complete shutdown until Jan. 1.

News Items From Field and Trade

ILLINOIS

The Union Fuel Co., having extensive operations in Illinois, has consolidated its offices to the Reisch Building, Springfield, instead of Chicago, where offices have heretofore been maintained.

The Kickapoo Creek Coal Co., of Peoria, has been incorporated with capital of $65,000 by George H. Wamsley, John Rayner and others.

Drilling for coal will be started in Section 21 of Elk Prairie Township. Large tracts of land have been purchased in this region by the **Nason Coal Co.**

The Montgomery Brothers Coal Co., of Murphysboro, has purchased the mine at that place formerly operated by Robert Harvey and Frank Scholes, and will continue its operation.

The Southern Illinois Coal Co. recently shipped its first car of coal from its new mine in Williamson County near Marion. The company had been working steadily on the plant in order to get it in condition to operate before cold weather hit the industry.

Reports from West Frankfort are to the effect that Mine No. 19 of the **Peabody Coal Co.**, at that place is to be reopened after being idle for nearly a year. The mine will employ about the same number of men it formerly did.

The Franklin Coal & Coke Co., with extensive operations in Franklin and Williamson counties, has announced its intentions of sinking another new mine between Mulkeytown and Royalton. The mine will be located on the new branch of the Illinois Central which is to be put under construction at once, and will be located in the center of an unusually large coal field which has been heretofore untapped. The shaft of the mine will be sunk on what is known as the old Taylor farm and surveys have been made for its location.

KANSAS

The small mine of the **Burgess Coal Co.**, one mile south of Mulberry, was recently wrecked by two explosions. The tipple was destroyed, the mouth of the slope caved in and motors and other electrical machinery ruined.

Some coal men are showing considerable interest in the Illinois-Kansas miners' situation, in which the Illinois organization is defying the international union by supporting the Kansas strikers. Prediction was made that trouble is in the air. It is pointed out that Illinois miners may be prohibited from financing the Kansas strike through a probable suit by the Kansas operators asking that the support be restrained. In that event litigation similar in some respects to the Indianapolis injunction suit may arise.

KENTUCKY

The Harvey Jellico Coal Co., has filed suit against the **Standard Byproducts Co.**, and **Fred E. Hoerter**, for $333.30 alleged due on a promissory note.

Amended articles have been filed by the **Winchester Coal Co.**, increasing its capital stock.

The Harlan-Kelliока Coal Co., has changed its charter, increasing the debt limit from $25,000 to $50,000.

Ross E. Gordon, of Louisville, president of the Gordon Miller Coal & Coke Co., and also of the States Oil Co., has merged the latter corporation with the Ohio Refining Co., Cincinnati, the States properties going in at $286,000 in a new million dollar organization, of which Gordon will be an officer.

Sawyer D. Smith, U. S. District Attorney, has filed suit in U. S. District Court, at Covington, against the **Catrons Creek Coal Co.**, Harlan, stockholders, to recover $21,574 alleged to be due the Government in income and excess profit taxes, it being alleged that the defendants dissolved the company, but filed erroneous reports with the Government of profits.

NEW YORK

The Virginia Iron, Coal and Coke Co. for the twelve months ended Sept. 30, 1921, in a report to the New York Stock Exchange shows net income after charges, depreciation and taxes of $1,048,953. Gross income for the period amounted to $7,624,541.

H. M. Bertolet, general manager of the New River & Pocahontas Consolidated Coal Co. spent a few days in New York recently.

W. H. Evans of Ansted, W. Va., president of the Mill Creek Coal Co. and of the Signal Knob Collieries Co., was a recent visitor in New York.

Among other contributors to the **Downtown Hospital Association, New York City**, were the following members of the coal trade: Berwind-White Coal Mining Co., Consolidation Coal Co., Knickerbocker Fuel Co., Cory Mann George Corporation, Castner, Curran & Bullitt, Inc., Madeira, Hill & Co., Pennsylvania Coal & Coke Co., Clinchfield Coal Corporation, Robert H. Burrowes, New York & Phila. Coal & Coke Co., H. B. W. Haff, Anonymous—Burns Brothers, Emerson & Morgan Mining Corp., Williams & Peters, The C. G. Blake Co., Willard, Sutherland & Co., Inc., W. A. Marshall, Geo. C. Heilner (Heilner & Son), Industrial Coal & Coke Co., Imperial Coal Corporation. E. H. Zimmerman, St. George Coal Co., D. E. Flack & Son, Ledlard & Co., C. W. Williams Fuel Co., Inc., Johnstown Coal & Coke Co., J. W. Lowe Co., D. de L. Hendrickson & Co., R. Henderson & Co., Wyatt Coal Sales Co. (S. D. Forbes), L. B. Burger.

OHIO

Colonel J. Mulvihill, veteran of the wholesale department of the Reliance Coal & Coke Co. of Cincinnati, who has been in poor health for several weeks, is again able to be at his desk.

An echo of the receivership for the **Mohio Coal Co.**, granted last July was heard in the United States District Court in Cincinnati when the **Tildesley Coal Co., E. M. Poston** and **John B. Johnston**, acting as receivers for the Interstate Coal and Dock Co., appeared and asked that proceedings in bankruptcy be instituted against the Mohio company. It was alleged that the respondent company is insolvent and that it committed an act in bankruptcy with the appointment of the receiver.

Passing upon the suit of the **General Coal Co.**, of Huntington, W. Va., the United States Court of Appeals, sitting in Cincinnati, affirmed the decision of the lower courts which handed down a decision that the **Sloat-Darragh Co.**, of Hamilton, Ohio, is indebted to it for $11,000, the award of the jury in the lower court. A question was raised whether the coal was purchased by the Hamilton coal company or a coke concern into whose possession it finally fell. Other cases appealed were: **H. B. Combs** against the **Haley Coal Co.**, in which the decision of the Eastern Kentucky court was affirmed; **The Atlantic Ice and Coal Corporation** vs. **Sam Van** in which an award of $1,000 to Van, made in the Knoxville district court was affirmed.

Another wrangle over a State coal contract has appeared. This time it is a controversy over the purchase of West Virginia nut, pea and slack at $4.20 a ton when the state could have purchased Ohio coal of the same grade at $3.09. **The Southern Ohio Coal Exchange** through W. D. McKinney, its secretary and also a committee from the United Mine Workers called on the State officials to protest. Controversy over the relative value of the two grades of coal is in progress. An organized movement was launched by coal men to have Ohio coal purchased when bids for about 125,000 ton were opened Nov. 21.

Thomas C. Pratt, who has been in the coal stripping and mining business for the Wayne Coal Co. has resigned as general superintendent and is now located in Greensburg, Pa.

A. F. Smith is president and general manager of the recently organized **Pittsburgh-Ohio Coal Co.**, which has acquired 270 acres of coal in Jefferson County. The coal will be mined by stripping.

The Paragon Coal Sales Co., of Cleveland, has been incorporated with a capital of $10,000. Incorporators are John H. Price, W. C. Graves, K. L. Fuller, Charles S. Horner and J. Janda.

The George L. Fairbanks Co. of Cleveland, has been incorporated with a capital of $10,000 to do a retail coal business. The incorporators are W. F. Maurer, T. B Bolton, Norton McGriffen, John T. Wilson and E. R. Dolin.

The Columbus Board of Purchase has been authorized by the city counsel to buy coal on the open market until Dec. 31. This action followed the taking of bids recently, all of which were rejected.

President Roy Cox of the Kanawha Valley Coal Co. of Charleston, was a recent visitor in the Cincinnati market.

The Turkeyfoot Coal Co., has been incorporators are L. A. Brill, J. F. Dougherty mine coal in the Tuscarawas Field. The incorporated with a capital of $150,000 to W. H. Swihart, I. Wiesend and E. L. Smith

The Bernice Coal Co., has been incorporated with a capital of $150,000 to mine and sell coal. The concern has acquired a large acreage in Jefferson County. Incorporators are Fred W. Scott, Charles W. Zeigler, Sadelle Welday, William R. Alban and John J. Scott.

Fred W. Diebel, formerly manager for the Sun Coal Co., in Cincinnati and later a partner in the Eagle-Elkhorn Coal Co., is now affiliated with the sales force of the Producers' Coal Co.

E. A. Spreen and **E. A. Lovejoy** of the Thomas A. Mordue Coal Co., made a recent trip to Coal River mines of the corporation to look over a new tipple and other equipment which has been put in.

The Starr-Jackson Mining Co. has been incorporated with a capital of $30,000. Offices are located at Columbus. The incorporators are Louis H. Helling, E. K. Delaney, Martha Evans, Lolo Goff and James R. Holub. At the same time the Starr Collieries Co. was chartered with a capital of $50,000 to do a jobbing business with the same incorporators and the same office.

G. H. Ewald, of Charleston, president of the Standard Tide and Inland Coal Sales Co., spent a day or so in the Cincinnati market recently.

Harry Yonng, one of the principal figures in the Utilities Coal Co., of Huntington, was a business visitor in the Cincinnati market recently.

Pittsburg interests have purchased the holdings of the **Williams Coal Co.** of Steubenville for $66,000, according to announcement made by George W. Borden, receiver for the company. The mine and mining property is located just beyond the city limits and supplies some of the local demand.

OKLAHOMA

The Hartford Valley Coal Corporation has announced that a new coal field will be opened in Craig County in the near future. The field is located in township 26 and range 19, northwest of Vinita about 12 miles. The corporation has more than 10,000 acres under lease.

PENNSYLVANIA

Robert Baka, formerly with the Valley Camp Coal Co., Cleveland, has become affiliated with the Steel City Gas Coal Co., Pittsburgh.

A State charter has been issued to the **Cucumber Run Coal Co.**, of Confluence. The capital stock is $60,000 and F. M. Parnell, Confluence, is treasurer. The purpose of the corporation is the mining, shipping and preparing of coal for the market. The incorporators are F. M. Parnell, H. F. Parnell and John Van Sickel, all of Confluence.

The Shannopin Coal Co., Pittsburgh, has notified the State department of an increase in its indebtedness from nothing to $4,-800,000. James C. Watson, Pittsburgh, is treasurer.

After having been closed for a month by a strike operations were resumed in full Nov. 1 at the Freeport mines of the **American Manganese Co.** at Dunbar, 300 men returning to work after they were granted the Frick wage scale now generally in effect. The Dunbar mines attracted considerable attention July 1 when their employees accepted a substantial wage reduction rather than not work at all, merchants of the town making a proportionate cut in prices of staples. The employees joined the general strike movement among the independent plant employees and were the last to return to work.

The mine of the **Brothers Valley Coal Co.** was closed recently when miners refused to accept a wage reduction and a walk-out occurred. The operators contended they would have to revert to the scale of 1917 in order to maintain a profit on sales at present prices.

F. E. Gebhard, assistant chief engineer of the Hillman Coal & Coke Co., of Pittsburgh, has transferred his headquarters from Brownsville to the headquarters of the company.

The Ford Collieries Co., operating four large mines near Curtissville, which have been only working about half time, are now working full. The **Inland Collieries Co.**, a subsidiary of the Inland Steel Co., who have been working steadily for several months, closed down recently for an indefinite time.

C. J. Maher, formerly superintendent of the Lambert plant of the H. C. Frick Coke Co., has been made superintendent of the Palmer plant of the same company, up the Monongahela River, where extensive improvements are under way.

The Exeter Machine Works, Inc., of West Pittston, announces the appointment of **W. P. Mackenzie Co.** as exclusive sales agents for the Exeter rotary pump line in the Philadelphia and Baltimore districts. Offices are in the Pennsylvania Building in Philadelphia and in the Equitable Building, Baltimore.

The Mullholand Coal Co., is being organized to operate coal mines. The company is headed by Frederick J. Mullholand and Clyde E. Speer. It is represented by W. J. Askin, Jr., 912 Oliver Building, Pittsburgh.

The Republic Mine of the **Republic Iron & Steel Co.**, at Republic, which has been running about half-time is now running full. The Martin plant is still idle. The Marion Mine of the **West Penn Coal Co.**, which has been idle since last December, is starting up. The Crescent Mine of the **Pittsburgh Coal Co.**, near Brownsville, at the edge of the coke region, which has been working about half time is now running full.

The Pennsylvania Collieries, Consolidated, Inc., has been organized under Delaware laws, with capital of $5,000,000, to operate coal properties in Pennsylvania. The company is represented by the Delaware Registration Trust Co., Wilmington.

UTAH

The Anthracite Coal Company has filed an amendment to its articles reducing the capital from $750,000 to $150,000.

A Utah Judge has ruled that owners of government mineral leases may use any portion of the surface necessary for the mining and removal of coal in spite of surface rights granted by the state. The judge bases his decision on the fact that the state accepted land grants from the national government, subject to the rights of the coal owner to use the surface for all purposes "reasonably incident to the mining and removal of coal." The case arose out of the application of the **Morton Coal Co.** of Salt Lake City which sought the right to build a railroad across a portion of the **Standard Coal Co.'s** tract under a right-of-way given by the Mutual company, which had acquired surface rights from the state.

WASHINGTON, D. C.

E. M. Spieker of the Geological Survey has returned to Washington from work in the coal fields of Wasatch Plateau, Utah.

The case of the **Morrisdale Coal Co.**, vs. the United States under the Lever Law, in which the coal company seeks difference between market and Fuel Administration prices during the war, is on the calendar for argument before the Supreme Court. It is expected several weeks will intervene before a decision is rendered. The case is on appeal from the Court of Claims.

E. A. Holbrook, assistant director of the Bureau of Mines, is making an inspection visit to the experiment stations of the Bureau at which research work on coal is being done.

U. S. Civil Service Examinations will be held for positions of structural engineer, and associate engineers, economist and associate economists, junior structural engineer, junior economist and administrative assistant. Receipt of applications to close Dec. 20, 1921.

Among claims which have been allowed by Government accounting officers and which have been sent to Congress for payment are the following: Under the War Department—**James Coal Co.**, $27; **Meadow Lick Coal Co.**, $51.50; **Birmingham Coke and Byproduct Co.**, $992. Under the Navy Department—**J. B. Weaver & Co.**, $11,458, fuel and transportation; **Henriette Coal Mining Co.**, $388. Claims of $353 of the old Fuel Administration are also included.

The Supreme Court has before it for review the case of the **Santa Fe Pacific R.R. Co.** vs. the Interior Department, involving coal lands. The District of Columbia Court of Appeals refused the railroad company an injunction against the department to restrain it from canceling land selections made by the railroad with the government. The department conceled the land on the ground that it was valuable coal land, and the railroad has appealed the case.

WEST VIRGINIA

It having been necessary to appoint a receiver to administer the affairs of the **American Gas Coal Co.** of Morgantown, J. M. G. Brown, E. D. Tumlin and James R. Moreland, of Morgantown, were designated to act in that capacity. When the receivers were appointed they were authorized either to operate or to sell the property to the best advantage for the benefit of the creditors. At the first meeting of the three receivers a decision was reached to make an effort to operate the mines, it being hoped to put the company on a paying basis with a view to ultimately meeting the claims of the various creditors. It is hoped that the Knob Mine of the company will soon be ready to operate. J. M. G. Brown, one of the receivers appointed, was interested in the mine before it was taken over by the American company. This particular mine, however, has been in idleness almost since it was purchased by them.

President Everett Dremnen of the West Virginia Coal and Coke Co. with headquarters at Elkins, was a visitor in the Fairmont region recently.

E. H. Arnold, of Elkins, president of the Randolph Colliery Co., was at Kansas City during the early part of November attending the American Legion convention.

Capitalized at $200,000, the **Nagola Coal Co.**, has been organized with headquarters in Huntington. Among those actively identified with the new concern are: A. D. Cronin, Detroit; G. R. Williams, Thomas E. Jeffries, L. T. Pope, E. L. Douglas, all of Huntington.

In a party of coal men who enjoyed a hunting trip in the mountains of West Virginia recently were **Quin Morton**, of the Wood-Morton Fuel Co., **G. H. Caperton**, president of the Smokeless Coal Association, and also of the New River Coal Co.; **Harry M. Hall**, of the Ft. Dearborn Coal Co., and others.

R. B. Isner, general manager of sales of the Boone County Coal Corporation, with headquarters at Sharples, has resigned to accept a similar post with the Old Dominion Coal Corporation in Charleston.

C. L. Menager, cashier of the Smokeless Fuel Co., of Charleston, was a visitor in Eastern cities recently.

F. C. Colcord, general manager in charge of the operations of the Colcord Coal Co., with offices at Montcoal, was a recent Charleston visitor.

J. K. Dering, president of the J. K. Dering Coal Co. of Chicago was a recent visitor in Charleston.

The Pine Bluff Coal Co., operating on a branch of the Western Maryland in the Fairmont region, has resumed operations. The company has found it possible, however, to work on a part time basis only.

With 300 acres of coal land near Mannington, in Fairmont County available for development, the **D. T. & S. Coal Co.** is putting the finishing touches on a new plant at Salt Lick. About all that is holding back the completion of the plant and the loading of coal is the construction of a spur from the B. & O.

T. L. Lewis, secretary of the New River Coal Association, has returned from a trip into northern West Virginia.

George E. Wolfe, secretary of the Winding Gulf Coal Operators' Association, was a Charleston visitor recently.

President L. B. Ramsey of the Logan Fuel Company, which has its main office in Charleston was in the Logan County field recently.

A concern recently organized in the Monongalia field was the **Fielder Coal and Coke Co.**, which, with its main office in Morgantown, has a capital stock of $25,000. Actively identified with the new company are: H. Fielder and Harold G. Hodges, of Morgantown; Clarence H. Fielder, of Parkersburg; James H. Henshaw of Fairmont; Robert W. Henshaw of Uniontown.

The capital stock has been increased from $500,000 to $1,000,000 by the **Cumberland Mountain Coal Co.** of Charleston.

H. H. Morris, of Huntington, president of the West Virginia Standard Coal Co. and other West Virginia concerns has also been elected president of the Mary Elizabeth Coal Co.

D. J. Henderschott is now associated with the Interstate Coal and Dock Co. Mr. Henderschott was formerly manager of the Manhasset Fuel Co., Charleston.

The Consolidation Coal Co. has acquired coal properties of the **Monongahela Power and Railroad Co.**, the consideration being $3,000,000.

The Albert Mine of the **Greater Fairmont Investment Co.** has been sold to Cumberland, Md., people represented by Basil Lucas, of Shinnston. This plant is located on the branch line of the Western Maryland in the Fairmont field.

ONTARIO

A meeting of the shareholders of the **Nukol Fuel Co.** was held in Toronto recently, and after hearing a report showing a substantial loss on operations, a committee of five members was appointed to look into the situation and to report later. The financial statement showed that up to January, 1921, the company had sustained a loss of upward of $125,000 and for the nine months ended Sept. 30, losses were $72,069.81.

C. W. Moss, of Buffalo, president of the Weaver Coal Co. of that city, and also president of the Penn-Canadian Fuel Co., Toronto, spent some days in Toronto recently. Another visitor from the Weaver Coal Co. was **W. D. Smith.**

Traffic News

The complaint of the **Morton Salt Co.**, relating to rates on coal from West Virginia mines to Lake ports for trans-shipment by vessel beyond has been dismissed.

At complainant's request, the commission has dismissed the case brought by the **Hercules Motor Mfg. Co.**, relating to rates on coke from Detroit, to Canton, Ohio.

On advice that the proceedings have been satisfied, the commission has dismissed the complaints of the **D. L. & W. R.R.**, relating to rates on anthracite from Avondale Mine to Woodward Breaker during Federal control, and the complaint of the **Consolidated Coal Co.**, of St. Louis.

The Coal, Coke & Iron Ore Committee, Central Freight Association, Pittsburgh, Pa., has docketed the subject of switching charge at Cleveland on bituminous or cannal coal or briquets, carloads, from the Erie R.R. when for delivery on private sidings of the B. O. and W. & L. E. Present rate 35c. per ton, proposed rate 20c. per ton. Absorption of Erie R.R. switching charge at Cleveland on the above coals from B. & O. and W. & L. E. for delivery on private sidings of the Erie. Present absorption 35c., proposed absorption 20c., out of switching rate of 35c. published by the Erie. Disposition will be made not later than Nov. 28.

The Perry County Coal Corporation in a brief filed with the I. C. C. in its case contends that the rates on coal from its mines to points in the St. Louis switching district are unreasonable, and asks that the rates in effect prior to the last general increase be restored. **The Illinois Coal Traffic Bureau** has asked the commission to make similar reductions from all Illinois mines if the request of the Perry County Coal Corporation is granted. The defendant railroads ask that the complaint be dismissed, on the ground that the proposed action would disturb relationships that have long existed.

Coal and coke rates to steel plants in the Buffalo, N. Y., territory were considered at a recent conference between steel producers of the Buffalo and Pittsburgh districts with the I. C. C. Request for lower rates on coal and coke to steel plants in Buffalo were based on the ground that unequal production costs have arisen from the commission's action in lowering rail rates on ore from the Lakes, as Northern plants do not receive the benefit of this reduction as they receive ore by water.

In the complaint of the **Loognotee Fire Clay Products Co.**, an I. C. C. examiner recommends that the rate on bituminous coal from Wheatland, Ind., to Vincennes, Ind., and from Montgomery, Ind., to Loogootee, Ind., during Federal control was not unreasonable but that the rate from Cannellburg, Ind., to Loogootee was unreasonable.

In the complaint of the **Graselli Chemical Co.**, an examiner recommends that rates on bituminous coal from mines in the Clinton, Ind. district to complainant's plant near Terre Haute, Ind., during Federal control were not unreasonable.

The I. C. C. has denied an application of the **Peerless Coal Co.** of Illinois for rehearing of its case in which the commission recently decided that rates on coal from various points on the Springfield Terminal Ry. to interstate destinations were not unreasonable. The rehearing was requested on the ground that the Springfield group rates are not lower than other group rates in Ohio, Pennsylvania and Indiana and not lower than other group rates in Illinois, but are higher.

The Northwestern Traffic and Service Bureau of Minneapolis complains against unreasonable rates on soft coal from Alger, Wyo., to Grand Junction, Ia.

M. L. Butcher, of Kansas City, Kan., alleges unreasonable rates on coal from various points in Missouri and Kansas to Argentine (Kansas City), Kan.

The commission has set aside its former decision in the complaint of the **West Kentucky Coal Bureau** in so far as it relates to rates on coal from western Kentucky to Festus and Crystal City, Mo., and will give a rehearing on these rates.

Rep. Sanders of Indiana has had published as a House document a statement of **Interstate Commerce Commissioner Lewis** on rate reductions since August, 1920, in which coal rates are reviewed. The commissioner says that the reduction of 28c. a ton on coal from Pennsylvania, West Virginia, Ohio, Kentucky and other Eastern producing points to ports on Lake Erie when destined for movement by Lake to Wisconsin, Minnesota, the Dakotas, and the Northwest will affect about ten million tons of coal. The purpose of the reduction is said to be to avoid a coal shortage in the Northwest this winter and to readjust the rates on Eastern coal as compared with Illinois and Indiana coal in the Northwest. The reduction was extended to Lake cargo coal to ports on Lake Erie when destined to ports on Lakes Michigan or Huron regardless of whether the coal was for local consumption at those ports or destined to points beyond, and will affect an additional three million tons. Other coal rate reductions mentioned are: From Illinois mines to Michigan points. From Canon City District, Col., to Colorado, Kansas and Nebraska destinations. From Montana to 150 destinations in Montana. Nut coal from points in New Mexico to points in Colorado.

Members of the Indiana Public Service Commission were in Washington recently, to assist in the movement to have the Interstate Commerce Commission help the **Pere Marquette R.R. Co.** finance its plan to buy the Indiana coal railway division, of the Chicago & Eastern Illinois R.R. The C. & E. I. has petitioned the I. C. C. for permission to abandon the line. The I. C. C. had the Indiana commission conduct the hearing on the petition and to make recommendations. It has been proposed that the federal contingent fund at the disposal of the I. C. C. for the help of struggling railroads be used to help the P. M. acquire the division, which then would be kept in operation.

The I. C. C. has denied the application of the **Seaboard Byproduct Coke Co.**, to reopen its case regarding movement of coke from Seaboard, N. J., to New England territory.

The Interstate Commerce Commission has granted the application of the **Chicago, Milwaukee and St. Paul R.R.** to acquire control by purchase of the capital stock of the **Chicago, Terre Haute and Southwestern.** The latter is a coal-carrying road and will be valuable for the St. Paul in tapping the coal fields in the Terre Haute district.

Association Activities

Southern Ohio Coal Exchange

At a postponed meeting of the Southern Ohio Coal Exchange held early in November, the question of the Anderson injunction was discussed at length, but as in the previous meeting, no action was taken. Because of the stay in execution given by the Federal Court of Appeals at Chicago, the question is not directly before the association. Ohio operators are watching the proceedings at Chicago with a great deal of interest as much hinges on the decision of the higher court.

Northern West Virginia Coal Operators' Association

Officials of the association took an active and prominent part in the presentation of evidence before the Interstate Commerce Commission at a hearing held in Atlantic City, N. J., in connection with the Ohio Rate Case, West Virginia operators being opposed to any widening of the freight differential which they claim would be discriminatory and which would operate to bar West Virginia coal from Ohio and other Middle Western states.

The association was represented by A. Lisle White of Clarksburg, its president; George S. Brackett, of Fairmont, secretary of the association; W. L. Andrews of Baltimore, vice president of the Consolidation Coal Co.; C. H. Jenkins, of the Hutchinson Coal Co.; W. O. Caldwell, chief clerk of the association. The representatives of the association, in conjunction with the representatives of other associations in West Virginia, aided in the presentation of evidence in rebuttal against that presented by the Ohio operators who were cross-examined. E. J. McVann, secretary of the Smokeless Coal Association of West Virginia, has the case in charge for the West Virginia operators.

Virginia Coal Operators' Association

As a result of a recent meeting held by the association at Norton, Va., a decision was reached to employ a full-time traffic manager. This field is growing in importance and traffic problems are coming more and more to the front.

One of the association activities at the present time has been a two weeks' vocational training school for mine foremen. This school was conducted under the supervision of Raymond V. Long, supervisor of industrial education of the Virginia State Board of Education and J. C. Wright, chief for industrial education of the Federal Board. Association members are giving attention to first aid work and there are first aid teams at nearly every plant of any consequence in the field.

Smokeless Association of West Virginia

In addition to a special meeting of the association, held at New York, a call was issued for a general meeting to be held in November. A report was submitted by the committee having in charge the question of freight reductions on coal for export, this committee reporting that it had been unable to make any headway in its consultations with railway officials. After hearing the reports mentioned, members abandoned any hope of obtaining any relief in the near future. The association left the question upon which reports had been submitted in the hands of the committee before attempting to take any definite action.

Coming Meetings

The American Institute of Consulting Engineers, Inc., will hold its annual meeting Jan. 16, 1922, at the Engineers' Club, 32 West 40th St., New York City. Secretary, F. A. Molitor, 35 Nassau St., New York City.

West Virginia Coal Mining Institute will hold its next meeting Dec. 6 and 7 at either Charleston or Huntington, W. Va. Secretary, R. E. Sherwood, Charleston, W. Va.

New England Wholesale Coal Association will hold its annual meeting Jan. 10, 1922, at Boston, Mass. Secretary, R. S. Townsend, 27 Kilby St., Boston, Mass.

Southern Appalachian Coal Operators' Association will hold its next meeting Jan. 27, 1922, at Knoxville, Tenn. Secretary, J. E. McCoy, Knoxville, Tenn.

Pike County Coal Operators will hold their annual meeting Jan. 6, 1922, at Pikeville, Ky. Secretary, F. E. Miller, Pikeville, Ky.

The Coal Mining Institute of America will hold its annual meeting at Pittsburgh, Pa., Dec. 7, 8 and 9. Secretary H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

American Society of Mechanical Engineers will hold its annual meeting Dec. 5-9 at the Engineering Societies' Building, 29 West 39th Street, New York City. Secretary Calvin W. Rice, 29 West 39th Street, New York City.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors*,

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Ways of Making a Profit

MAKING selling prices has been declared to be an art, whereas accounting is a science. Determining a sales policy in 1921 for the conduct of a bituminous-coal property has been more a matter of pre-war training and general "hunch" than either science or art. For instance, there is the class of concerns that made reasonably profitable contract prices early in the year, tied up what tonnage they could at those prices—usually with old, reliable customers—and have been content thereafter to produce only the coal their customers required. Such a policy has been the most conservative of any followed. These shippers have made no attempt to meet the spot market, their prices being generally above that obtaining for current sales, even at the time they closed their contracts. They have been able to move coal at from 50c. to more than a dollar above the market because they have an established trade that for this one year at least has been willing to pay a premium to a reliable shipper who in 1920 did not demand the high market prices and delivered 100 per cent and more on his contracts.

Whether the producer who followed such a policy in 1921 can repeat with success in 1922 is an open question. In some if not many instances the consumer will conclude that he has discharged his obligations for protection in 1920 by paying a premium in 1921. It appears, however, that those who took and maintained a firm stand on prices in 1921 and who had a satisfied clientele have suffered no serious losses and some have made a little profit this year, although operating on a considerably reduced scale.

At the other extreme is the class of operator who refused to contract last spring in the belief that the market was only temporarily in the dumps. Such operators have been in hot water all year, operating intermittently, throwing coal on the market on consignment and too often selling at distress prices. For the most part shippers who chose this policy have depended largely on jobbers to place their tonnage and, because the spot market has been regularly so low, have profited little, if they have not generally taken losses on the year's business.

The largest tonnages have been moved by those who contracted all they could at the best figure in each instance they could obtain, and then went after business in the open market, direct and through jobbers. By a combination of intensive selling and setting prices just under the market such producers have in a number of instances more than doubled their output for 1920, itself a high record year. Labor and cars have flowed to him who could give them work and high tonnages have operated to lower average costs and have thus sustained production at a profit at comparatively low prices.

On the whole the bituminous-coal industry has made no profit this year. Those fields that produce domestic and steam coal have been whipsawed the entire season, first because of no market for the resultant prepared sizes and in later months because of no market for screenings. Nevertheless the best-managed lower-cost operations have come through the year so far with no red ink on their books, and some have had the most profitable year on record. Those who cut prices and moved large tonnages have the largest measure of profit if not the highest average net return per ton of output, but whether in the long run they have done well is an open question. The answer depends on individual circumstances, not the least of which is the extent to which they have sacrificed reserves of high-grade coal.

Finding Uses for Fine Coal

MANY manufacturers, when they have their product perfected, find themselves compelled to look around for some place where they can place it and to discover how by appropriate changes it can be fitted so as to be of use in some of the many industries to the needs of which it is in certain ways suited. To this end they send out experts and establish bureaus of research and finally by advertisements and personal solicitation they introduce their product to people who, at first, had no idea that they needed it.

A little less than a century ago anthracite was a product for which no one felt any particular need. It was not even road-making material. A stove had to be developed that would burn it. Iron masters had to be induced to try it out in their furnaces. But soon thereafter anthracite became recognized as a fuel, and for the most part the main effort of the seller from then on was to sell his particular brand of anthracite rather than to sell coal in general. In most cases those that wanted anthracite knew they wanted it, and the question was only *which* anthracite did they prefer, and that was decided mostly on the presence or absence of ash.

In consequence coal men have been slow to undertake research work. They have left it to consumers to study out the problems of combustion, gas making and the manufacture of byproducts, and, seeing that the consumer and the equipment manufacturer have done this work more or less satisfactorily, perhaps it is as well to leave it in general to them. It may be pointed out, however, that the fact that coal has sold without technical assistance has made the coal man somewhat unprogressive in places where solicitation by advertisement and agents and research by experts might greatly assist in enabling him to rid himself profitably of that part of his product that he must make and cannot sell except at a loss. We refer to his fine coal.

It would pay the owner of mines to ascertain by experiment what is the best method by which to pulverize coal and to burn it when pulverized, to discover where it can most profitably be used and to promote the sale of atomized coal by spreading a knowledge of its

advantages. It would furnish a ready opening for his "bug dust" and his smaller sizes. The Susquehanna Collieries Co., sets a good example in this direction.

An interest in discovering the best form of domestic furnace for the burning of buckwheat and smaller anthracite would be well rewarded. When the discovery is made it will revolutionize anthracite mining and save the expense of carrying tons of fuel in storage for many months and even years. It will hasten the time when sludge will be turned into burnable material and it will make it possible to use up the fuel in the old waste dumps, and do it not at a small margin but at a big profit.

The action of the Hudson Coal Co. in making experiments in anthracoal and of the Lehigh Coal & Navigation Co. in entering into the briquetting business are instances of enterprise by no means too common. A study in producer- or water-gas making using fine coal is another form of activity that some anthracite operator should be investigating. Every large company should have its research department and every possibility opened up by that department or discovered in some other way should be sold to the buying public by a department for that purpose.

It has been found by the copper producers that the metal will not sell itself in sufficient quantities to balance productive capacity. It has been discovered that inferior substitutes were edging it out of some markets. Many of these it had held undisputed before the day when electrolytic deposition made it possible to manufacture an inferior article having a temporary semblance to the real. There is only one answer to the problem—research and mercantile activity—and there is only one reply to the question "What shall I do with fine anthracite?" Ascertain how it best may be burned for any one of a dozen uses and then by advertisements and roadmen make the facts generally known.

Public Interest in Strikes

PUBLIC opinion is the most powerful force in this country and its influence is felt and its support sought in every industrial dispute. Doubtless the time will come when economic maladjustments will be studied, treated and healed just as are epidemics that attack the human race. But until that time arrives we must needs deal with the sterner realities of strikes.

The rescinding of the railroad strike order was an impressive exemplification of the great power of enlightened public opinion, according to the Guaranty Trust *Survey*, which notes that it was "in this instance so unmistakably demonstrated that the majority of the people throughout the country believed the threatened strike was a grave menace to business and absolutely unjustified. There are many evidences, in fact, of a widespread conviction that the strike vote of the railway brotherhoods was intended to prevent the proper readjustment of railway wages in line with the wages of other workers and with reduced living costs—in brief, to make secure the preferred economic position of certain favored elements of organized labor at the expense of the public and of all other workers."

The opinion now prevails that a strike of coal miners next April is inevitable in the course of wage readjustments. The part that arbitration may play in the 1922 settlement is now a matter of current comment and speculation. There is an undercurrent of feeling that so far as the market is or may be concerned, a strike of some duration would be welcomed. This is particularly manifest with those whose business it is to sell coal. Such a feeling is traditional in the bituminous coal industry, a business in which profits are for the few save when coal is in short supply and strong demand, as when there is a car shortage or a labor strike.

The public is somewhat inclined to be skeptical. It is being said that although the law prevents combinations among operators to raise or maintain prices, and appears to be about to decree that operators and labor shall not make certain agreements, there is nothing to prevent both from agreeing to disagree, thereby shutting off production and elevating prices of coal. At a recent meeting of the Academy of Political Science, Herbert Hoover, in discussing "Good Will and Co-operation in Industry," spoke of the primary interest of the public in certain classes of strikes and industrial controversies. According to the *Iron Age*, he divided industries into two categories, one of which included the transportation and the coal industry, where continuous operation is vital to the life and safety of the community and where there is no alternative to some substitute service, and the other category including those industries from the continuous operation of which there is alternative supply without imperiling the life of the community. Of the latter he said that the public takes but a secondary interest in the dispute arising therein, but of the first group the public is impatient to find a solution.

"As a result of these things," said Mr. Hoover, "we have seen the gradual extension of the arm of the public to these disputes through both administrative and legislative action. We also witness this extension of public interest bitterly resented both by the employers and employees. The primary instinct of the public is self-preservation first and last, and where 1 or 2 per cent of the whole population may jeopardize the comfort and security of the other 98 per cent I do not believe that they can be restrained from exerting a commanding voice, however much it may be resented by either side.

"The thing that must concern us all is that the entrance of the third party into these disputes will be in such form that it does not increase the ill-will, that it shall be in such form as will secure justice, and that will preserve the very foundations of initiative and that type of American individualism upon which our whole social system is based, and that it will recognize the fundamental necessity to build up good will itself."

The dispute that is to come up for settlement next spring may be adjusted by arbitration without a strike or following a strike, or there may possibly be no arbitration, but instead the union may do as the railroad workers did—recognize and admit the futility of a resort to the time-honored show of force. Just what will happen no one knows, but of one thing we can be fairly certain—the public and the government are not inclined to accept any measure of hardship while operators and miners follow a policy of agreeing to disagree. It was reported from Washington that during the Unemployment Conference certain representative operators from the Central Competitive Field indicated their willingness to arbitrate for a new contract next year, but that the Mine Workers' representatives declined the invitation. The country should have this circumstance more clearly in mind as winter passes and spring complaints arise.

Devices for Speeding Low-Temperature Carbonization And Procuring a Dense and Non-Friable Product

Carbonizing Retorts Set in Shaft of Gas Producer—Cast Iron Versus Refractories—Revolving Barrel with Solidifying Roller—Thyssen's Rotating Cylinder with Interior Spiral—Thomas' Lined Cylinder with Spiral Conveyor

By A. Thau*
Oxelösund, Sweden

MUCH has been written in recent years concerning low-temperature carbonization and many descriptions have appeared in the technical press, so that the advantages and disadvantages of this type of coking are well known and need no comment here. Although this process is received in some quarters with open hostility and in others with an optimism that can hardly ever be justified, the fact remains that low-temperature carbonization has thus far gained a small, yet nevertheless sound, footing in all coal-mining countries. It is doubtless destined to fill the gap between high-temperature carbonization on the one hand and gas producers and the consumption of raw coal on the other.

Why German Semi-Coke Experiments Lagged

In the United States the Carbocoal process of low-temperature carbonization probably leads all others but several other plans and processes appear promising. In England, where low-temperature carbonization originated, the Coalite[1] process predominates. The Delmonte-Everett and the Tarless Fuel plants have hardly as yet developed beyond the experimental stage.

Low-temperature carbonization was taken up in Germany at a comparatively late date. This was chiefly because that country did not possess a fuel that could be utilized to the best advantage in such a process. In judging the relative conditions prevailing in Germany one must keep in mind the fact that the bulk of the coal there mined is rather lean. What fat coals are produced the gas industry readily absorbs, and slack that is high in volatile matter is carbonized in byproduct coke ovens. As this fuel is not mined in sufficient quantity to maintain the large coking industry, it is invariably mixed with lean slack.

Open-grate domestic fires are practically unknown in Germany, closed stoves alone being employed. These assure a combustion so thorough that the towns are only slightly troubled by smoke and soot. It is evident, therefore, that little incentive existed to attempt low-temperature carbonization. Consequently prior to the war the only efforts made in this direction lay in the field of scientific research.

The war, isolating Germany from the rest of the world, altered this condition considerably, and an acute shortage of motor fuel and lubricating oils brought the low-temperature carbonization process into prominence as a possible solution of this difficulty. As Germany throughout the progress of hostilities occupied the position of a beleaguered fortress, little information leaked out as to the progress made in this direction.

The fact, already mentioned that no appreciable quantities of high-volatile coals exist in Germany, excludes from the very start the possibility of the development of low-temperature processes with such fuels as are available in other coal-mining countries like the United States and England. By the terms of the peace treaty Germany is compelled to supply large amounts of its best coal to her former enemies. The remainder is so rationed among its consumers as to discourage experiments involving uncertain economic results. The conditions imposed by the peace treaty, therefore, render necessary a greater and more economical use of the huge lignite deposits. It is in this field, accordingly, that low-temperature carbonization finds a broad scope.

Suggestions have been made, and in isolated cases put into practice, that coal that is to be gasified in producers be passed first through a separate low-temperature carbonizing retort, thus extracting the oils from the gases issuing therefrom, and then be further gasified in the producer, enriching the gas evolved in this device by that given off during low-temperature distillation. Such plants, however, are a decided exception, as quite similar results may be secured by much simpler means, obviating large mechanically operated plants in conjunction with gas producers.

In the cases above cited, however, the carbonizing retorts are placed vertically within the shaft of the producer, their open bottoms terminating over the fuel bed of the latter device. Each retort is heated externally by the hot producer gas surrounding it and occupying the upper zone of the producer. The fuel within the retort also is gently heated by the ascending gas.

The retorts are provided with a separate take-off from which the gas is conducted to a plant where the oil is recovered. After this, gas is mixed with that emanating from the producer proper. Many such producers were built during and shortly after the war, and still more plants have been rebuilt so as to embody such arrangements. The large quantity of oil obtained by

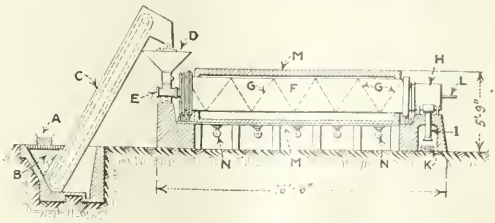
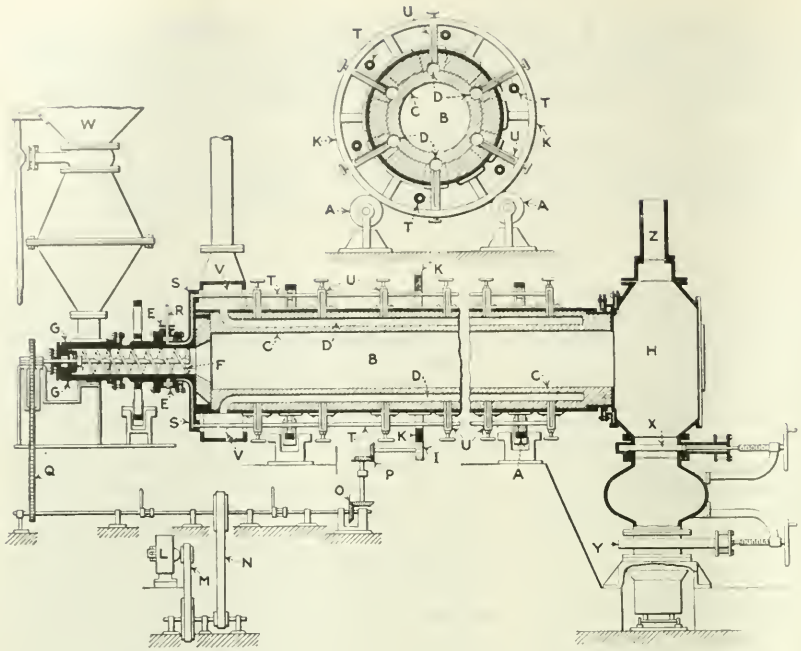


FIG. 1. REVOLVING RETORT FOR MAKING SEMI-COKE
In the interior of the retort is a spiral rib which moves the coal slowly from inlet to outlet. As fast as the coal reaches the orifice it falls onto a belt conveyor. The gas is taken off by a suction line. One hundred tons can be carbonized every 24 hrs. The product can be used for fuel in gas producers or for briquetting.

*Coke Works superintendent, Oxelösund Iron Works.
[1]In America an explosive is known by this name



FIGS. 2 AND 3.

Cross-Sections of Thomas Revolving Retort with Discharge Gate

The longitudinal cross-section has been made on a somewhat smaller scale than that at right angles to the diameter of the cylinder, so as to make the details more clear. This retort is of steel plate but is lined with firebrick with heating flues. The cylinder is evenly heated by bunsen burners to a temperature of 930 deg. F. The slide valves in the lower right-hand corner are so operated that the semi-coke is dropped out at the gate without admitting air.

this means has assisted appreciably in making up the deficiency above noted and in alleviating the scarcity of lubricating oils.

Apart from these producers, supplemented by primary low-temperature retorts, the low-temperature carbonization process found its greatest application in the utilization of fuels low in calorific value, such, for instance, as lignite and even turf. German inventors could learn little from England, for in that country such processes were chiefly applied to the treatment of rich coals and had been adapted to their use. Comparatively little also could be ascertained of efforts made in this direction in the United States prior to the war.

Germany was thus compelled to begin anew. Experimentation was conducted mainly in the excellently equipped coal-research institute at Mülheim on the Ruhr, with the well-known coal-research chemist, Prof. Franz Fischer, as chief. The results of the work there undertaken, particularly with reference to the low-temperature distillation of coal and other fuels, has been published in several volumes. The empirical rules which the process had thus far more or less followed have been supplanted by properly defined and scientific formulae.

Methods generally applied to low-temperature carbonization prior to the war strongly resemble those of gas works, the chief difference being that a specially selected cast iron was used in the manufacture of the retorts. This metal, of course, possesses the advantage of high heat conductivity. Its great disadvantage, however, lies in the fact that the continuous heat causes the iron to "grow," this swelling continuing until the shell begins to scale off and waste away.

It is thus significant that the low-temperature carbonization processes that have actually been introduced in working practice have discarded the cast-iron retort and adopted one made of refractory material. This applies alike to the Carbocoal process in America and the Coalite process in England. In a number of other low-temperature carbonization installations cast iron is used, as, for instance, the Greene-Laucks[2] plant and in the English Tarless Fuel plant.[3] In the Delmonte-Everett plant,[4] the retort is made of steel. These last mentioned processes, however, have not as yet attained large commercial dimensions.

Germany could not gain materially from the experience of other countries, so it made a fresh start altogether, and found that the solution of the problem that would best meet the prevailing conditions was the introduction of a revolving retort. Prof. Fischer built this on an experimental scale at the coal-research institute at Mülheim on the Ruhr.

Carbon, as is well known, is a poor conductor of heat. Though heat will penetrate satisfactorily a thick layer of densely packed coal in the high-temperature coking process, it will not do so when low temperatures are applied. As a rule, therefore, such an increase of temperature on the heated surface is necessary that the structure of the semi-coke is uneven, being hard on the outer end and becoming gradually softer toward the center of the charge. In consequence pieces of coke are formed that are both friable and brittle.

In coke ovens and gas works coal can be carbonized in large masses, but in a low-temperature retort it must be fed in such a comparatively thin layer that it will be quickly penetrated by the heat, for a high temperature cannot be applied to its outer surface. This precaution is taken in the English Coalite process. Here the charge is fed over large retort surfaces so that

[2] See *Coal Age*, Vol. 15, p. 810, 1919.
[3] See *Gas World*, 1913, p. 680.
[4] See *Gluckauf*, 1914, p. 839.

the thickness of the layer will seldom exceed 4 inches.

To insure an even temperature throughout the entire charge and to prevent it from being overheated on its outer surface, the coal is sometimes agitated within the retort by a paddle conveyor which mixes the material thoroughly and simultaneously propels it to the coke outlet at the end. This arrangement is frequently adopted and is typical of the Carbocoal process with horizontal retorts, the Delmonte-Everett process with inclined retorts and the Greene-Laucks process with vertical retorts.

To avoid the use of mechanically operated agitators and conveyors inside the heated chamber and to obtain the same effect by more desirable means the entire retort is rotated. It is in this direction that low-temperature carbonization has developed in Germany. Such arrangements were already in use for other purposes, but Prof. Fischer applied them successfully to low-temperature coking. Its application, with certain variations in design, adopted by other inventors, is almost universal throughout Germany. Prof. Fischer found, however, that in the ordinary revolving retorts the coal is so much disturbed during coking that although the yield of oil is exceptionally high, the formation of coke is much impaired.

To overcome this difficulty efforts were made to compress the coal while the heat still keeps it plastic. Prof. Fischer experimented with a revolving retort 59 in. long and 20 in. in diameter, resting horizontally upon rollers. This device was charged with 20 kg. (44 lb.) of ground coal, and a solid roller about 4 in. in diameter and of the proper length was placed within the cylinder. This retort was surrounded by a chamber serving as an oven, and was heated from below by a number of vertical gas burners as it revolved slowly.

The coal distributed itself evenly about the periphery of the retort, and as soon as it reached a plastic state, adhered to the shell, covering its interior surface uniformly. As the heavy iron roller inside the retort tends to move toward the lowest point, it rotates continuously and automatically and compresses the coal in proportion to its plasticity.

When Coked, Shell Breaks Down and Falls

As soon as the charge is carbonized completely and all volatile gases and vapors are driven off, the cylindrical coke shell breaks down and falls. This makes itself known by a distinctive noise within the retort. At this point in the process the heat is cut off and the revolution of the retort stopped, after which the coke can be withdrawn. By this means a good hard semi-coke of even texture was obtained. Promising as this design appears and operates experimentally, its obvious disadvantages are too great for the development of the process upon a large commercial scale.

A revolving retort that has been built for several large commercial plants is that invented by Thyssen and shown in Fig. 1.[5] The fuel, after having passed a screen or mill, is brought by a conveyor, *A*, and discharged into the pit, *B*. Thence the elevator, *C*, transfers it to the charging hopper, *D*, under which a short screw conveyor, *E*, is mounted. This transfers a certain amount of coal continuously into the cylindrical revolving retort, *F*, which is 70 ft. 6 in. long, including its foundation, and is made of steel plate.

On its inner surface it is provided with screwlike ribs, *G*, which move the coal slowly through the retort as it revolves. At the discharge end the retort is connected to a stationary receptacle, *H*, with an outlet, *I*, which discharges the coke continuously onto the conveyor, *K*. To the end of the receptacle *H* a pipe, *L*, is connected, serving as a suction line for the withdrawal of the gases given off by the fuel. The retort is surrounded by an oven, *M*, built of brick, heated from below by a row of burners, *N*. With the dimensions shown in Fig. 1 this retort has a capacity of about 100 tons of coal per day of 24 hours. The semi-coke discharged can either be used as fuel in gas producers or can be briquetted if pitch be added as a binder.

American Scheme With Firebrick Flues

Although the revolving retort is the type most commonly used for low-temperature carbonization in Germany, its application is by no means confined to that country. A similar device of American design, invented by Thomas, is shown in longitudinal section in Fig. 2, and in vertical cross-section in Fig. 3.[6] In this design, heavy rollers, *A*, support the retort, *B*, which, depending upon the variety of fuel to be treated, may be as much as 100 ft. long.

This retort is made of steel plate, the inner surfaces of which are covered by a strong fire-brick lining, *C*. The lining is provided with a number of heating flues, *D*, extending parallel to the retort cylinder. These are equally spaced around the circumference of the retort. By means of a gland, *E*, the interior of the retort is connected on one end with the stationary cylinder, *G*, in which the spiral conveyor, *F*, revolves. At the opposite end the retort terminates in another gland connecting it with the chamber, *H*.

The retort is revolved by means of the pinion, *I*, or a worm in gear with the worm wheel or toothed ring, *K*, encircling the retort at its middle point. The pinion, *I*, and the screw conveyor, *F*, are driven from the electric motor, *L*, by means of the belts, *M* and *N*, the gear wheels, *O* and *P*, and the chain, *Q*. Gas for heating the retort is conducted through the pipe, *R*, connected to the gland, *E*. It enters the channels, *S*, which revolve with the retort.

By means of pipes, *T*, the bunsen burners, *U*, are fed from these channels, the burners distributing the heat throughout the flues, *D*. The whole retort is thus evenly heated, so that its interior temperature does not exceed 500 deg. C. (930 deg. F.). Near the charging end the heating flues, *D*, are open and are surmounted by the stationary channel ring, *V*, which on its top carries a steel chimney for escape of waste gases. This also furnishes the necessary dratt for the flues, *D*.

Fuel to be treated is conveyed by suitable means to the hopper, *W*, this being connected by means of a gas-tight slide valve with the heating receptacle on top of the conveyor cylinder, *G*. The fuel in his receptacle is replenished as required by opening the slide valve under the hopper, *W*. The fuel dropping into the cylinder, *G*, is transferred by means of the conveyor, *E*, into the retort, *B*. By the revolution of the retort, each individual particle of coal comes in contact with the heated inner surface.

The continuous feed gradually drives the fuel toward the discharge end of the retort, where it drops into the chamber, *H*, closed at the bottom by means of the gas-tight valve, *X*, under which a receptacle is placed, also closed at its bottom by a valve, *Y*. By opening

[5] Stahl & Eisen, 1920, p. 743.

[6] See *Gluckauf*, 1919, p. 552.

the upper valve, *X*, the coke falls into the lower receptacle and by closing *X* and opening the valve, *Y*, it drops out without the escape of gas from the retort and without influencing the suction applied to it. After leaving the retort the coke falls into the quenching car or may be cooled on a conveyor. Pipe connection, *Z*, conducts to the byproduct plant the gases emitted in coking.

This retort is well designed and differs from all others in that it is not heated from a single point but, as may be seen in the cross section Fig. 3, from six equally spaced rows of burners which revolve with it. This secures the obvious advantages that the retort itself, is a self-contained unit and does not need to be placed in an oven but is readily accessible from all sides. It revolves so slowly that the burners can be adjusted without stopping the revolution of the retort.

Grid Resistors for Mine Locomotives and Their Care

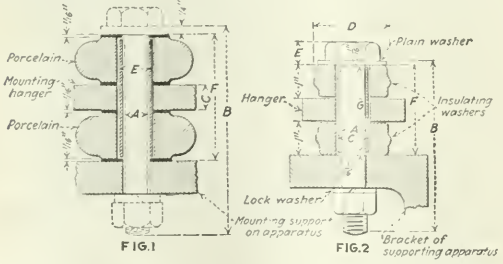
Current-Carrying Capacity of Resistor Steps Inadequate to Operate Continuously on Any One Controller Notch When Locomotive Is Pulling Its Heaviest Loads — Resistor Usually Designed for Starting in Parallel

By H. H. Johnston*
East Pittsburgh, Pa.

THAT resistors are invariably used upon and furnished with any and all mine locomotives should be sufficient evidence that they are necessary parts of such machines and should not be slighted during periods of inspection and overhaul. The main resistor is primarily provided for the protection of the motors and to afford smooth acceleration with the aid of the controller and its notching scheme. Thus the use of the combined resistance and control makes it impossible to impress instantly the full line voltage across the terminals of a standing locomotive, thereby forestalling excessive starting currents with attendant injury to motors, gears and other mechanical equipment. It also prevents the locomotive from drawing an undue proportion of the current, robbing other equipment about the mine which must obtain current from the same line.

Poor or rapid notching-up on the controller, as it approximates the ill effects of using no resistor, is injurious to the motors. Locomotive drivers and others who handle similar equipment that requires starting or accelerating apparatus should be given more instruction than is usually afforded them as to the saving of time and power and the reduction of maintenance costs by the proper manipulation of such equipment.

With mine locomotives of either main-haulage or gathering type the current-carrying capacity of the various steps in the resistors seldom is large enough to make it safe to operate continuously on any one controller notch or point while the machine is pulling its heaviest load. The reason for this is readily discernible. A 20-ton 250-volt locomotive should be provided with a resistor having a total starting resistance of approximately 0.5 ohm. If this is required to carry currents corresponding to the slipping point of the wheels it would mean that approximately 70,000 to 100,000 watts would have to be consumed in the grids beyond the second and third steps of the resistor. To say nothing of the power loss and heat that would necessarily have to be dissipated, an excessively bulky resistor would be required. In most cases such a large piece of apparatus could not be put on a locomotive if it is to be limited to the dimensions necessary for operation in a mine.



FIGS. 1 AND 2. METHODS EMPLOYED IN INSULATING RESISTOR ELEMENTS

Fig. 1 shows porcelain insulators and Fig. 2 moulded washers. The frames of resistors should be insulated from the frames of the locomotives. This affords double insulation between grids and locomotive frames, thus eliminating grounds even in wet mines.

Many combinations of resistor assemblies are possible for any one size of locomotive. The one to be chosen will depend upon (1) type of controller, (2) service, (3) gear ratio, (4) type of motor, (5) drive-wheel diameter, (6) line voltage and (7) the characteristics of the resistor elements themselves, including their capacity resistance, their weight and the ventilation afforded by the method in which they are assembled.

The type of controller will determine the number and arrangement of the resistor steps so far as resistance and capacity are concerned. The service will determine the ohmic value required in the total resistor as well as in its various steps. The type of motor and its characteristics fix in a general way all essential attributes of the resistor. The gear ratio will determine in part the speed and tractive effort of the locomotive. The higher the gear ratio the lower the speed and the greater the tractive effort for a given current consumption. Consequently the total ohmic value required for starting a locomotive of a given weight will be decreased as the gear ratio is increased.

The wheel diameter also will partly fix the speed and torque characteristics of the locomotive. The greater this diameter, the higher the speed and the lower the tractive effort. A greater driver diameter will require a smaller starting resistance. As the wheel treads wear, the tractive effort will gradually increase for the first point of the controller. Ordinarily this will not be noticeable unless the trolley voltage is constant or higher than normal.

Line-voltage fluctuations mean corresponding changes in starting current and tractive effort. As the starting resistor usually is fixed in size and capacity, consideration must be given to both maximum and minimum voltages.

Having given consideration to the service to be per-

*General engineering department, Westinghouse Electric & Manufacturing Co.

formed the grids or other resistor elements used must in themselves be of rugged mechanical design, have heavy overload capacity and an insulation capable of withstanding excessive heat. Ventilation is an important factor. Spacing grids close together will give more metal, but this advantage is largely offset by decreased ventilation, the tendency of this close grouping of grids being to cause hot spots.

It is good practice to insulate the frames of resistors from those of locomotives for both 250- and 500-volt machines. This affords double insulation between the grids and the locomotive frames and overcomes many troubles arising from grounding, particularly those encountered in wet mines. Porcelain insulation (Fig. 1) surrounding the mounting bolts also is advantageous. For this service moulded insulating compound has been used around the bolts as shown in Fig. 2 and satisfactory results have been obtained.

Resistor frames usually are mounted on locomotives

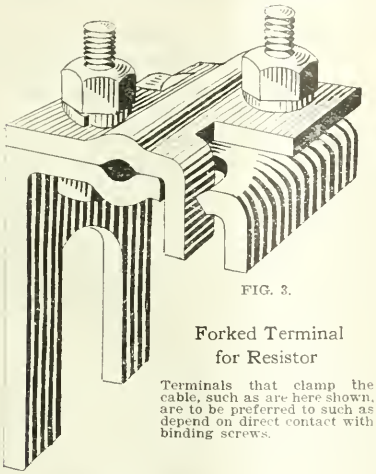


FIG. 3.

Forked Terminal for Resistor

Terminals that clamp the cable, such as are here shown, are to be preferred to such as depend on direct contact with binding screws.

in more or less out-of-the-way places, being those not occupied by other equipment. The grids tend therefore in some locomotives to collect so much sand, coal dust and other foreign material that their ventilation is impaired. If the grid frames are built up and mounted directly above a solid plate they are likely to become cluttered up in this manner. This defect usually can be easily overcome, however, by drilling a number of 1½-in. holes through the plate, thus allowing sand or other extraneous material to fall through.

In mine-locomotive service the controllers usually are of the series-and-parallel type, which permit the locomotive to start with the motors either in series or in parallel. This involves designing the starting resistor primarily for one or the other. If calculated for series starting, the tractive effort obtained on the first notch, when starting with motors in parallel, will be low because the resistance in the grids will be about twice that required to give good starting in the other position. It is customary to design the resistor for starting with the motors in parallel, whereas starting in series is possible, for the starting current consumed will be half that for parallel operation. It is good practice to use a system of control that necessitates starting in series, and in these cases the resistor is designed for such conditions.

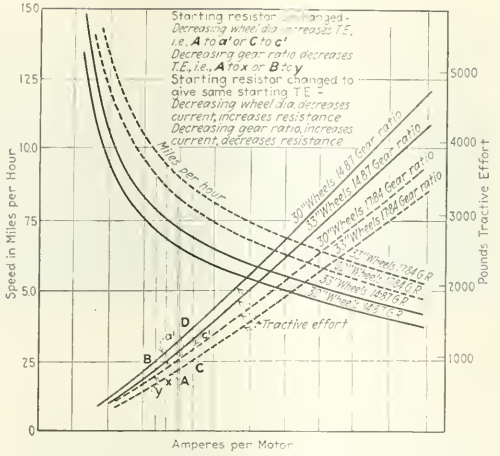

Starting resistor unchanged-
Decreasing wheel dia. increases T.E.,
i.e., A to a' or C to c'
Decreasing gear ratio decreases
T.E., i.e., A to x or B to y
Starting resistor changed to
give same starting T.E. -
Decreasing wheel dia. decreases
current, increases resistance
Decreasing gear ratio, increases
current, decreases resistance
Miles per hour
30" Wheels, 14.87 Gear ratio
33" Wheels, 13.84 Gear ratio
30" Wheels, 13.84 Gear ratio
33" Wheels, 12.87 G.R.
30" Wheels, 12.87 G.R.
33" Wheels, 12.87 G.R.
Tractive effort
Speed in Miles per Hour
Pounds Tractive Effort
Amperes per Motor

FIG. 4. RELATION OF TRACTIVE EFFORT TO MOTOR AMPERAGE, SPEED IN MILES PER HOUR, WHEEL BASE AND GEAR RATIO

This shows graphically how much decreasing the wheel diameter increases the tractive effort with the same starting resistor and how decreasing the gear ratio decreases the tractive effort when the starting resistor is unchanged. Keeping the tractive effort constant and changing the starting resistor, a decrease of the wheel diameter decreases the current and increases the resistance, and a decrease in the gear ratio has, as in the previous case, the reverse effect.

It is not well to operate a locomotive with grids cut out or short-circuited. A grid that has been broken or burned out should be renewed, care having been taken to replace it with a grid of the proper capacity and ohmic resistance.

Terminals that clamp the cable are preferable to those that depend on direct contact with binding screws, for in that case if the heat of the grids causes any tin to flow from the cable it will not interfere with removing the cable connections from terminals of this type.

The insulation should be removed from the cable for several inches back from the terminal connections to prevent its burning. Some operators make a practice of using flame-proof sleeving over the 6 to 8 in. immediately adjacent to the grid terminals.

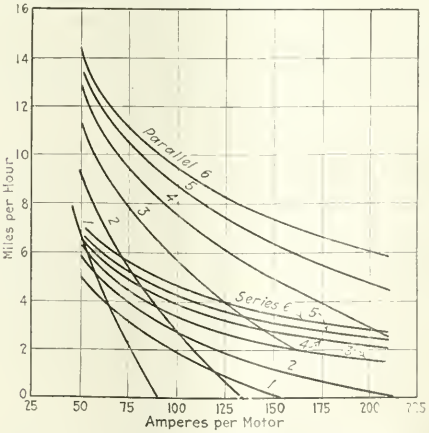
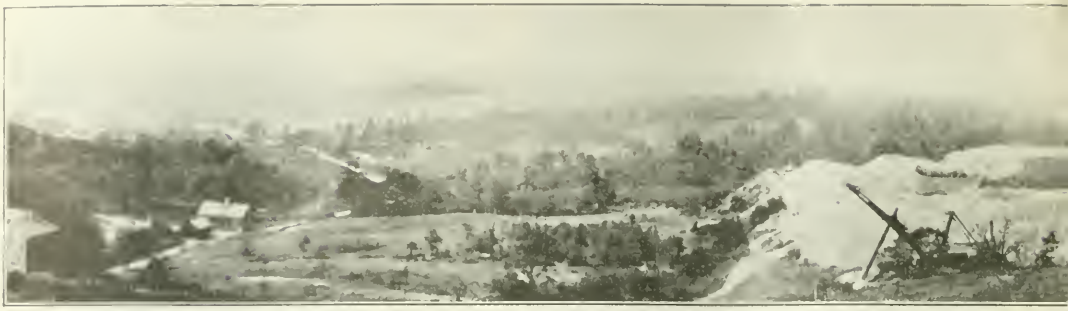


FIG. 5. NOTCHING CURVES FOR SERIES AND PARALLEL CONTROL

These are figured for a 20-ton locomotive with two 500-volt motors, 36-in. wheels and a gear ratio of 16 to 73.



VIEW OF THE BLANCHARD COAL CO.'S NO. 1 STRIPPING WITH SURROUNDING COUNTRY. MANY SMALL AREAS

Stripping and Selling Coal

Cover Up to 6 Ft. Can Be Handled Three Advantages—Stripper Spirals Half Circles and Then Backs Outward

By William G. Blanchard†
Pittsburgh, Pa.

IT WAS REPORTED recently that a certain producer was withdrawing in utter disgust from the coal-stripping business. I tried to learn the reasons for this disgust, and when questioned on the subject this man gave answers that explained his failure. Among other things, he remarked: "Well, I can't get a production. If she ain't too hot she's too cold; if she ain't too cold she's raining, and if she ain't raining she's snowing."

Thus, without searching for the real truth, the elements were being blamed for difficulties that probably arose through some inherent defect in equipment or management. The result was that what had been conceived as, and what might have been made, an interesting and profitable enterprise had degenerated into a nightmare of trouble, loss and aversion.

Anyone who wanders around a bit may see coal-stripping plants so equipped and so operated that they never have a chance to win. These instances, however, are exceptions and not the rule, as many operators of such plants are not only achieving success in the industry but are also deriving much pleasure from so doing.

Stripping Only Method of Mining Some Coal

Readers of *Coal Age* are more or less interested in these successes and failures, as stripped coal now represents not only a respectable yearly production but also a capital investment of many millions of dollars. Therefore I have seen fit to set forth some of my ideas and experiences in the hope that they will prove of value to some, and at least of interest to others.

Coal-stripping operation is practiced by reason of the truth of four incontestable facts. First, by this method of mining many acres of otherwise unrecoverable coal may be reclaimed, as the mining of coal by underground methods can be conducted only where the roof structure is sufficiently strong to be in a measure self-supporting. With coal lying near the surface the roof in many instances is so soft that the attempt to hold it by timbering makes the cost of mining prohibitive. In the great majority of cases also this condition prevails when it is attempted to mine close to the crop. Should the coal at this point be still merchantable, stripping offers the only feasible method of recovering it "clear to the grass roots."

Second, a greater percentage of coal may be recovered from any given body where stripping is economically possible than can be obtained by underground mining. This, of course, is not so evident; nevertheless it holds true where roof conditions are good and the bed reasonably thick. Under favorable conditions improved methods of underground operation may effect a recovery of as much as 95 per cent of the coal. Even under the most favorable circumstances, however, slips and caves occur, and coal is lost in ribs and pillars. This always materially lowers the total final recovery.

Shallow Mines Like Strip Pits Ruin Farms

Where roof conditions are not good and the overburden is light, the economic loss through mining by underground methods is much larger than is ordinarily admitted. For instance, one may walk over the rolling hills of Westmoreland County, Pennsylvania, and see thousands of acres of farm land totally ruined beneath which still lies many millions of tons of the highest-grade gas coal, lost to man for all time through improper mining unless the value of fuel rises to such a point as to permit the working over of these vast acreages by the stripping method.

The third basic fact to consider is that coal can be mined by the stripping method both with less labor and at less cost than is possible by underground mining. This means, of course, that the more expensive labor becomes, the more pronounced is the advantage of stripping. Forty men at a well-located and well-operated strip pit should produce 1,200 net tons of coal per day. More than half of this force is classed as common labor, and generally can be obtained no matter what may be the condition of the labor market.

Fourth, it is asserted that with this method of operation an organization can go into a property and within three days after the stripping shovel has reached the top of the coal can be producing tonnage at the maximum rate intended for the plant. This means that heavy carrying charges extending over long development periods are entirely obviated.

One might be led to believe from the advantages enumerated above that coal-stripping projects invariably

*Note the two unmined areas in the stripping and the tipple just to the left of the concrete road, which is bridged by the approach trestle.

†General Manager, Blanchard Coal Co.

OF COAL PARTLY MINED EXIST ALL AROUND BUT IT IS DOUBTFUL IF IT WOULD PAY TO MINE THEM.

on a Dead Market—I

Profitably—Rock Overburden Has Inward—Loader Follows Stripper for —Strip Wide and Beware of Inner Bays

develop into advantageous and profitable operations. This is far from the case, however, as is shown by the many failures that have occurred that entailed heavy financial losses and blasted bright dreams of large profits. A general yet simple investigation usually will show wherein lay the cause of failure. Among the more common reasons may be listed, in the order of their importance, bad management, improper machinery, impossible physical conditions, inexperience and, lastly, lack of capital.

Bad management is listed first because in the majority of cases where stripping operations are started the physical conditions are favorable but poor management or the lack of all management allows many of these projects to "drift to the rocks." It usually is taken for granted that mining coal by the stripping method allows such a margin of profit that a mediocre organization can be maintained and a property operated without careful planning, yet with sufficient profit to represent an attractive return on the investment. Nothing could be further from the truth. One might well not even consider entering the industry unless he realizes from the start that, all things considered, the margin of profit is small and the risk involved is great.

Site Rarely Fills All Specifications

As there is only a limited amount of coal available for operation by stripping, one cannot go out and select a property according to a previously drawn set of specifications. He may, however, study a property, judging as to whether or not its inherent characteristics are such as to allow profitable operation. One potent consideration is the grade of the coal itself—that is, whether it can be considered a gas, a high-grade steam or only a low-grade steam fuel.

Simultaneously the freight rate to the several logical markets must be considered, as must also be the amount of crop or soft, stained and unmerchantable coal that is likely to be found in the acreage and which must be left in the ground. The width of this inferior band of coal at times is so small as to be negligible, and under such circumstances the coal can be mined almost to the grass roots. In many places, however, where the roof condition is not favorable, weathering may extend back through an entire hill.

Next to the quality of coal the thickness of the bed should be considered, as should also the thickness and character of the overburden. Even a 3-ft. bed may be profitably stripped if overburden conditions are favorable. Open cutting loses its advantage of cheapness where the stripping expense per ton of coal exposed equals the cost of underground mining.

Sixty Feet of Cover Removed With Profit

In considering overburden, it might be stated that covers up to 60 ft. in thickness may be economically removed, provided other conditions are right. In such a case, however, the ever-present rock must not be too hard. For a bank of this height, moreover, the coal bed should certainly not be less than 5 ft. in thickness. A rock contact and overburden, provided its structure is laminated, is in itself an advantageous circumstance, for three reasons: (1) It keeps the dipper and teeth of the stripping shovel free and clean at all times; (2) less swelling occurs in the spoil piles; and (3) as a general rule the coal under a rock overburden is firmer and less stained than where the cover carries little or no rock.

At the Blanchard No. 1 mine of the Blanchard Coal Co., located at Wyano, Westmoreland County, Pa., an 8-ft. bed of Youghiogheny gas coal is being stripped at one of its mines and worked under cover at another. The company has underground mines elsewhere. At the No. 1 mine the Pittsburgh bed pitches 8 per cent into the Port Royal syncline. The coal being developed lies just under the surface of a succession of knobs or hills with a maximum overburden of about 40 ft., consisting in the main of a soft laminated sandstone. If coal lying under such knobs does not develop too great a proportion of unmerchantable crop, any acreage that can be worked by circling completely around the crop line presents operating advantages unobtainable where it is necessary to travel back and forth along one side of the hill. Some of these advantages will be pointed out later.

Even with this small amount of overburden, compared with the thickness of coal as stated above (that is 40 ft. and 8 ft.), the largest shovel so far developed, even though it could handle a cover twice as high, is the proper one from an economic standpoint. A 340-ton 225-B Bucyrus machine with a 6-cu.yd. dipper, therefore, is being used at the Blanchard mine. A smaller 43-ton 35-B Bucyrus with a 1½-cu.yd. flat-bottomed special dipper is used to load the coal. This is mounted

on caterpillar trucks. The coal is hauled in 5-cu.yd. Western side-dump cars fitted with 10-in. side boards, hauled by 19-ton Vulcan locomotives on a track having a gage of 36 in. At the tipple the trains proceed onto a trestle, where they are dumped into a 500-ton storage bunker. The coal is elevated by a 4-ft. rubber conveyor belt, 100-ft. long center to center, to screens, crusher and loading pans. Railroad trackage is available for thirty empties above the tipple as well as for thirty loads below it.

In developing a property the entire area likely to be underlaid with coal should be staked out in squares, 10 yd. on a side. The stakes are then numbered from some arbitrarily chosen central position, as shown in the accompanying illustration (Fig. 1). After this, elevations are run from a base point on the coal to each stake. This, then, completes the field engineering for each hill, and makes it unnecessary to maintain an engineering corps, as a simple chart in the main office and a similar one in the field office give any and all the information required.

By reading the position of the big shovel in the morning and again at night, one can tell from its reported position at any time the width of the cut the stripper is making, the height of the overburden which is being handled, and the amount of coal uncovered and ready to be loaded out. Also in an emergency one can determine from the main office just how many ties, or how much rail or pipe will be necessary to cover a certain part of one of the cuts.

For comparison, the stripping areas for different months are blocked out in distinguishing colors, and at any time, by a simple calculation, the amount of coal still remaining in the tract can be ascertained. Fig. 1 shows such a chart, the keeping of which is simple, but which gives at all times a valuable, accurate and visible picture of the various steps of development and the condition of the property. Each day the superintendent

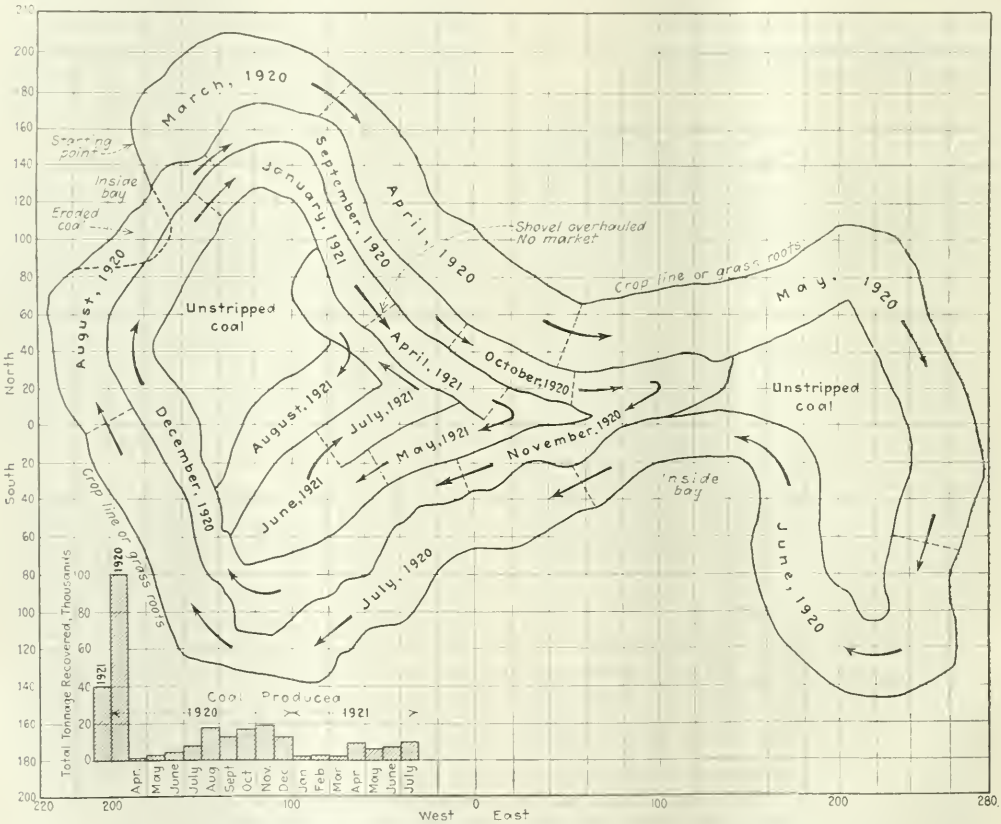


FIG. 1. PLAN OF THE STRIP PIT SHOWING HOW THE AREA IS DIVIDED INTO SQUARES, WHAT STRIPPING WAS DONE EACH MONTH AND HOW THE STRIPPER SPIRALS IN ON THE COAL

The plan shows simply the progress made in stripping and not in the removal of coal. This explains why the diagram of coal produced exhibits coal production in February and March of 1921, and the plan does not show any coal stripped at that time. The Blanchard property is run so that a shutdown of the stripper will not necessarily prevent the production of coal, because the loading shovel does not follow the stripper closely, as is the too-general practice. The loading shovel works half the stripped semicircle in one direction and then works backward on the other half. The coal thus being entirely removed on the first semicircle the loading shovel is enabled to go to the next and take that coal out in the same way. Stripping goes fast when low cover is being lifted. Witness the run of the first few months. It becomes slower thereafter, when the cover becomes heavy. Then it is well to have coal to draw on. Note the two bays, one in the upper left, or northwest, and one in the lower right, or southeast. In these the material is handled radially from the outside of the curve toward the center of curvature. The mass of material deposited near the center of the curve where the cover is large is, therefore, excessive and these re-entrant angles are to be avoided as far as possible even if it is necessary to cut on a chord across them and to remove "sterile" material that covers valueless coal or none at all. This was done at the point marked "eroded coal" near the left-hand bay.

at the mine sends in a tabulated report of operations. This carries all general information concerning daily operation. A study of these reports gives the time lost in delays, with the reasons therefor, and an analysis over any given period will bring out the weak points to be remedied.

After the preliminary work of surveying, the next consideration that must be taken up is the proper supply of water for the various boilers. One must guard carefully against a failure in water supply during dry periods and also against using water containing too much scale-producing carbonates and sulphates. As a precautionary measure a sample of the water available should be taken to a reputable laboratory and there analyzed as an insurance against serious boiler trouble later. At the stripping operation under consideration the water is elevated approximately 250 ft. through a 3-in. main to a large storage tank placed upon the highest elevation on the property.

Big Water Tank Makes Work More Steady

It will be found that a large tank capacity is of great advantage in preventing temporary shutdowns arising from pump disability, freeze-ups, pipe breakages and the like. From the storage tank water is distributed to the shovels through a 2-in. main, buried, where possible, to prevent freezing in the winter. Where it is necessary to run the pipe in the open on the surface it has been found that a few smoldering fires fed with dirty or refuse coal, along the line and built directly under and around the pipe, will warm the water sufficiently to prevent freezing.

When the structure of the overburden becomes appreciably hard, it is drilled at regular intervals with a 5-in. bit by a No. 3½ Keystone churn drill. The holes, of course, are put down only to the roof coal, which generally runs about 3 ft. in thickness. Thus the average depth of the shothole is slightly less than the average thickness of the overburden. On the tract represented by the chart shown by Fig. 1 the depth of these holes averages about 25 ft. It will thus be seen that only a short time is required to drill each hole after spudding-in has been completed. To facilitate this work of spudding-in, the drill is equipped with special guides.

Blasting a Subject for Close Supervision

After drilling, the holes are sprung with a few sticks of dynamite at the bottom, thus forming a pocket to receive the black powder which is then poured into the hole. The most economical amount of dynamite for the springing, and of black powder for the actual blasting, together with the most efficient spacing of holes varies not only in different properties but in different parts of the same property, depending on the height of overburden, the amount of rock and its character. A conscientious and experienced powder man under a capable superintendent who watches the results of the various shots and the facility with which the stripping shovel handles the blasted material can make a large saving for the organization in the quantity of explosives used. This saving alone may closely approximate the total remuneration paid to both blasters and superintendent.

In developing a property the practice followed by this company is to travel around the coal body with the big shovel, keeping it moving always in the same direction and winding further in on each successive cut just as do the straw bands on the top of a summer hat. If the plant has been properly balanced as to the capacity of each unit from the big shovel to the tipple it will be found that as the overburden in the first cut usually is rather soft, easy to handle and relatively small in amount, the stripping shovel will circle the hill twice as fast as the loading shovel can remove the coal. In taking out the first cut of coal, by watching the progress of both shovels one usually can so lay out the work that this condition will be exactly fulfilled.

At the start the coal shovel follows immediately after the stripping machine, taking out only a half cut of coal. As the width that the big shovel can successfully clean up is less than 45 ft., which is about twice that which the smaller shovel can readily load out, the above mentioned schedule is continued until both shovels are half way around the property. At this point the coal track is in the middle of the first half cut, which extends from the shovel to the point of entrance to the pit. This track is now thrown over to the inside of the cut against the bank, after which the coal shovel deserts the stripping machine and turns around, proceeding backward in the direction whence it came, removing the remaining half cut of coal in this first half circle. The coal track can then be picked up as rapidly as the coal shovel proceeds.

Stripper Spirals, Coal Shovel Reciprocates

With the stripper going straight ahead and the coal shovel returning, the two machines then proceed until they meet at the starting point. Here the coal shovel passes the stripper and starts over again, following the same routine on the other side of the hill with no delays in operation. It will thus be seen that there is always a cut extending half the entire length of the hill of coal uncovered as a reserve, ready for loading. An attempt is made to maintain this reserve at all times until the property has been fully and finally developed. The coal track can now be replaced as rapidly as men are available. When a track once more has been laid around the second half of the cut, no further track work is necessary until all coal has been removed from this cut, except, of course, the shifting previously mentioned.

In starting the second cut the big shovel usually encounters heavier and harder overburden and will need more time for tightening up and repairing weak places that have developed. Hence the reserve already established can be maintained but not increased and each shovel will complete a half cut in the same length of time. The routine above outlined is then continued as long as possible. It can be carried out with considerable precision if the hours of work of the big shovel are lengthened or shortened as necessary.

Three Advantages of the Method Described

Some of the advantages of this system of development are: (1) The stripping shovel never has to cast over the coal track, which, if found necessary, is expensive and dangerous and retards the operation; (2) a large reserve of uncovered coal is always maintained, which will tide over all ordinary breakdowns of the stripping shovel; (3) the coal track can be laid, picked up and maintained at much less cost than is possible where one shovel must follow directly behind the other, as is the usual practice.

In making the first cut with the big shovel it has been found that it is always best to strip clear out to the outer edge of the actual crop, no matter whether the coal is all merchantable or not. The purpose of this

procedure is to place the spoil from the first cut of overburden as far away as possible. The importance and advantage of so doing are not always evident until one has made two or three cuts into the hill and, getting into a 60-ft. bank, finds the cut narrowed down with not enough room to accommodate the material being dug.

If care is exercised to place the first and each succeeding cut as far away as possible, and the property is so laid out that it can be circled as mentioned before, a stripping shovel of the size and type used at this operation usually will handle an overburden up to a maximum of 70 ft. in thickness. On the other hand, if the superintendent is not careful with the first cut and becomes careless, feeling that everything is going along nicely, he is likely to find by the time a 40-ft. or 50-ft. bank is reached that he has dug himself in, and that he will have to cease stripping and go underground for the remaining coal.

In removing the first cut the leaving of inside bays must be avoided as far as possible. The reason for this is evident in that a great amount of spoil has to be crowded into a restricted area. This sooner or later will seriously hamper the operation of the stripping shovel. A sharp inside bay is shown in Fig. 1 at 150 East, 20 South. Had more cuts and higher overburden been encountered inside this bay it probably, later on, would have locked the stripper in with the spoil. However, had this condition been confronted in this case the stripper would not have remained at the crop of the coal but would have avoided making this bay by cutting straight across the sterile area for a short distance on the first cut. This would be done without uncovering any coal but exactly as was the procedure at the sharp bay shown on the west end of the property, at 100 North, 180 West.

Kinks for the Economical Shovelman

It usually is advantageous also to make all cuts as wide as possible, for the fewer the cuts required to develop a given acreage the lower will be the cost of complete recovery and the less will be the amount of coal lost against the faces of each successive spoil bank. The idea seems to prevail that the stripping shovel in cutting should never swing farther than the inside corner. This does not always hold true, as in many cases it is of advantage to take all the spoil that can be reached, even if at times the shovel must swing over more than a complete half circle. The idea must not be given credence that the amount of yardage handled by the stripping shovel is the only factor to consider, for this is merely one of the elements that go to make up the cost of producing a ton of coal.

The runner of a stripping shovel should be watched carefully, and those details of operation that can be improved upon should be corrected at once, as their continuance day in and day out may cost many dollars in the end. An experienced stripping operator often drops his dipper into the pit and pulls it up loaded through the entire bank at each lift rather than take the material off in successive shelves. Or he may cast his spoil without regard to the face of coal against which he is filling. At this particular operation the rock coming from each successive cut is cast at the foot of the spoil bank and against the face of the coal. Rock thus deposited forms a kind of riprap that makes the loading of clean coal from this face easier. It also makes possible the removal of all coal without leaving a retaining band against each successive spoil pile. If necessary, such a rock buttress or berm can be thrown up ahead to a height of 15 to 18 ft., thus serving as a strong and high retaining wall for the spoil which will remain in place long enough for all the coal to be removed and behind which a great amount of spoil can be stored.

Although the coal under the particular property being discussed is on an 8-per cent slope, no difficulty has been experienced in the operation of the stripping shovel. The only extra work that has been necessary in this case is to see that the shovel is kept approximately level from left to right as it faces the bank ahead. This is accomplished by carrying the low side on a set of short, heavy timbers.

A slope of the shovel from front to rear or from rear to front, considering the bank as being in front of the machine, offers no serious difficulties except that when handling a loaded bucket a little more care must be exercised in starting and stopping the swing. Damage from this source is amply forestalled in the shovel used in this operation by the installation of a friction clutch on the swinging engine.

Stripping over old workings, if care is exercised, presents no particular difficulty. One will usually find that it will be cheaper to operate over and through the old workings than to disrupt the entire system of operation in an attempt to avoid or work around a small minded-out area.

Breakers Use Large Quantities of Water*

By D. C. Ashmead†
Kingston, Pa.

An abundance of water must be supplied for the wet preparation of anthracite. Where anthracite is prepared, in general, by dry methods, water must nevertheless be used, for it is needed in the preparation of the finer sizes. The average quantity of water used in preparation by wet methods in the Wyoming Valley per ton of daily output is 1.035 gallons per minute. Thus, if a breaker has an output of 1,000 tons per day it will require 1,035 gallons of water per minute. A combination wet-and-dry method of preparation requires 0.634 gallon per minute per ton of daily output. The dry method requires only 0.626 gallon per minute.

In the Lehigh region the wet method of preparation requires 1.428 gallons per minute of water per ton of daily output, and the combination wet-and-dry method of preparation requires 0.692 gallon per minute per ton of output per day. In the Lower field the wet method requires 1.542 gallons per ton of daily output and the wet-and-dry combination method requires 1.23 gallons per ton of output per day. The quantity of water required depends on mining conditions. Steep-pitching measures produce a coal that demands more water in its cleaning than does the flat-measure coal produced in the Wyoming Valley field.

Not only is much water necessary but its quality is important. Ordinary mine water is much too high in sulphur to be employed, as it will corrode the chute linings excessively. Consequently anthracite companies endeavor to obtain either pure water or such as is contaminated with as little sulphuric acid as possible.

*From "Advances in the Preparation of Anthracite," a paper presented at the Wilkes-Barre meeting of the American Institute of Mining and Metallurgical Engineers.
†Anthracite editor, *Coal Age*.

By Rolling Coal-Cutter Bits in a Die They Are Forged Or Sharpened to Uniform Length and Outline

A Machine Cuts as Well as Its Bits Will Let It—An Incompetent Blacksmith Makes an Inefficient Coal Cutter—Proper Angle, Clearance and Length of Cutting Point Should Be Carefully Adjusted

COAL-MINING machines have been continuously improved during the past twenty years until in point of both efficiency and convenience they have reached a high standard. The bits, however—which do the actual cutting—have remained, until lately, practically unaltered and but little attention has been given to bettering or improving them.

While manufacturers of mining machines have made some efforts to furnish their customers with bits of proper angle, clearance and uniformity, the resharpening of these parts as well as the making of new ones, has been left to the mine blacksmith shop. A power hammer and a pair of hand tongs are the best equipment in general use for this purpose. The result is that bits are too often neither of proper shape, angle, clearance or length of cutting point, and no two are alike.

A Few Bits Made to Do All the Cutting

When such bits are put in the machine, even if a conscientious attempt is made to gage them, the result is obvious. Some lose their gage or clearance quicker than others, thus throwing undue work onto those remaining. On the other hand, a few bits, projecting beyond the rest, do more work than they should, and dull more quickly, so that the cutter chain seldom operates at its greatest efficiency and the bits must be reset much more frequently than otherwise would be necessary. Higher power consumption, severe fluctuations in load, undue stress on the chain and machine, a reduced output and an increased labor cost are the results of improperly made cutter bits.

For several years the engineers of the Sullivan Machinery Co. have been studying this problem in an effort to provide a machine that would not only forge bits rapidly but would make them of proper shape and with exact uniformity. After numerous experiments such a machine has been produced and placed on the market.

Bits Are Rolled, Not Hammered, to Shape

As shown in the accompanying illustration, this machine consists of a rectangular frame of convenient width and height, set on four legs. At one side is attached a heavy driving pulley to the shaft of which is fastened an oscillating ram. Rolling action has been substituted for the ordinary hammer blow in this machine. The forming die consists of a heavy roller having a slot in its center of proper shape to make either pick-pointed or chisel-pointed bits. Separate roller dies are provided for each of these two forms.

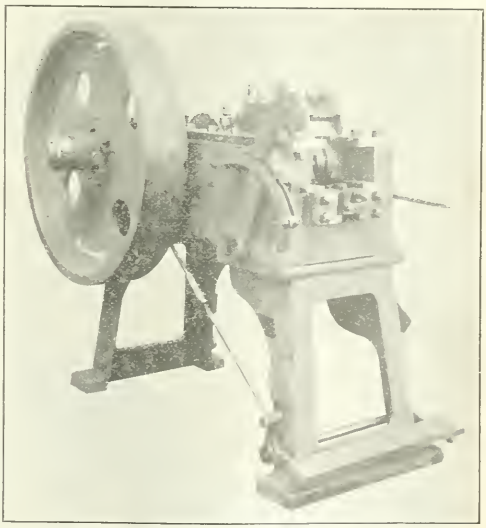
At the forward end of the machine is placed a thick stop or anvil block having an angle corresponding to that which it is desired to give the bit. The bar or blank of heated steel is dropped into the slot just behind this stop; the actuating lever, which is controlled by a foot treadle, is then pressed, whereupon the ram and roller reciprocate, the latter passing over the upper end of the steel, first bending and then forming it into proper shape against the anvil block or stop.

The machine runs at from seventy to eighty strokes per minute and five to six passes of the roller are sufficient to complete a new bit. The operator places the blanks or the old bits, as the case may be, one at a time as they come from the furnace in the slot, and when the sharpening or forming operation is completed manipulation of the hand lever at the right side of the machine moves the shift plate and the completed bit with it to the right, where the bit falls into the discharge chute and slides out of the machine.

Readjusting the Lengths of Old Bits

In resharpening, some old bits will be found to be longer than others. Adjustment for length, in order to maintain cutting points of the proper dimension and taper, is made by the vertical hand lever and ratchet or quadrant at the left side of the machine. This elevates or lowers the wedge or base plate underneath the slot. The position of the bit in the sharpening slot is the same as it would be in the cutter chain of the mining machine.

The shape of the bits made by this machine is that which experience has shown to be most efficient. The



MACHINE FOR MAKING UNIFORM BITS

Four qualities are needed in the making of bits—accuracy in shape and size, speed in operation, and proper temper. For this, much skill is demanded of the blacksmith, but even with this skill he makes a bit that is in many ways defective and he does it at the expense of an excessive amount of time. This machine meets the first three demands. It makes bits of standard shape, accurate outline and five to sixteen bits to the minute. After all, the bit is the real coal cutter and should be as carefully made as the machine which is to use it.

angle of the cutting point with the stock is absolutely uniform, as is also the length of the point. Clearance at the back of the bit is ample, while at the same time the shape is such as to support the point, obviating unduly rapid wear.

As stated above, from five to six passes of the roller are required to form a new bit; from one to three passes are all that are needed to resharpen one that is worn, the actual number depending on the condition of the point. From five to eight bits can be made on this machine in one minute and from seven to ten old ones can be resharpened in the same period without either abusing the machine or slighting the work. With a conveniently arranged heating furnace as high as eighty old bits have been resharpened on this machine in five minutes.

It is asserted by the makers of this sharpener (1) that with it more bits can be made or resharpened in a given time than with the ordinary belted hammer, (2) that the bits so made are uniform, identical and perfect in shape, obtaining the following advantages: (a) A reduction in the power necessary for operating the mining machine, this economy being as high as 25 per cent in some cases. This includes not only the power saved when the bits do not drag in the coal, but the saving that is effected through a reduction in the pull required to move the machine across the face. (b) As the machine requires less power to cut the coal with suitably sharpened bits, less repairs naturally will be necessary. The saving on repairs may be estimated at from 10 to 15 per cent. (c) A set of bits made on this sharpener will cut more square feet of coal than will bits sharpened in the ordinary manner, because of the proper shaping and clearance which they embody. This means an appreciable saving in the amount of time required to cut a given number of places; in other words, it signifies more tonnage per day from the machine.

As illustrating this last consideration a report from a certain mine in Illinois states that as high as five places have been cut with one set of bits of the new pattern, as compared with two places when the old style of bits was employed.

The primary object sought in the design and development of this machine was not so much to enable a purchaser to make or resharpen bits rapidly and cheaply as to provide a much needed element of insurance for coal cutters. It is the intention also to reduce maintenance cost by decreasing the wear and tear on the cutter chain and thus on the machine itself, and to effect a reduction in the power consumed in cutting coal through the employment of suitable cutter bits.

Two Independent Shafts, Which Serve Two Distinct But Connected Mines, Dump Coal Over One Tipple

Coal May Be Brought from Either Mine to Either One of Two Shafts — Each Mine Has Separate Organization — Shafts Walled Ten Feet Above Surface Against Floods — Hoist Twenty Feet From Ground

AT THE plant of the Ben Franklin Coal Co., Moundsville, W. Va., the mine is laid out in two sections. These are worked by separate organizations and as distinct mines which are reached by two shafts, each having two compartments. Yet there is but one tipple for these two mines, which is certainly an unusual arrangement.

The layout at the bottom of the two shafts is such that either or both sections of the mine can be served by either shaft. There are two beds of coal and the same arrangement can be used in either bed. The total hoisting distance is now 270 ft., of which 200 ft. is the depth below the surface, and the balance, or 70 ft., is the height from the ground to the dumping point. Each hoist is designed for a capacity of 2,400 tons in eight hours, and the tipple is built to handle this output. Self-dumping cages operating in balance are employed. Each car holds approximately 4,000 lb. of coal.

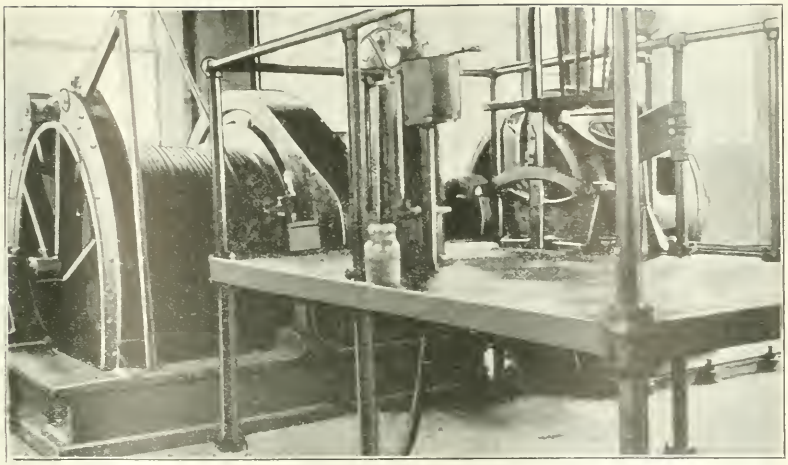
Each hoist has a rope speed of 1,250 ft. per minute. These machines, which are of Lidgerwood manufacture,

Double Headframe

To meet the difficulty of hoisting a large tonnage where small 2-ton capacity cars are used one may have cages for two cars or a multiple deck cage or more than one hoisting shaft. At the Ben Franklin Coal Co.'s mine at Moundsville, W. Va., twin shafts and duplicate hoists meet the problem in the last, and least usual, way.

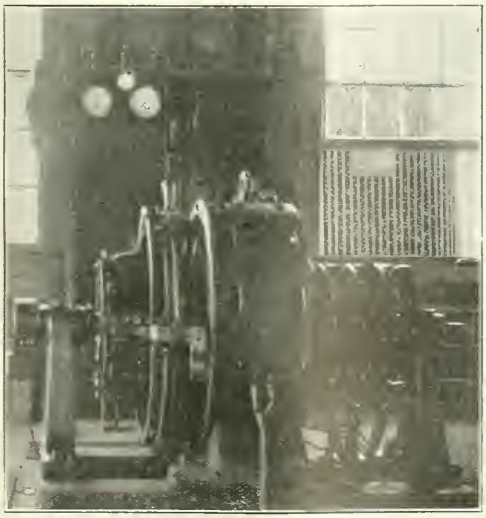
One of the Hoists

Lift is only 270 ft. from mine landing to dumping point. Drums are 5 ft. in diameter, driven through flexible couplings and single-reduction cut-steel herringbone gears by 350-hp. 40-deg. motors. A safety device prevents overwinding and overspeeding, and the control device is of full magnetic contactor type. Protection is provided in case the power fails or too great a demand is made on the power.



are driven through Francke flexible couplings and single-reduction cut-steel herringbone gears by 350-hp. Westinghouse 40-deg.-rise motors. The hoisting drums are 60 in. in diameter and each machine is equipped with a Welch safety device for the prevention of overwinding and overspeeding. A ground stop for use when hoisting men also is provided.

Control equipment, with which each motor is fitted, is of full magnetic-contactor type, providing either manual or automatic acceleration. Protective devices also are installed, providing for failure in power supply and overloading. The operative's platform is raised above the floor of the hoist house and is placed directly behind the hoist drum. Upon it are mounted all control equipment and other devices necessary to comply with the mining laws and compensation rules.



ROTARY CONVERTS ALTERNATING CENTRAL-STATION CURRENT TO DIRECT

Current is received at 2,200 volts, three phase, 60 cycles and is converted to direct current at 250 volts by the 150-kw. rotary converter shown in the illustration.

The plant is situated near the bank of the Ohio River, which usually overflows in the spring, inundating the low ground by which the tipple is surrounded. To prevent flooding of the shafts their four concrete walls, each 3 ft. thick, are carried up to a point 10 ft. above the level of the railroad tracks. The hoist houses also are elevated on concrete columns 19 ft. high. This raises the hoists and other machinery well above the highest known water mark.

Designed by Jacobsen & Schraeder, Inc., the tipple machinery is so arranged that the following sizes of coal can be produced: Slack, mine-run, 1½-in. lump, 3-in. lump, 1½-in. nut and 3-in. nut.

Alternating current for the operation of the hoists and tipple machinery is received at 2,200 volts, three-phase, 60 cycles. For use underground it is converted to direct current at 250 volts, the 150-kw. rotary converter shown in one of the accompanying illustrations being used for this purpose. This machine is located in a room in the rear of that containing one of the hoists.

Test of Turbine Blades of Stainless Steel

STAINLESS steel is not a material merely for making pocket knives and table cutlery. It is an industrial alloy which will compare in importance, it is believed, with manganese, nickel, chrome and other steels.

Thomas Firth & Sons, at their Tinsley factory, in Yorkshire, England, recently fitted several experimental blades in a Westinghouse turbo-generator set of 2,000 kw. running at 3,000 r.p.m. The temperature of the steam with superheat averages about 600 deg. F.

Nine experimental stainless steel blades, some polished and some unpolished, were fitted in the low-pressure end of the turbine on June 11, 1920, and alongside them were placed for comparison three new nickel-steel blades supplied by the makers. The latter were of 5-per cent nickel steel. At the high pressure end eighteen stainless steel blades were placed, some polished and some unpolished, and three standard blades. After a run of 3,471 hours the turbine was opened and it was found that whereas the standard blades had corroded in the usual way the stainless ones, both polished and unpolished, were practically untouched and retained their original brightness.

Problems of Operating Men

Edited by James T. Beard

Working a Vertical Seam of Coal

Maximum Recovery at Minimum Cost Determines Choice of Method —Steep Pitch to Vertical Minimizes Roof Pressure—Chutes Driven on Pitch of 45 Deg. Above Airway—Pillars Drawn Back in Benches

ALLOW me to suggest, for the consideration of readers, another solution of the problem presented in the inquiry of a mining engineer, *Coal Age*, Nov. 3, p. 726, relative to the working of a vertical coal seam.

The proposition presented is somewhat an unusual one and it may be that the plan I have in mind for working such a seam will prove of interest, in connection with the method already described in the reply to this inquiry. The seam is said to be a friable lignite, from 10 to 15 ft. in thickness and having a good hanging wall, but the footwall is poor and spalls off badly.

In mining coal, the choice of method to be employed must be determined by considering the plan that will produce a maximum recovery, at a minimum cost per ton, and yield a product in good marketable condition, always having in view a maximum degree of safety for the workmen.

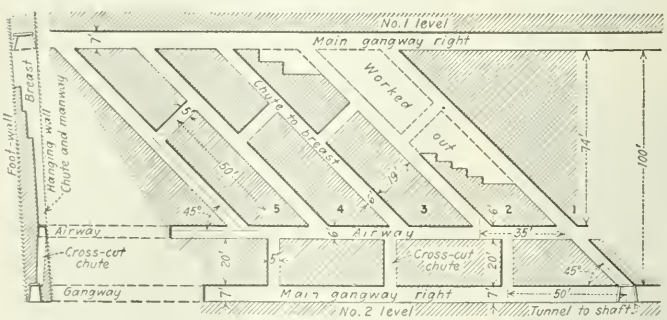
In this selection, the factors influencing the choice of a method are the roof pressure, strength and character of roof, floor and coal, inclination and thickness of seam, equipment available and output desired. Without a knowledge of the local conditions, it is practically impossible to make an absolute choice of a method that will, with certainty, yield the best results. It is quite evident that numerous details may considerably modify the choice.

It is practicable, however, to view the proposition of working a vertical seam in a general way and, without being familiar with the local conditions in this case, it is in the spirit of helpfulness that I am presenting the following suggestions, accompanied by a sketch that I hope will be clear.

Owing to the friable character of the coal, the steep pitch and the thickness of the seam, the pillar method of mining is the most logical to employ. Also, it being desirable to produce a maximum percentage of lump coal, the excessive use of powder should be avoided, and the loading and haulage of the coal should be performed in a manner to avoid breakage, as much as possible.

The sketch presented in this inquiry (p. 726) showed the first level, 100 ft. below the surface, reached by a rock slope and tunnel; while the second level, 100 ft. below the first, was reached by a shaft and tunnel. Assuming this to be the case, and starting from the lower tunnel where it cuts the seam, a main gangway 7 x 7 ft. should be driven to the right and left of the tunnel, close to the footwall and continued to the property lines.

As indicated in the figure, crosscut chutes are driven up, on a steep pitch, to the hanging wall, a distance of 20 ft., where an airway 5 x 6 ft. is then driven to the right and left along the hanging wall and parallel to the gangway 20 ft. below.



VERTICAL SECTION AND PLAN OF MINE PROJECTED ON VERTICAL PLANE

The development is now ready for working out the coal above the airway and, for that purpose, my plan is to drive narrow chutes, say 5 x 6 ft., in section, up from the airway, at an angle of 45 deg. and close to the hanging wall. These chutes are driven on 35 ft. centers, which will leave pillars about 19 ft. thick between them.

As shown in the figure, I would locate one main chute starting from the tunnel, where much of the coal will be loaded into the cars in the later progress of the work. As the development proceeds, each chute is driven up to the first level above, a distance of something over 100 ft. measured on the pitch.

When five or more of these chutes have been driven through to the first level, the work of robbing the pillars in this panel or block is commenced. In mining parlance, this is done by "slabbing" back the rib of the chute. The same process is continued in steps or benches, as indicated in the figure, till the footwall is reached.

The work of robbing is started on the upper end of the outby pillar and progresses inby. When properly conducted, this method will permit of an arrangement whereby the coal will run from the breast and be delivered to the main chute; or the coal in each breast can be sent down a trough, erected in its own chute, and passed through a cross-chute between the airway and main gangway, where it is loaded into the mine cars.

By careful arrangement, it is possible to keep the main chute full of coal and, at the same time, give each breast an opportunity to send out coal continuously. The plan requires but little timber as all haulage roads, airways and chutes are driven in the coal, except where the footwall or hanging wall forms a rib of the opening.

It is needless to say that the extraction should proceed as rapidly as possible, in order to avoid trouble from caves and settlement, due to the disintegrating effect of the air on the strata. In respect to ventilation, the best plan is to pursue the usual one of conducting the air first to the inside workings, by means of an aircourse, forming the back entry of each haulage road. From that point it is carried along the faces of the breasts, passing through the crosscuts in the chute pillars, which were made 50 ft. apart when the chutes were driven. Where no gas is present, the haulage road is generally made the return airway.

H. B. MILLER,
Mining Engineer & Geologist.
Pittsburgh, Pa.

Mining Coal at Sydney, N. S.

Unjust criticism of coal-mining equipment at Sydney—Many Operations of Cape Breton the most up-to-date on the Continent—Difficulties encountered peculiar to the district—Must be studied on the ground.

IN a recent editorial appearing in *Coal Age*, Sept. 1, p. 325, entitled "An International Issue," much injustice was done to the mining of coal in Cape Breton. As the writer states, he is taking a "long-distance view" of a Canadian problem.

In common justice to the coal mining of this district, it is only fair to assume that the editorial writer is wholly unfamiliar with affairs in Cape Breton. Either *that*, or he took this

course for the purpose of getting under some person's skin and spurring him to defend our "Jubilee Bankhead," to which his remarks particularly refer, but of which we are justly proud.

The readers of *Coal Age* will be interested to know that we are operating, here in Cape Breton, mines of almost all description, ranging from the most up-to-date equipment with tumbling cages that hoist 5,000 tons in eight hours, to a little slope mine, opened last year, and equipped with a pole bankhead cut from the clearing on which the mine was sunk.

The larger mine, first mentioned, cost for shaft and bankhead over $1,000,000, when started about 15 years ago. The little slope mine mentioned is now producing 500 tons of coal, per day, and its total cost for bankhead and equipment was under $75,000. It is interesting to note, in passing, that the cost of production, per ton, is less at this mine than at the larger operation.

The problem of mining coal in Cape Breton is a big one, and we desire all the assistance possible in its solution. Every mine, here, presents its own peculiar difficulties, which must be studied on the ground. As is well known, these operations are submarine and in danger from water and gas.

Mining Coal Under the Sea

The ventilation of workings four miles out under the sea is of itself a man-sized problem. The roof ranges from bad to worse. While the longwall method of mining can be successfully employed in some places, other undertakings can be worked only on the "board-and-pillar" plan. The coal is very fragile and requires most careful handling, as the market demand is for large coal.

Under these conditions, it can be readily understood that the mining of this coal is no simple trick. Every fall the coal gets, in passing from the face to the consumer, means another gray hair in the sales agent's head, and a few cents less in the pockets of the shareholders. The handling of the product is made more difficult by the fact that the government coal-mine inspectors of Nova Scotia do not approve of a screening plant within 200 ft. of a downcast shaft.

The editorial, previously mentioned, commented on the size of our Jubilee 1-ton tubs, expressing the thought that they should be larger. In reply, let me say that we are using 2- and 4-ton tubs in some of our 7- and 9-ft. seams. But, I would ask the writer if he thinks he could remain close friends with a 4-ft. 2-in. Jubilee pit pony, by expecting him to haul a 2-ton box up an 8 per cent headway. I do not have to tell the editorial writer that, to use a larger horse in this thin seam, would mean extensive brushing of the roof, which would be prohibitive.

At Jubilee Colliery, we have the last word in electric hoists, built by the Vulcan Iron Works, this year, and equipped with every modern safety appliance. At the Princess, a pair of 36 x 60-in. engines, direct connected to an 18-ft. drum, hoists the coal up a 700-ft. shaft. This engine was built in England, in 1867, and has been in continuous operation ever since. Several of our collieries are equipped with self-dumping cages. At one of these, 8-ton, self-dumping skips are hoisting 5,000 tons of coal in eight hours.

May I ask, in conclusion, Is it any wonder that we are proud of our Jubilee Bankhead, which every one down East seems to feel has reached the topnotch in mine equipment

For a period of years, in the past, our engineers have visited the principal coal mines, in the United States and Europe, and what we have are the results of their investigations. The company is now contemplating another Jubilee Bankhead, for a new mine.

Sydney Mines, N. S. M. Dwyer.

Causes of Loss in Power Transmission

Small conductors cause large drop in voltage—Heating effect not important factor in mining practice—Poor joints in conductor the chief source of trouble—Different forms of joints used in wiring.

In a brief article that appeared in *Coal Age*, July 7, p. 12, W. L. Murray draws attention to the heating effect that results when a conductor is overloaded or its current-carrying capacity exceeded.

In urging the selection of a wire of suitable size, the writer deals with the subject almost wholly from a standpoint of heating effect, stating that the wire may become red or white hot or even melt.

In mining practice, however, the chief trouble arises from choosing too small a wire for the transmission of power, which increases the resistance and causes the loss of voltage. The heating effect is not an important factor.

Small Conductors Increase Linedrop

My experience proves to me that the electrical conductors installed in coal mines are, as a rule, large enough to carry the required current without heating the wire to any serious degree. But, considered from the standpoint of efficient operation, these conductors, are very frequently far too small and cause a loss of voltage that is a great hindrance in the operation of the machines and motors in the mine.

Occasionally, I have found this loss to run up as high as 50 per cent. Such a condition is readily explained by the fact that when the mine was first opened the distance, from the power house to the point in the mine where the power was used, was comparatively small. Later, as the mine was developed, that distance greatly increased.

As is well known, the loss in voltage or line drop increases with the resistance, which is proportional to the length of the conductor, for the same size of wire. It is easy to see that a wire that will carry a given current a few hundred feet with a low linedrop, would be incapable of carrying the same current several thousand feet into the mine, without a great loss in voltage.

Again, as electric power is the product of the voltage, in volts, and the current, in amperes, it is clear that any loss of voltage, in transmission, represents a loss in the power available for operating the machines. That means an increased ratio between the power generated and that utilized in the mine, or a loss in efficiency.

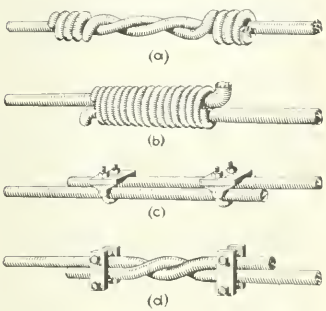
Another source of trouble that often causes an extensive voltage loss, in power transmission in mines, is poor or improperly made joints in the wire conductor. In some instances, I have found a poor joint to have caused a resistance equivalent to a hundred feet or more of wire. This may seem overstated, but it is a fact that emphasizes the need of making good joints wherever these are required.

Four Forms of Joint Recommended As Most Efficient

In the accompanying figure, I am showing four forms of joining the ends of two wires, any one of which will reduce the resistance offered by the joints to an approximate minimum. While each of these have, more or less, a particular adaptation that makes the choice of one or the other preferable, they all require that the two wires be well soldered together.

The first form shown at (a) is that known as the twisted or Western Union joint. In making this joint, the ends of the wires are first thoroughly cleaned with a file and sandpaper. The central portion must be twisted, as shown in the figure, which gives a better opportunity to solder the wires and make a complete joint.

This joint is excellent for permanent work. Its strength and electrical conductivity can hardly be improved. It is, however, a hard joint to make, in the larger sizes of wire, because of the difficulty of twisting the two loose ends tightly around the conductor.



JOINING ELECTRIC CONDUCTORS

The second form of joint shown at (b) is more quickly made, but has not the strength of the preceding one, as the two wires are liable to pull apart under a severe strain. As before, the two wires are thoroughly cleaned and a sharp bend made at the end of each. They are made to lap about 4 in. and firmly soldered together, after which the joint is wrapped closely with a smaller wire that has first been cleaned; and again the whole is well soldered.

In the third form of joint shown at (c), the wires having been thoroughly cleaned are lapped about 8 in. and clamped together with two wire-rope clamps, after which the space between the clamps is well soldered. This is a good joint for temporary work, as it can be taken apart easily without loss of copper.

The last or fourth form of joint, shown at (d), is another twisted joint where the two loose ends are secured by a simple clamp, as shown in the figure. Here, also, the space between the clamps is well soldered to insure the wires having a good contact. This is a good joint for any class of work.

Hillside, Ky. F. C. Sinback.

Physical Examination of Miners

Physical defects should debar men from employment in mines. Color-blindness, deafness, and other defects render men unsafe as mine employees—Physical examination an important requirement.

THE question asked by an inquirer in *Coal Age*, Sept. 29, p. 497, as to whether a man who lacks the sense of smell, would make a safe mine official, brings up a point that has long been in my thoughts and which I believe deserves the earnest consideration of mining men who are desirous of increasing the safety of mining.

The reply to this inquiry stated concisely and clearly that a man whose faculty of smelling is impaired is not fit to act in an official capacity in a mine and, further, such a lack would be sufficient reason for witholding from him a certificate of competency.

Although the sense of smell is the only faculty referred to, here, that would debar men from holding an official position in a mine, there are many other possible imperfections in men that not only unfit them for serving in an official capacity, but make their employment in any capacity underground a menace to the lives of all in the mine.

It is not too much to say that to employ such men as are known to be physically deficient, in any manner whatsoever, is to defeat the very purpose of our mining laws, which are enacted to provide for the health and safety of persons employed in and about the mines for the protection of property.

Many years ago, in Great Britain, I heard a man who was lectioneering in the interest of a labor candidate for Parliament make the statement, in a mining community, that he knew personally several firebosses who were color-blind and serving in that district.

He stated they could not discern a gas cap on a safety lamp, intending this to serve as a plank in the platform of the candidate for whom he was speaking. The statement was not without effect. The British mine law has since been amended and the certification of firebosses now includes a rigid color test of the eyes of all candidates.

That color-blindness is more common than is generally supposed is shown by the compulsory test of the eyes of seamen and railroad men. A medical examiner, acting for a large company, recently stated that out of 900 seamen whose eyes he had examined, about 2 per cent were unable to discern different colors and had to be rejected for service.

Good hearing is also an important faculty and should be possessed by all underground workers, whether mine officials, daymen or miners. Not infrequently it has happened that a man partially or wholly deaf has been caught and injured or killed, on a haulage road, because he did not hear the shout of the driver or the alarm of an approaching trip.

Strange as it may seem, there is a case on record, in a state where I formerly worked, showing the employment of a totally blind man who worked in that condition, for several years at the coal face. The unfortunate man had lost his sight by going back on a shot that failed. Later, out of sympathy for him and his family, he was permitted to continue his work as a miner. Mine foremen should remember, however, that it is no act of kindness to permit a man to endanger his own life and the lives of others, in work for which he is unfit.

In my experience, I have known of the employment of men in mines who were mentally irresponsible. I recall one case of a man subject to epileptic fits being taken suddenly when hoisted on a cage with seven other men, in a 900-ft. shaft. Fortunately, the men were on the alert and caught and held the fellow till the cage reached the surface, thereby avoiding an accident.

At another time, I worked with a buddy who was subject to these fits. This man was taken with a fit while traveling an airway and fell where his path crossed the main haulage road at the foot of an incline. It was only the prompt action of a fellow worker who rushed to a refuge hole and wrecked an oncoming car, with a prop taken from the hole, that saved the lives of the man and those trying to rescue him.

Many instances could be mentioned of deaf mutes, peg-legs and other cripples employed underground. One man, I remember, had both arms cut off at the elbows. All of which I have known in my own experience in mines. Surely, a coal mine is no place for such.

As far as my knowledge goes, none of our state mining laws require a physical examination of candidates for certificates of competency. To my mind, this is an important omission. It would seem absurd for a board of examiners to put their official sanction on a man who may be able to perform the duties, required of him by law, only in pantomime.

In my opinion, the law should require all state examining boards to examine candidates as to their physical fitness to perform their duties. The means of making such physical examination should be placed at the disposal of the board. No candidate who would fail to pass the physical test should be granted a certificate. Such physical tests are being instituted by some companies already, I am glad to say, and their efforts in this direction are commendable.

JOHN WALLS, SR.

Bayview, Ala.

Inquiries Of General Interest

Facts About the Carbide Lamp

Large Percentage of Carbide Lamps in Use, in Mines, Calls for Heavy Consumption of Carbide—Estimate of Number of Lamps in Use Based on Reported Consumption of Carbide, Per Ton of Coal Mined

I WISH to obtain what information is available regarding the use of the carbide lamp in coal mining. Is it possible to give any accurate figures on the number of these lamps now in use in mines, in this country, and the amount of carbide consumed by them? Facts bearing on this matter, if available, will be greatly appreciated.

SUPER.

———, Ill.

It is obvious that it would be practically impossible to give accurate figures regarding the number of carbide lamps in use, in the coal mines of this country, as no reliable data of that kind are available. However, owing to the evident large number of these lamps in use, as indicated by the prodigious consumption of carbide, the matter is of much importance statistically and we have made earnest efforts to secure information on which to base an approximate estimate.

The latest reliable statistics (1918) published by the Federal Bureau of Mines, shows a total of 762,426 men employed in coal mining. Of this number, 597,923 or 78 per cent, work underground.

Careful inquiry of manufacturers shows that, approximately, there are 150,000 Edison electric cap lamps and about 10,000 of all other types of electric lamps in use, in the mines, together with 25,000 flame safety lamps and 5,000 oil torches.

This makes a total of 190,000 of all kinds of lamps other than carbide lamps in use by, say 598,000 miners. Taking this as a fair estimate, it is logical to assume that of the 598,000 miners, in our coal mines, over 400,000 are using the carbide light.

These figures show the immense popularity of the carbide lamp, gained in the few years since its introduction into the mines. It also explains the rapidly growing consumption of carbide in recent years. It is stated in "Mine Gases and Ventilation," page 309, "A charge of 2½ ounces of carbide will supply gas sufficient to maintain a flame 1½ inches in length during a half-shift or more; but then it will be necessary to recharge the lamp."

This would mean a daily consumption of five ounces of carbide, by each miner using that lamp. Statistics show the average production of coal, per man, as between three and four tons per day. The consumption of carbide based on this estimate is, therefore, 1 lb. of carbide for every 10 tons of coal mined.

Correspondence with a number of large coal companies in different states, using the carbide lamp, exclusively, shows a total of 202.6 tons of carbide consumed in the production of 4,198,279 tons of coal; or $4{,}198{,}279 \div (202.6 \times 2{,}000) = 10.3$ tons of coal mined, per pound of carbide consumed. We believe these figures are a close approximation to the actual facts.

Examination Questions Answered

Miscellaneous Questions

(Answered by Request)

QUESTION—*What are the advantages of driving rooms and entries on sights, and how would you drive to keep rooms straight without sights?*

ANSWER—The advantage of driving rooms on sights is that they are kept straight and there is no danger of their running into each other. The pillars separating the rooms are kept at a uniform width and the danger of squeeze or creep is avoided. The work of drawing back the pillars is then performed with greater safety and there is less loss of coal than where the pillars are of variable thickness. Under these conditions, there is less roof trouble in the first working, or when robbing, and fewer accidents are liable to occur.

The best method of keeping the rooms straight without sights is to sight along the rail, while keeping the track straight and at a uniform distance from the straight rib of the room.

QUESTION—*What effect does pitch of seam have on ventilation?*

ANSWER—The pitch of a seam affords an opportunity for air columns to form, which may either assist or retard the circulation of the air, according to the relative temperatures of the air on the intake and return sides. In a mine generating marsh gas or methane, the gas being lighter than air, tends to accumulate at the face of the pitch workings and is often difficult to remove. On the other hand, if the mine is generating blackdamp, this gas being heavier than air, tends to accumulate in the dip workings and is likewise difficult to remove.

QUESTION—*Which is the most evenly ventilated, a flat or an inclined seam?*

ANSWER—A generally flat seam is capable of more uniform or even ventilation than an inclined seam, because there is no opportunity for air columns to form in different parts of the working, which would change the ventilation by assisting or retarding the air current, at different points in the mine.

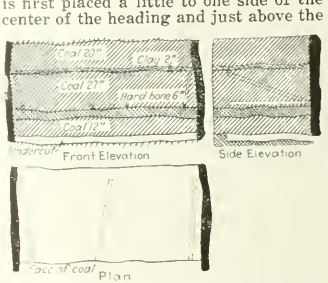
QUESTION—*What effect does the amount of moisture carried in the air have upon the mine?*

ANSWER—The *amount* of moisture in the air is not material, in respect to its effect on the mine, but rather the *degree of humidity* of the air. For example, an air current of 60 per cent humidity, at a temperature of 70 deg. F., will carry twice the amount of moisture, volume for volume, as air of the same humidity, at 50 deg. F., and yet have no greater effect on the mine, in respect to making the air dry or wet. The effect produced in a mine by the moisture carried in the air increases and decreases with its degree of humidity and the relative temperatures of the outside and inside air.

QUESTION—*In a mine worked by safety lamps, the seam is a hard coal having the following section: Coal 1 ft. 8 in.; clay 2 in.; coal 2 ft. 3 in.; hard bone 6 in.; coal 12 in. An entry driven 9 ft. wide is undermined, below the 12 in. of coal, to a depth of 5 ft. What instructions would you give your shotfirers, both for safety and economy in blasting the coal? Show by sketch, in plan and section, the location of the shots, stating which shot should be fired first and giving your reason.*

ANSWER—The shotfirers should be given instructions to make a careful test for gas in each place before firing a shot and to fire no shots that, in their judgment, are unsafe. Only one shot should be fired at a time in this heading. Time should be given for the air current to sweep away the gas and smoke, before firing another shot.

As indicated in the figure, one shot is first placed a little to one side of the center of the heading and just above the



hard bone. The hole for this shot should be drilled level and extend to within three or four inches of the depth of the cutting. The position of the hole should be such that the charge will be located about in the center of the heading, the hole being started a little to one side and inclined toward the center, as shown in the plan. This shot should be expected to break down the hard bone and the 12 in. of coal beneath it. It will also break the coal above and give opportunity for the two rib shots, fired later, to perform their work. As shown in the figure, the rib shots are each started about 8 or 10 in. from either rib and the holes inclined upward and toward the rib, so that each charge will be located quite close to the rib side.

QUESTION—*How may an even amount of moisture be maintained in the air?*

ANSWER—The amount of moisture carried in an air current will remain constant in its passage through the mine when the conditions are such that the air is saturated at the temperature of the mine. It will then neither deposit or absorb moisture.

QUESTION—*Which would produce the most poisonous afterdamp, an explosion of dust in a non-gaseous mine, or an explosion of gas in a gassy mine?*

ANSWER—Much will depend on the amount of air in the workings; but, in general, it can be stated that an explosion of dust will produce more carbon monoxide (CO), which will render the resulting afterdamp more poisonous than an explosion of methane or marsh gas (CH_4), under like conditions with respect to the air.

QUESTION—*An airway 7 x 10 ft., in section, is passing 35,000 cu.ft. of air per minute, under a water gage of ¾ in. It is desired to reduce this quantity of air by means of a regulator, so that the airway will pass but 21,000 cu.ft., under the same water gage. What should be the area of opening in the regulator?*

ANSWER—In order to calculate the area of opening in a regulator, such that it will pass a given quantity of air under a given water gage, it is necessary to know the natural pressure or water gage due to the reduced quantity of air that will then be passing in the airway. In this case, we assume that the original water gage (¾ in.) remains unchanged, in front of the regulator, and calculate the natural gage due to the reduced circulation, remembering that the pressure or water gage varies as the square of the quantity of air passing. In other words, the gage ratio is equal to the square of the quantity ratio. Therefore, calling the natural water gage, due to friction when the airway is passing 21,000 cu.ft. instead of 35,000 cu.ft. per min., we have

$$\frac{x}{0.75} = \left(\frac{21}{35}\right)^2 = \left(\frac{3}{5}\right)^2 = 0.36$$

$$x = 0.75 \times 0.36 = 0.27 \text{ in.}$$

Subtracting this natural water gage from the original gage gives the water gage due to the regulator; thus, 0.75 — 0.27 = 0.48 in.

Finally, the area of opening in the regulator required to pass 21,000 cu.ft. of air per minute, under a water gage of 0.48 in., is

$$A = \frac{0.0004 \times 21{,}000}{\sqrt{0.48}} = 12.12 \text{ sq. ft.}$$

QUESTION — *What effect does temperature have in removing gases from high falls?*

ANSWER—A higher temperature of the gas accumulated above a fall makes it more difficult to remove, because of its tendency to rise. In such cases it is necessary to employ a stronger air current to sweep the gas from the fall.

QUESTION—*How do seasonal conditions affect the wetness and dryness of underground roads workings, in coal mines?*

ANSWER—The cold air of winter, entering the mine and becoming warmed by the higher temperature of the workings, has its capacity for carrying moisture rapidly increased. In other words, the air becomes drier by reason of its higher temperature. It is then in a condition to absorb moisture from the mine workings, which renders the mine dry and dusty, unless means are taken to humidify the intake current by the introduction of steam or otherwise.

On the other hand, the generally warmer air of the summer season, entering a mine and becoming cooled in passing through the underground workings, has its capacity for absorbing moisture much reduced. In other words, the lowering of the temperature of the current, after it enters the mine, renders the air more moist. If the outside air approaches the point of saturation before it enters the mine, the lowering of its temperature may cause moisture to be deposited in the mine.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

BUSINESS is better and sentiment throughout the country reflects courage, according to a bulletin on business conditions just issued by the National Bank of Commerce in New York. "Such progress as has been made by the business community toward normal conditions," the bulletin continues, "results from a realization that artificial levels of activity will not again be reached in any period near enough to affect the problems of to-day, and from a determination to practice economies of operation more rigid than heretofore thought possible.

"Some part of the recent gain in business is unquestionably a result of seasonal demand. Permanent improvement depends to a large extent on foreign buying power, and even more on the adjustment of conditions under which the farmer operates. The last three years have clearly shown that the European situation can be stabilized only by the political and economic efforts of the countries concerned. Domestic conditions can be bettered by steady determination on the part of corporations and individuals to secure greater efficiency and to practice greater economy. This will result in gradual readjustment of the burden of price inequalities now resting on the farmer.

"In the period immediately ahead, manufacturers will face the most severe competition in a generation. It is now clear that many important industries are seriously overbuilt, when measured in terms of effective demand here and abroad. There is no method by which competition can be avoided, but there are methods by which it can be successfully met. Overhead charges should be rigidly examined and cut to the lowest point consistent with productive efficiency. Costs should be critically studied and such examination should include not only factory operations but the entire producing organizations. In periods of high profits, useless frills are certain to be introduced into the best systems.

"In many lines, labor costs must be further reduced. Such reduction can in part be attained by lower wages and in part by increased efficiency in organization for production. A considerable part of labor inefficiency is at times due to actual defects in plant and organization. Business has two duties: first, to provide the best means for efficient production by its labor, and second, to insist on a day's work for a day's pay."

Tin Plate Mills Resume Work

Fires have been started in the six furnaces at the Yorkville (Ohio) tin plate plant of the Wheeling Steel Corporation, which had been idle since the latter part of June due to refusal of the company to renew union agreements for its subsidiary companies.

The Newcastle (Pa.) tin plant of the American Sheet Tin Plate Co. resumed in full at midnight Sunday, Nov. 20. The plant had been operating on a five-day a week schedule and with ten of its twenty mills in operation. The entire twenty mills are now at work on a five-day a week schedule.

The American Sheet & Tin Plate Co. started four additional hot mills last week at the tin plate mill in Farrell, Pa. This placed twenty-four out of the thirty mills in operation. The prospects for steady operation throughout the balance of this year are considered good.

The company also put nine additional hot mills in operation at Vandergrift last week. There are now twenty-one mills running.

92,000 Fords Built in October

Final October production figures of the Ford Motor Co. indicate that there were 92,000 automobiles and trucks produced during that month. Of that number approximately 85,000 were turned out at Highland Park and the assembling branches at Kearny, Kansas City, Philadelphia and St. Louis. The remainder were produced in Canada and other foreign plants The November production is being maintained according to schedule.

Valve Plant on Full Time

The Chapman Valve Manufacturing Co.'s plant at Springfield, Mass., resumed full time Monday, Nov. 28, with practically a full working force of between 700 and 800 hands. The step is said to be due to improved business conditions. Lately the factory has operated five days a week.

Industrial Employment Gains

Improvement in business conditions are indicated by the employment reports of the Bureau of Labor Statistics of the Department of Labor. In 10 out of 14 groups of industries there were increases in the number of persons employed in October as compared with September and in 4 decreases. Six of the 14 groups showed increases in the amount of money paid to employees and eight showed decreases. The largest increases in the number of persons on the payroll are shown in car building and repairing, which had a gain of 6.1 per cent, and bituminous coal mining, with a gain of 5.3 per cent. In the automobile industry there was a decrease of 3.9 per cent and in men's ready-made clothing a decrease of 1.9 per cent. The bituminous coal mining industry showed an increase in the amount of money paid employees of 17.3 per cent while the amount paid to workers in the iron and steel industry increased by 15.1 per cent, and that paid in the car building and repairing industry by 12 per cent. There was a decrease of 16.1 per cent in men's ready-made clothing, and a decrease of 10.8 per cent in automobiles. A comparison of the figures of October, 1921, with those for identical establishments for October, 1920, shows that in eight of the 14 industries there were increases in the number of persons employed, while in six industries there were decreases. Six of the 14 industries show an increase in the total amount of the payroll for October, 1921, as compared with October, 1920. The remaining eight industries show decreases in the amount of the payroll. The woolen industry shows the most important increase, 38.3 per cent.

Consumer Storage Throughout the Country as a Means of Regularizing the Coal Industry

Plan Has Been Shown to Be Feasible in Recent Emergencies —Initial Cost Would Be Counterbalanced by Stabilization of Price — Benefit to Mine Worker in Regular Work

By Thomas Robson Hay

THE season of hot weather and vacations does not recommend itself as the time in which to consider the purchase and storage of coal for the cold winter months that are sure to follow. And yet it is this very improvidence and, in a sense, indifference that is the cause of no little suffering and hardship in the cold season and which has as its expression the berating of the coal operator for high prices and of the railroads for delayed shipments, due to traffic congestion.

In the cold winter months, when demand is at the maximum and railroads are congested with traffic and hampered by unfavorable and harassing weather conditions, prices are seemingly unreasonable, but only are they so, as a rule, by comparison with the prices that would be just and reasonable if the industry were regularized. In the summer months the prices obtained usually are too low and in the winter months, by comparison, they are too high. On the other hand it should be noted that the prices received by the coal producer in the mid-season are too low in most cases to allow for a fair return on the investment, and it is in the winter time that the economic law of supply and demand helps to equalize the average annual price received per ton to the point where coal production can be considered a profitable undertaking. But the profits for all mines are not the same. The high-cost mine is just breaking even, with perhaps a small profit. Only the excessive demand enables it to come into the market. But the medium- and low-cost mines may, at the same time, be making comparatively large profits, to average up with their small summer profits or, perhaps, losses.

Mine Worker, Public and Operator Affected

The three primarily interested parties are the miner, the public and the operator. The miner is interested because his income depends on the continuity of operation of the mines; the operator is interested because his income and profits are dependent not only on the continued operation of the mines, but also on the efficiency and economy with which they are operated; the public, whether industrial or domestic user, is interested from the standpoints of cost and regular delivery. The industrial user, whether employer or employee, is interested because the economic fulfillment of fair price and assured delivery determines either directly or indirectly the continuity of industrial operations and, therefore, of income and profits. The domestic user is interested because a fair price and assured delivery affect his living costs and his personal convenience and comfort.

The conduct and methods of the coal operator and, to a lesser extent, of the miner, in the time of abnormal demand during the war and the subsequent period of inflation, have caused the buying public to be disposed to view with reservations any explanation of the present state of the coal industry. This public considers that the coal industry has been deservedly "let down" from its perch of high profits and high wages and of arrogance and indifference to the present level of supplication and humble petition. It is not disposed to view with tolerance and consideration any pleas of poverty, of reduced earnings, or of physical handicaps of production and distribution as justification for any but the lowest price for a commodity produced and sold in one of the most disorganized and cut-throat markets in the country, a market in which the survival of the fittest, no matter how ethical the method, is the only index of success.

The following discussion of the means available and the value of regularizing the coal industry takes the long view of the question, considering the recent period of continued high prices and public inconvenience as abnormal. Such regularization will have two fundamental values, one social, the other industrial. The only available and feasible method of regularizing the industry is by the location of storage points, all over the country, large enough to enable the mines to operate at a fairly average rate of production throughout the year, while at the same time allowing for an adequate flow of supply to meet the irregular demands. Such a scheme of storage would be primarily a problem for the domestic user as represented, individually and collectively, by the municipality and the state. Industry would be required to provide its own individual and collective facilities. This it already does, or rather can and has done, when a coal strike has been expected and anticipated. Such storage has, however, been unusual rather than a common practice, but the mere fact that it has been done in such an unorganized and individual manner is only proof that it can be done either individually or collectively as a common practice.

Storage of Coal Would Tend to Stabilize Price

Coal storage to any extent would undoubtedly be an apparent financial burden, but in the long run the provision of the means of bulk storage would be a profitable investment. Such an arrangement would tend to stabilize the price of coal the year round by acting as a reserve reservoir to draw from as required. The bulk of the domestic coal is consumed in the period from December to April, at a charge that is too often exorbitant. During this period industrial consumption is also at a maximum, railroad tracks, yards, sidings and terminals are congested and in very cold weather the transportation system is too liable to temporarily break down entirely. Though industry consumes 35 per cent of the total annual production, the railroads 25 per cent, and less than 16 per cent is applied to domestic uses, it should be noted that these are percentages of the annual production and that the peak of production comes in the winter months, during which time coal for domestic uses forms a larger percentage of the coal moved.

Regular Work Would Simplify Wage Problem

Storage facilities would benefit the miner in that it would be possible to anticipate requirements with some degree of exactitude. A certain number of working days per month or per year could be relied on as an irreducible minimum and wage scales set accordingly. Under present conditions the miners' wage scale, like the dock workers' wage scale, is high because it is necessary in 200 days or less to obtain sufficient income to make possible the maintenance of a decent standard of living. The income from the busy periods must be applied to help tide over the slack periods.

The operator would benefit, because his investment, instead of being speculative would become stabilized, the returns being dependent on efficiency of management rather than on the vagaries of the season and the resourcefulness and, too often, unscrupulousness, of the operator. The honest and public-spirited operator, giving his life to serving the public, with ethical standards of fair and just dealing would not have his investment jeopardized and the public good-will impaired and often destroyed by the

operator or broker whose only goal is financial profit and who has no ethical standards or ideals of service.

Such an arrangement of storage, which would be spread over the country just as is the banking system or the grain elevator, would be costly and would necessitate the proper solution of the various engineering features and observance of the requirements of safe storage to prevent deterioration in heat content and spontaneous combustion. By careful and suitable location of the central district, or community, reservoirs, the turnover would be high and the coal kept moving.

As now operated and manned the conditions in the coal industry are somewhat analogous to the conditions obtaining in such industries as garment making and farming, in which the labor, plant and facilities must be adequate to take care of a seasonal peak demand, during which time work is carried on under difficulties and at high pressure, but in which the plant is not susceptible of ready adaptation to any other industry during slack seasons. Labor must thus periodically seek temporary or permanent employment elsewhere, or else stand idle. This condition, under the present system of corporation accounting, requires that the continuing overhead charges be liquidated in the season of maximum demand and results in congestion of rail and terminal facilities and in dissatisfaction due to comparatively high prices and delayed deliveries on the part of the buying and consuming public.

It should not be understood that coal production ceases after the winter period of maximum demand. The railroads and industrial plants continue their demands through the balance of the year, though in reduced degree. Less coal is required by the railroads during the warm season because steam generation can be more economically accomplished and traffic and haulage conditions are less severe, due to the fact that yard work is performed more efficiently and main tracks and sidings are not covered with snow and ice. Industrial operations are at a lower pressure and no fuel is required for domestic or plant-heating purposes.

Fruition Dependent on Leadership and Necessity

The practicability and the possibility of working out the suggestions set forth may at first sight seem Utopian and, at least, remote. But the Utopia of yesterday can become the truth of to-morrow, as the world's history has often proved. It is only dependent on leadership and on whether the idea of unconditional necessity is uppermost. Grim need creates the desire and this desire in turn must be converted into tangible works if the need is to be met and satisfied.

Progress is the index of any civilization. In this country the coal industry, like the labor market, is unorganized, chaotic and individualistic in an age that is becoming essentially collectivist by reason of the development and pressure of industry from the old-fashioned home manufactures to such highly specialized production as that of automobiles. The growth of the organized-labor movement and the tendency toward nationalization of public utilities, the progression being from regulation, control and operation to public ownership, are only two of the everyday manifestations of this fact. It is not to be presumed that the coal industry, any more than the railroads, the street railways, the central stations, etc. can escape this tendency. The only way to prevent its realization is for capital and labor to understand that they have a real community of interest in the matter and to get together and agree on some constructive program of control and operation that will leave capital in possession and control of its property, that will insure to labor the power and the right to bargain, individually or collectively, with whom it will, and that at the same time will insure to the public, whether industrial or domestic consumer, an adequate supply of coal at all times at a price that is fair.

If capital and labor do not get together with the public and work out some mutually acceptable and workable scheme of production and distribution at a price that, while not taking from capital a fair profit and from labor a decent living wage, will at the same time insure to the public an adequate coal supply, the public in the form of government will step in and either by purchase or condemnation, or in some other way, will arrogate to itself the ownership, control and operation of the industry. That its course will be wise or its management and operation efficient is not the question, but for present purposes it is sufficient to observe that this is the direction in which the public is rapidly moving.

This movement can be arrested only by constructive and co-operative action on the part of those most vitally affected. The initiative, under existing conditions, must come from capital. The public is unorganized and, to a certain extent, collectively indifferent; labor generally is hostile to any policy but that of nationalization, with its theoretical advantages and practical shortcomings. Capital, however, in the shape of the mine owners and operators, though not cohesively and kinetically organized, has the potential means of correcting the present unsatisfactory situation of coal-mining operation and of coal production and distribution, in the form of the National Coal Operators Association, the Coal Mining Institute, and its local organizations, together with the coal-trade journals, all acting in conjunction and co-operation with the Department of the Interior, and the departments of Commerce and Labor. Acting together with these organizations, the coal industry, as a whole, can constructively and practically meet the changed conditions and requirements that have grown up, and solve them.

Genuine permanent progress always is the result of evolution, not revolution. Evolution, over an extended period of time, constitutes the revolution of a day, with the difference that the results of evolution are builded on the rock foundations of experience, while revolution builds on the shifting sands of theory and expediency.

The whole argument for regularization of the coal industry may be summed up in the statement that such action is daily becoming more necessary in order that the production, distribution and sale of coal may be preserved from the hands of economic and social theorists acting in the capacity of government advisers and agents, with unlimited power to rule or ruin. The public wants coal, as required, at a fair price. Labor wants employment that is continuous and remunerative to the extent of providing an income that will enable a decent standard of living. Capital wants to be secured in the ownership and operation of its property under conditions that will permit a fair revenue return. If something is not done in the near future to end the present chaotic conditions in the coal industry and to organize it along constructive and modern lines the government will be forced to intervene in one manner or another. It is for capital, in the shape of mine owners and operators, to choose. What will be their choice? The answer must not be long delayed if the present structure is not to be upset and a new and strange one erected in its stead.

Whether Boys Under the Age of 18 Years should be granted permits for working in the mines came under consideration at the recent monthly meeting of the board of miners' examiners at Terre Haute. George Richards, the representative of the operators, took exception to the ruling of the Industrial Board at Indianapolis the previous day, holding that the age of the miner was governed by section 23 of chapter 132 of the acts of 1921 in the new attendance law. He explained that mining was in 1904 designated by law as a dangerous occupation and always has been considered such. The section referred to by Mr. Richards follows immediately the one set forth by the Industrial Board and states that "no minor under the age of 18 years old shall be employed, permitted or suffered to work in any capacity in the following occupations: Oiling and cleaning machinery; in the operation of any elevator, lift or hoisting machine; in any saloon, distillery, brewery, or any other establishment where malt or alcoholic liquors are manufactured, packed, wrapped or bottled; or in any other occupation dangerous to life or limb, or injurious to the health or morals of such minor."

Massachusetts Fuel Administrator Prepares Statement Against Anthracite Tax Laws

EUGENE C. HULTMAN, Fuel Administrator for Massachusetts, has prepared a memorandum for the Attorney-Generals of New England and New York relative to the recently enacted Pennsylvania tax laws on anthracite. He summarized the enactments as follows:

No. 225—An act imposing a state tax of 1½ per cent on anthracite, providing for the assessment and collection thereof and providing penalties for the violation of this act; effective July 1, 1921.

No. 444—An act affecting anthracite mines and operations, establishing the Pennsylvania State Anthracite Mine Cave Commission, defining its jurisdiction and powers, imposing an assessment of 2 per cent and duties upon owners and operators of anthracite mines and imposing penalties; effective Aug. 27, 1921.

No. 445—An act regulating the mining of anthracite, prescribing duties for certain municipal officers and imposing penalties; effective Aug. 27, 1921.

"At least twice before, in 1913 and 1915, the State of Pennsylvania imposed a tax on anthracite. The law of 1913, almost identical with the present law, was later declared unconstitutional. The State of Pennsylvania did not attempt to collect the tax imposed by the law of 1915, which was palpably unconstitutional. However, under both the 1913 and 1915 statutes the producers collected an amount equal to the tax. After the decision of the court in the case of the 1913 statute some producers refunded to the retail dealers while others did not; but in any case, so far as I have been able to find out, the refund did not go back to the ultimate consumer, upon whom it had been levied. The same situation existed in connection with the 1915 statute. If it is intended again to exploit the people by adding this tax to their already crushing burden due to the existing high price of domestic coal, it is most urgent that the real purpose of Act No. 225 be determined in order to prevent the recurrence of this unfair practice. It appears that the price of coal has been increased by some producers without specifically billing the tax on the invoices. Therefore, the retail dealers and the consumers cannot recover any excessive amount paid for coal even if the law is declared unconstitutional.

"If this method of taxation is constitutional, a precedent has been established that will endanger our industrial prosperity and the welfare of large numbers of our people. There is nothing to prevent this tax from being increased indefinitely at the pleasure of the State of Pennsylvania, so that property and other taxes can be made practically negligible. Furthermore, this probably will result in a tax being levied on bituminous coal produced in Pennsylvania. In view of the above, it is of the first importance for New England and New York to consider the possibilities confronting their industries.

"New England and New York receive most of their coal from Pennsylvania and West Virginia on account of proximity of these fields, drawing from them annually approximately 32,000,000 net tons of anthracite and 50,000,000 net tons of bituminous coal. All of the bituminous coal is used for railroad, industrial and commercial purposes. About 60 per cent of the anthracite consumption is by householders, the balance being used principally by large buildings, gas companies, etc.

"The tremendous importance financially of the present tax levy cannot be fully appreciated without considering the fact that New England and New York receive a total of about 23,000,000 gross tons of domestic anthracite annually out of a total production of about 52,000,000 gross tons. Steam sizes of anthracite are in competition with bituminous coal and cannot absorb this additional expense, which must be added entirely to the prices charged for domestic sizes. Reliable authorities estimate the probable cost of the 1½ per cent tax levy at 15c. per ton on the domestic sizes. At this rate New England and New York are being assessed $3,450,000 per year for the governmental expenses of the State of Pennsylvania.

"As long as New England and New York are dependent upon anthracite for their domestic requirements we will have to pay the price and the taxes imposed upon us by the State of Pennsylvania should such laws be constitutional. If such laws are not constitutional, some legal regulation or governmental supervision should be provided in connection with the collection of the tax, pending the decision of the court in regard to its constitutionality, to prevent the exploitation of the coal consumers. In this way it will be possible at least to insure the refund of the tax to the people from whom it has been collected and afford protection against a repetition of the plundering which took place in 1913 and 1915.

"In the case of Act No. 225 the anthracite operators are required to make their first report to the Pennsylvania State authorities on Jan. 1, 1922.

"The Fowler act (No. 444) is claimed to offer liability insurance to operators in case of cave-ins and surface damage. It establishes a commission of three members, each to receive $8,000 per annum, which will have complete control of disbursements, employment of specialists, engineers, etc. Reliable authorities in the trade estimate that collections or premiums at the rate of 2 per cent on sales in the case of one-half of the total production would amount to over $5,000,000 annually. In order to continue such a commission indefinitely it is evident that disbursements will nearly equal the receipts to avoid the possibility of its discontinuance by the accumulation of a surplus. Therefore, I am of the opinion that in addition to supporting many of the charities of Philadelphia the anthracite consumer has a direct financial interest in this governmental agency of the State of Pennsylvania.

"The Kohler act (No. 445) is considered as complementary to the mine-cave law, No. 444.

"Judge Henry A. Fuller, of the Court of Common Pleas of Luzerne County, Wilkes-Barre, Pa., has recently rendered a decision in which he holds that Act No. 445 is unconstitutional. The test case was brought by H. J. Mahon and wife, of Pittston, who sought to restrain the Pennsylvania Coal Co. from mining under their home. The case will be appealed to the State Supreme Court."

Mr. Hultman submitted his statement for the information and consideration of the Attorney-Generals of New York and the New England States as to whether or not it is possible to take suitable action to safeguard the interests and welfare of their respective people.

Lehigh & Wilkes-Barre Coal Co. Declares Special Dividend of $35 a Share

THE Lehigh & Wilkes-Barre Coal Co. announced Nov. 21 a special dividend of $35 a share. It is payable Nov. 29 to stock of record Nov. 21. The following statement was given out:

"The president reported that on Nov. 17 the Central Railroad Company of New Jersey had agreed to sell the 169,788 shares of this company's stock owned by the Central Railroad of New Jersey and recommended to the board that the dividend action be taken in light of this change."

It was learned that Burns Bros.' share in the syndicate that purchased the 169,788 shares of Lehigh & Wilkes-Barre Coal Co. stock was approximately 25 per cent and that the investment in the coal property will approximate $8,000,000. Officials of Burns Bros. said the interest of that corporation in the coal property assured an adequate supply of the best quality coal at the lowest mining cost.

THE COAL COMMITTEE of the Federal Purchase Board met Monday, Nov. 21, to decide on procedure to place the purchase of coal supplies by the government on a practical basis. The committee will confer with operators and dealers and expects to submit a report by the first of the year in which definite plans in the matter of coal purchases by the government departments will be set forth. The government annually purchases about 9,000,000 tons of coal, of which 600,000 tons is anthracite. The bituminous purchases are made up of 2,500,000 tons by the navy, 2,000,000 tons each by the Shipping Board and army and 250,000 tons by government departments in the District of Columbia.

Railroads Ask Extension of Rate Cut on Hay and Grain To All Farm and Animal Products

Further Reductions Impossible Until Wages Are Again Pared—Coal Jobbers Demand Drastic Cut in Freights to 1917 Level—Drop in Revenue Would Jeopardize Safety of Roads, Says J. H. Parmelee

IN ORDER that more widespread relief can be realized by the agricultural industry from a reduction in freight rates, the Interstate Commerce Commission was asked on Nov. 23 by the carriers to reopen its decision rendered on Oct. 20 last ordering a cut in hay and grain rates, according to a statement issued by the Association of Railway Executives. As a substitute the carriers propose a reduction, for an experimental period of six months, of 10 per cent in carload rates on practically all products of the farm and of animals.

"The effect of this proposal," said the application, "will be an immediate reduction in carload rates on the products of agriculture and the products of animals which are mentioned, but as soon as and to the exent that a reduction in wages is obtained from the Labor Board on the proposed application a further reduction in rates (except as meanwhile put into effect), to be distributed among the users of transportation in such manner as this honorable commission may determine.

"The proposal thus deals immediately and without waiting for a reduction in operating costs, in the manner stated, with the needs of agriculture and undertakes to make further reductions not confined to agriculture as soon as further reductions are made possible by the proposed reduction in wages.

"Your petitioners, in view of the condition and of the special needs of the transportation industry, do not believe that any further reductions in rates than those herein mentioned should be made until there is a reduction in operating costs. They further submit that there is no justification for treating grain, grain products and hay preferentially or for giving special and preferred advantage to the territory covered by the order in this cause, and that the measure of reduction recently ordered by this honorable commission cannot be extended to the other products of agriculture or throughout the country without serious injury, injustice and hardship to the transportation industry."

This proposal is made by the carriers, the application points out, for the purpose of aiding in the economic readjustment and relieving the "serious economic distress" of the agricultural industry, despite the fact that the financial condition of the railroads does not warrant such a move.

"The net operating income of the railroads in 1920 amounted to $62,000,000, as against a normal in other years of more than $900,000,000," the application says, adding "and even this amount of $62,000,000 included back mail pay received from the government for prior years of approximately $64,000,000, thus showing, when the operations of that year alone are considered, an actual deficit before making any allowance for either interest or dividends." Interest requirements alone for 1920 amounted to approximately $475,000,000, the application says. For the first nine months this year the net operating income of the carriers was $391,384,719, which was only 2.9 per cent of the value of their properties as tentatively fixed by the commission for rate-making purposes.

The application added:

"The foregoing were the operating results notwithstanding the fact that the carriers as a whole were compelled to reduce their expenditures for maintenance of way and equipment for the said nine months' period $426,793,121 below what was expended for these purposes during the

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Extracts from a signed statement by George Cushing in the *American Coal Wholesaler:*

"Primarily we must have a readjustment of coal rates. We are not safe nationally or as an industry until these rates come down.

"Now the coal trade finds itself where it must move with vigor to protect its own best interests without too much regard for the consequences to others. It must act or face that ruin which is inevitable if a Bourbon policy continues to control the American roads.

"The situation summed up is: The thing which is damming up the activities of the coal business and threatening us with regulation is the present high freight rate on coal. These are being maintained at 40 per cent above the rates which prevailed during the war and for ten months after the signing of the armistice. And they are maintained on that level despite the fact that coal prices at the mines are far below the Fuel Administration's war prices.

"Our association has declared that not only must the last 40 per cent be taken off the freight rates but those freight rates must go back to below what they were in 1918, the same as coal and other things have done. Our association has taken a flat position that freight rates and service charges must come down to 1917 level.

"In other words the question of a freight rate readjustment is going to be decided by the commission before the winter is over. This action has been taken by this association because nobody else showed any inclination to take it.

"When your association has taken this definite action, you are losing an opportunity if you do not inform your customers at once of the fact that you are a member of the association which is moving to bring down freight rates in their interest."

"The issue is clear.

"If present wages are to be continued, rates cannot be reduced. If rates are to be reduced, the present wages cannot be paid.

"The railroads are powerless to take any other position."—T. DEWITT CUYLER, Chairman, Association of Railway Executives.

"The railroads of the United States are desirous of responding to the almost universal demand that railroad rates be reduced.

"The railroads have, in fact, determined to seek to reduce rates, and, as a means to that end, to further reduce wages, complying in all respects in so doing with the Transportation Act.

"How can a reduction of rates be brought about?

"The first obligation of the railroads is to render adequate service to the public at reasonable rates.

"The present rates are in many cases high, but reduction can be effected only by reducing the cost of operation, by far the largest element of which is the payroll.

"A general reduction of rates, without at least a corresponding reduction in wages, would weaken the railroads to a point where adequate service would be in jeopardy."—DR. JULIUS H. PARMELEE, Director, Bureau of Railway Economics, Washington, D. C.

corresponding period of nine months of the previous year. The policy of rigid economy made necessary by these results, and the consequent cutting to the bone of the upkeep and maintenance of the properties was at the price of neglecting, and for the time deferring, work which must hereafter and in the near future be done and paid for.

"The recent reduction by the Labor Board of wages, estimated at from 10 to 12 per cent, in no sense meets or solves the problem of labor costs and in no way makes it possible for the carriers to afford a reduction in their revenues. Notwithstanding this, however, the carriers have since the rate increase in Ex Parte 74 made many hundreds of thousands of reductions in freight rates, these reductions having resulted, it is estimated, in a reduction in the carriers' revenues of from $175,000,000 to $200,000,000 a year on the basis of normal business.

"The only practicable method of obtaining relief from these excessive labor costs is through an order of the Labor Board, which can be rendered only after a hearing of the parties.

"From the foregoing general outline of the circumstances of the carriers it is clearly apparent that without a substantial reduction in costs the transportation industry is in no condition to afford any reduction whatever in its revenues. It is urged that some interest must take the risk of the first step to relieve the industrial congestion which is holding business back and down, and the railroads are urged to take this first step, and to reply upon public opinion to bring about promptly the necessary reduction in operating costs, including a just reduction in the abnormally high cost of labor.

"The demand for reduction in rates is thus based on economic considerations, and if yielded to either by the carriers voluntarily or by this honorable commission, the effort should be made to work out a method that will bring the maximum relief to the industry which is suffering most from economic hardship and depression."

The carriers point out that "the problem is to find a means of aiding in a vast economic readjustment and to relieve serious economic distress—not as a right but as a matter of high and wise expediency and in a way that will best promote the public welfare."

"Your petitioners," the application continues, "however, submit that if there is to be a reduction in rates for the benefit of agriculture, there seems little justification for confining such reductions to rates on grain, grain products and hay, or to any particular section of the country. The economic reasons in favor of reductions apply with equal force to other products of the farm and to other territorial sections. The demand on the part of the agricultural public for a reduction in freight rates is not confined to the commodities covered by this proceeding and is not confined to the Western district. The commission and the carriers have been, or will be, confronted by the necessity of meeting the demand for a wider application among agricultural products of proposed reductions and for a more extensive territorial application of them. It is not apparent how this demand can be successfully distinguished from the action taken by the commission in this cause, and yet a general application of the scale of reductions ordered in this case to other agricultural products and to other territories of production would involve a loss of revenue to the carriers which would seriously impair their capacity to perform their public obligations."

Whole Subject of Coal Facts Taken Up in Considering Request That Commerce Dept. Issue Coal Reports

Congress Adjourns Without Passing Coal Legislation—Many Coal Producers More Interested in Return of Industrial Activity Than Reduced Freights—Standardized Government Contract Favored

By Paul Wooton
Washington Correspondent

THE action of the board of directors of the National Coal Association in formally requesting the transfer of the issuance of the weekly coal report from the Geological Survey to the Department of Commerce has precipitated a full review by the federal government of the whole subject of fact-finding as applied to coal. On his return to Washington from Cincinnati, J. D. A. Morrow, vice-president of the National Coal Association, personally took the resolution of the board of directors to the White House. It is understood that the President will go deeply into the whole question before issuing any order in regard to the transfer of duties.

It has been recognized for some time that a definite understanding with regard to coal fact-finding would have to be reached. During the consideration of the Frelinghuysen bill the Senate clearly indicated that it is not inclined to determine just how fact-finding shall be conducted. The appropriations committees of Congress on several occasions have shown little interest in this type of work and in one instance, at least, declined to act even after receiving a well emphasized request for a small sum to continue the statistical work begun by the Fuel Administration.

Recently the U. S. Geological Survey advised the National Coal Association and others interested that its appropriations are not sufficient to permit of the continuance of the full weekly coal report. This report requires a large amount of work and has been carried on at a considerable sacrifice to the Survey. The need for the report, however, was so apparent that it has been continued despite the recognition that some three times the amount of money available should be spent to make the report what it should be.

In a conversation between Herbert Hoover, Secretary of Commerce, and J. G. Bradley, president of the National Coal Association, it developed that the Department of Commerce could arrange for the money needed to carry forward the weekly report. When a similar situation arose previously the National Coal Association supplied the funds needed to tide the report over until another appropriation became available. As the coal producers form only one of the groups that benefit by the availability of these figures there is a feeling that the expense should be borne by the government. For that reason, Mr. Morrow points out, the National Coal Association favored the collection of this information by the agency which had money of its own to do it. He emphasizes the statement that the action of the board is not to be taken as a reflection upon the Geological Survey.

It is known that the President already has taken steps to obtain full information in regard to the matter before acting on the National Coal Association's resolution. It is not a foregone conclusion that he will consent to the transfer of this work. To separate the weekly report from the agency charged with the collection of the annual data would carry with it duplications and increased expense. Whether there will be compensating advantages the President doubtless will attempt to determine. It was not the intention of the Geological Survey to discontinue the weekly report entirely. Unless additional appropriations could be obtained, however,

it would be necessary for the Survey to give up the collection of data as to the percentage of full time output. This portion of the report requires the collection of data on losses of output due to transportation disability, labor shortage, strikes, mine disability, no market and all other causes. The gathering of that information, along with the necessary checking to insure its accuracy, calls for a particularly large amount of work.

After completing half of the scheduled program for which it was called in extra session by the President April 11 last, Congress adjourned Nov. 23 but will reconvene for the regular session Dec. 5. While the tariff and tax revision bills were the goal at the last session, only the tax revision bill was completed and the tariff bill goes over until the next session. The last session was marked by coal discussion but no action on this question, the tenor of Congress not being inclined to government regulation as proposed. The Frelinghuysen seasonal rate bill, designed to stimulate coal purchase and storage during the summer, was recommitted to the Senate Committee on Interstate Commerce. The debate on this bill included discussion of Senator Frelinghuysen's bill to aid in coal stabilization through various reports to government departments, but that measure was not separately considered by the Senate, although Senator Frelinghuysen announced he would call it up after the tax bill was disposed of. As the tax measure occupied all of the Senate's time up to adjournment no opportunity afforded.

Senator Kenyon, of Iowa, introduced a coal-regulation bill and a bill designed to prevent profiteering in coal but did not press the measures, as he realized the Senate was in no mood to consider them.

The Senate Committee on Labor made an exhaustive investigation in the West Virginia coal strike and is expected to report thereon next session. A bill for mining leases on the Fort Peck (Mont.) Indian lands, passed by the Senate, was sidetracked in the House on objection of Representative Stafford, of Wisconsin, and was placed in an unfavorable position, at the foot of the calendar. While a number of coal bills were introduced in the House, they were not considered either by committee or the House itself.

Think Rate Reductions Would Have Little Effect

As the consideration of reductions in coal rates progresses it is becoming increasingly evident that many coal producers feel that their business would benefit but little were the rates to be reduced. Even if there should be a reduction of 10 per cent in the rate on coal, it would not be reflected generally in the price quoted the ultimate consumer. Even if the full reduction were passed on to the consumer, it would not make enough difference in price to stimulate coal purchases to any great extent, it is believed. The average coal producer is not losing sight of the fact that a reduction of 10 per cent, when applied to coal, means a reduction of that amount on one-third of the freight tonnage handled by the railroads. Reductions applied to commodities moving in less volume do not dig so deeply into earnings. There is general recognition that even now the transportation machine is badly crippled through lack of earning power. It requires only casual observation to recognize that the railroads are not being rejuvenated and that even maintenance is being neglected through lack of money.

The feeling among coal producers is that the one thing that will make their business prosperous is the return of industrial activity. For that reason many of them would prefer to see any reductions the railroads are able to make apply to manufactured products, although the general impression seems to be that the railroads are in no position to reduce rates at this time. They at least would like to see the railroads attain a financial position which would allow them to meet their coal bills promptly.

A standardized contract to be used by the government in the purchases of coal is expected to be evolved as a result of conferences between the coal sub-committee of the Federal Committee on Co-ordination of Purchases and representatives of the National Coal Association. At present nearly every coal-purchasing bureau of the government has a different form of contract. Many of these contracts contain features which are needlessly annoying. As a result there has been a decreasing amount of competition for government business. Many coal men refrain from bidding for government business because of these annoyances. It is believed that a standardized contract can be perfected that will give the government ample protection and have the effect of reducing its coal bill, in that there will be a more general desire to secure the business. George Reed, of the Peabody Coal Co., of Chicago, is directing the National Coal Association's participation in the matter. F. R. Wadleigh, of the Department of Commerce, is chairman of the coal sub-committee of the Committee on Co-ordination of Purchases. The existing contracts are now being gone over by government solicitors to determine if any of the provisions of these contracts are made mandatory by law.

Report of Coal Stocks to Be Out Dec. 3: Will Be Most Complete Ever Issued

THE report of coal stocks being gathered by the U. S. Geological Survey will be issued Dec. 3. It will be the most complete report of this character ever issued by the government. The returns will be 100 per cent complete from the large consumers, such as steel plants, byproduct works and class 1 railroads. The returns from other types of consumers promise to be in excess of 95 per cent. The report covers more classes of consumers than does any previous stock report and contains much more information with regard to coal in transit.

The large percentage of returns on the questionnaire is accounted for by the fact that consumers have found these reports useful and are anxious to promote their success.

To Probe All Rates for Possible Cuts

BEGINNING Dec. 14 at Washington the Interstate Commerce Commission will begin a general investigation into all railroad rates for the purpose of determining what further reductions can lawfully be made. The investigation will cover coal rates, investigation and reduction of which was recently asked in a petition by the American Wholesale Coal Association.

Monongahela Power Co. May Connect Its Lines with West Penn Power Co.

AN agreement has been made by which the West Penn Railways Co., which controls the West Penn Power Co., a large supplier of electric power to the coal mines in the Pittsburgh district, will purchase the West Virginia & Maryland Power Co., of Kingwood, W. Va. This latter company supplies electric service from Grafton, W. Va., eastward through Taylor and Preston Counties in West Virginia and in Garrett County, Maryland, thus feeding the coal fields along the upper Potomac. The plant at Grafton was recently purchased by the incorporators of the West Virginia & Maryland Power Co., and the sale to the West Penn interests carries with it the Grafton plant.

Work has already been started on a power transmission line connecting with the present system of the West Penn Power Co., and extending south through the Cheat River basin to Tunnelton, Rowlesburg and Newburg on the main line of the Baltimore & Ohio R. R. Arrangements also have been made by which a direct power transmission line will be built from Grafton to Rivesville on the Monongahela River just below Fairmont, at which point is located the large power plant of the Monongahela Power & Railway Co., one of the largest utility companies in West Virginia. Service for Grafton will be purchased from this latter company and it is expected that at an early date the transmission lines from the West Penn system will connect to the line from Fairmont, thus making a substantial tie-in connection between the Fairmont and West Penn plants.

This purchase adds greatly to the territory served by the West Penn interests and it is believed that the construction of the power lines will do much to open up and develop the rich coal fields throughout the territory they traverse.

Sale of Lehigh & Wilkes-Barre Coal Shares May Cause Clash of Interests

THE recently reported sale of the holdings of the Central Railroad of New Jersey in the Lehigh & Wilkes-Barre Coal Co. is likely to precipitate a battle among big interests. The Board of Directors of the Jersey Central, with five proposals for purchase of its 169,788 shares of Lehigh & Wilkes-Barre Coal Co. stock in hand, accepted a bid of $185 per share, or $31,410,980. This offer, which was not the highest, was made by an inside syndicate headed by Jackson E. Reynolds, a vice-president of the First National Bank of New York, nor was it made on the same basis as to facts and information furnished by the New Jersey Central Railroad nor as to date with that which the four other proposals were made.

The highest bid was that of the Lehigh Coal & Navigation Co., of $190 per share, or $32,259,720. The Franklin Securities affiliated with the Franklin National Bank, of Philadelphia, put in a similar proposal carrying a bid of $31,920,144. Brown Brothers & Co., also of Philadelphia, headed a syndicate which bid $28,694,172, with interest on deferred payments. Kuhn, Loeb & Co., of New York, bid $29,125,000, with interest on deferred payments, for the Massachusetts Gas Co.

The five proposals were opened Nov. 17. The bid of the Reynolds syndicate, made as of that date, was $31,410,980, or at $185 per share, which was $35 above the price offered two weeks previously. It carried interest on deferred payments, $10,000,000 to be paid Dec. 6 and the balance strung along until Oct. 1 next. The interest to be paid figured about $1,000,000, so that the whole payment would be about $32,495,000. On that proposal the New Jersey Central board sold the company's holding of Lehigh & Wilkes-Barre coal stock to the Reynolds syndicate.

Coal-Mining Y's to Hold Annual Session in Charleston, W. Va., Dec. 7 and 8

REPRESENTATIVES of the Young Men's Christian Associations in coal-mining communities of West Virginia and Kentucky hold their fourth annual conference at the Hotel Kanawha, Charlestoon, W. Va., Dec. 7 and 8. In addition to discussions on policies and methods of Y. M. C. A. work, the program arranged offers much opportunity for discussion of general aspects of human relations in the coal-mining industry.

Among the speakers will be Ex-Governor John J. Cornwell; J. W. Bischoff, general manager of the West Virginia Coal & Coke Co., Elkins, and president of the West Virginia Mining Insititute; Carl Scholz, of the Raleigh-Wyoming Coal Co., Charleston; Charles R. Towson, head of the industrial department of the International Committee of Y. M. C. A.'s, New York City; J. Blaine Withee, state boys' work secretary of the Y. M. C. A., Parkersburg, W. Va., and Dr. Henry F. Kallenberg, secretary of the International Committee for Health and Recreation, New York City.

J. G. Bradley, of Dundon; J. R. Thomas, of Charleston; A. R. Beisel, of Huntington, and E. E. Drennen, of Elkins, constitute the advisory committee of the Y. M. C. A. for the coal mining industry of West Virginia. A special dinner session of the conference, under the auspices of this committee, will be held at the Hotel Kanawha, Thursday evening, Dec. 8.

Kansas Operators May Ask Injunction Against Sending of Strike Aid

COAL operators of Kansas are reported to be considering an early appeal in some one of the United States district courts in Illinois seeking an injunction against the Illinois United Mine Workers' Union sending "check-off" funds into Kansas for the aid of the Kansas striking miners. The likelihood of such action was pointed out in *The Chicago Journal of Commerce* a few weeks ago.

Illinois miners recently voted to assess each member $1 a month toward a $90,000 monthly fund for the Kansas strikers. At the time persons in the coal trade raised the question of legality of such action, in view of the injunction issued by Federal Judge A. B. Anderson at Indianapolis, restraining the International United Mine Workers' Union from sending strike funds into West Virginia.

It is understood that the Kansas operators held a meeting Nov. 22 to consider the injunction appeal.

Wage Agreement in British Columbia Renewed for Two Years

AT a mass meeting of the Canadian Collieries (Dunsmuir), Ltd., recently held at Cumberland, the wage agreement which has existed between the miners and the company for the past two years was renewed for a similar period. There were a few minor changes, for the most part in the men's favor. The scale of wages has been regulated by a commission on the cost of living which includes a representative of the men, a representative of the company and the fair-wage officer. The commission investigates the cost of living in the district for three months and regulates wages accordingly. This provision applies to the new agreement. There are more than one thousand men affected, and the fact that an understanding was reached without any friction is a striking commentary upon the good relations existing between the management and the men. Recently the company erected a large hall for the men at a cost of $30,000. It also has laid out a new athletic ground which is said to be one of the best in the province.

Destination of Lake Cargo Coal Shipped During Season to End of October

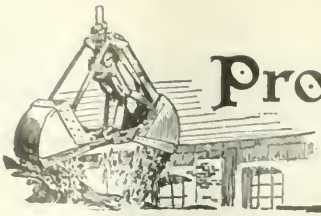
DISTRIBUTION of soft coal shipped up the Lakes this season has closely resembled that of 1919. The records of the Ore & Coal Exchange show that at the end of October a total of 20,865,000 net tons had been shipped, as against 20,757,000 tons in 1919. Of the total shipments, 16,415,000 tons, or 78.7 per cent, went to American ports, practically the same percentage as in 1919. Shipments to Canadian destinations were 4,450,000 tons. The charges in distribution between the different groups of ports have not been great. The movement to American points on Lake Superior totaled 9,577,000 tons and accounted for 45.9 per cent of the total shipments. In comparison with 1919 this was both an actual and relative increase. A corresponding decrease occurred in shipments to Lake Michigan, which totaled 5,547,000 tons, against 6,105,000 tons in 1919.

DESTINATION OF CARGO COAL DUMPED AT LAKE ERIE PORTS FROM OPENING OF SEASON TO OCT. 31

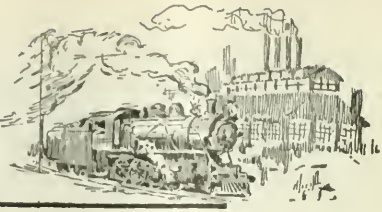
Destination	1919 Net Tons	1919 Per Cent	1920 Net Tons	1920 Per Cent	1921 Net Tons	1921 Per Cent
American						
Lake Superior ports	9,193,000	44.3	7,605,000	39.8	9,577,000	45.9
Sault Ste. Marie and river points	329,000	1.6	490,000	2.6	311,000	1.5
Lake Huron-Georgian Bay ports	291,000	1.4	188,000	1.0	209,000	1.0
Lake Michigan ports	6,105,000	29.4	4,737,000	24.8	5,547,000	26.6
Port Huron and Detroit River	310,000	1.5	768,000	4.0	614,000	2.9
Lake Erie ports	59,000	0.3	45,000	0.2	157,000	0.8
Total American	16,287,000	78.5	13,833,000	72.5	16,415,000	78.7
Canadian						
Lake Superior ports	1,581,000	7.6	1,704,000	8.9	1,873,000	9.0
Sault Ste. Marie and river points	805,000	3.9	1,031,000	5.4	710,000	3.4
Lake Huron-Georgian Bay ports	728,000	3.5	838,000	4.4	750,000	3.6
Port Huron and Detroit River	330,000	1.6	385,000	2.0	347,000	1.6
Lake Erie ports	48,000	0.2	10,000	0.1	79,000	0.4
Lake Ontario and St. Lawrence River	978,000	4.7	1,290,000	6.8	691,000	3.3
Total Canadian	4,470,000	21.5	5,258,000	27.5	4,450,000	21.3
Grand totals	20,757,000	100.0	19,091,000	100.0	20,865,000	100.0

Anthracite Miners to Prepare Wage Scale

UNITED Mine Workers executive boards of the three anthracite districts have issued official notice summoning a tri-district convention to meet in Shamokin, Jan. 17, 1922, to formulate wage schedules and other proposed conditions of employment to take the place of the wage agreement which expires March 31, 1922.



Production and the Market



Weekly Review

CONSUMER conservation is the prevailing note in the coal industry today. In both the steam and domestic branches business is extremely sluggish. The present extreme slump in steam demand, due to buying against the recent threatened strikes, will become less acute as accumulated stocks wear down. The low rate of industrial consumption, however, will serve as a barrier against any early spot activity and even the most optimistic see few encouraging signs for the next sixty days.

Very little spot coal is moving, and when it does move it goes at bargain prices. The buyer is "writing his own ticket," and operators are forced to accept unprofitable business or else close down. The only exception to the universally sluggish market is in the Northwest, where sub-zero temperature has increased the movement. This is entirely local and has no effect on current production, as the main source of supply—the Head-of-the-Lakes docks—is well prepared to meet even the strongest demand ever made upon it.

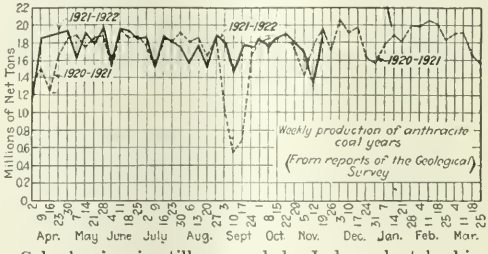
Warm Weather and Idleness Hamper Trade

Colder weather is needed to revive domestic trading. Retail yards are full to overflowing, but the distribution to consumers still lags. The extensive unemployment coupled with unseasonable weather has proven a disastrous combination for retail dealers and domestic producers alike.

The Hampton Roads market is weaker. Dumpings for all accounts are on the decline and only in the bunker trade is there any semblance of activity. Marine freights, coastwise and export, are softer, the former being productive of but little additional tonnage, while oversea business is nil.

No decision has been announced on the appeal against Judge Anderson's check-off injunction. If the injunction be upheld a strike is sure to follow, which would give the country a chance to consume some of the top-heavy coal stocks that are on hand. The Colorado mines, where a strike was ordered in protest against a wage cut, are working about 90 per cent.

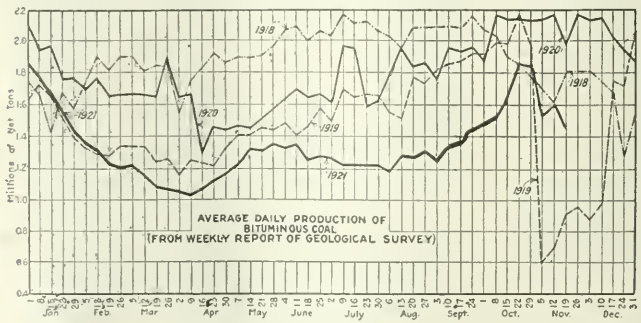
Anthracite markets feel the sluggishness caused by the warm weather. While producers are running full time, they have been able to do so mainly because of the interruptions caused by the many holidays that have occurred recently. Domestic demand has dropped sharply, as best reflected by the fact that independent quotations are off 25c. to 50c. on the family sizes. The less favored large coals are backing up at some operations, while steam sizes are suffering because of the heavy oversupply and are in the weakest position of the season.


1921-1922
1921-1922
1920-1921
1920-1921
Millions of Net Tons
Weekly production of anthracite coal years
(From reports of the Geological Survey)
Apr. May June July Aug. Sept Oct Nov. Dec. Jan. Feb. Mar.

Coke buying is still suspended. Independent beehive plants are showing less activity, but the Frick company continues to increase its production.

BITUMINOUS

The sluggish markets are clearly indicated in production figures for the week ended Nov. 19, when 8,843,000 net tons were mined, according to the Geological Survey. This is a slight increase over the previous week, but because of the successive holidays the two weeks immediately preceding do not offer a fair comparison. The week's output was 2,206,000 tons lower than that of the high point reached just before the railroad strike was averted, and production per working day was the lowest since late in September. A



Estimates of Production

(Net Tons)

Week Ended:	1921	1920
BITUMINOUS COAL		
Nov. 5 (*b*)	9,327,000	11,429,000
Nov. 12 (*b*)	8,582,000	12,132,000
Nov. 19 (*a*)	8,843,000	11,693,000
Daily average	1,474,000	1,949,000
Calendar year	364,961,000	484,042,000
Daily average cal. year	1,338,000	1,767,000
ANTHRACITE		
Nov. 5	1,716,000	1,429,000
Nov. 12	1,373,000	1,770,000
Nov. 19 (*a*)	1,910,000	1,993,000
Calendar year	79,113,000	78,116,000
COKE		
Nov. 12	103,000	389,000
Nov. 19 (*a*)	111,000	364,000
Calendar year	4,826,000	18,826,000

(*a*) Subject to revision. (*b*) Revised from last report.

further decline is indicated by preliminary reports of loadings for the first two days of the week of Nov. 26.

There is a growing interest in the coming miners' conference, scheduled for next February, on the formation of new wage demands. The feeling is growing that April 1 will see a moderate liquidation in the wage scale effected without much trouble with the U. M. W. of A.

October production is estimated at 43,733,000 net tons, compared with 35,127,000 tons in September and 34,538,000 in August. The year's production to Nov. 1, is 340,037,000 tons.

PRODUCTION OF SOFT COAL, BY GROUPS OF STATES, 1918-1921
(In thousands of net tons)

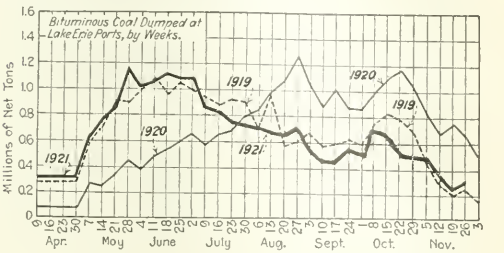
Region	First ten Months of 1921	1920	1919	1918
Northeast *a*	202,174	331,510	300,420	351,365
Southern Appalachian *b*	14,202	23,500	20,803	26,083
Eastern Interior *c*	82,546	130,800	90,407	130,768
Western Interior *d*	16,361	29,930	21,741	30,724
Mountain States and Northwest *e*	24,554	40,680	32,381	40,341
Totals *f*	340,037	556,420	465,752	579,281

(*a*) Michigan, Pennsylvania, Ohio, West Virginia, Maryland, Eastern Kentucky and Virginia. (*b*) Alabama, Georgia and Tennessee. (*c*) Illinois, Indiana and Western Kentucky. (*d*) Iowa, Kansas, Missouri, Oklahoma, Arkansas and Texas. (*e*) Colorado, New Mexico, Utah, Wyoming, Montana, North Dakota and Washington. (*f*) Alaska, California, Idaho, North Carolina, Oregon and South Dakota not included.

New England shipments via all-rail continued to decline during the week ended Nov. 19, when 3,022 cars were forwarded—437 less than in the week previous. Stocks are heavy in that section and will suffice until well into January, and consumers are not disposed to purchase further at this time.

Lake tonnage reflects the end of the season. During the week ended Nov. 28 there were 307,225 net tons dumped—297,488 cargo and 9,737 vessel fuel—as compared with 273,569 tons the week before. The season's movement stands at 22,932,800 tons; in 1920 it was 23,132,072. Upper Lake docks are finding a belated rush of orders which followed a sudden drop in temperature.

Coal Age Index of spot bituminous prices dropped from 88 on Nov. 21 to 86 on Nov. 28.



Tidewater business slumped sharply during the week ended Nov. 24. Dumpings at Hampton Roads for all accounts were 160,878 gross tons, as compared with 290,433 the week previous. Export markets continue out of the

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	Oct. 31, 1921	Nov. 14, 1921	Nov. 21, 1921	Nov. 28, 1921†
Pocahontas lump	Columbus	$4.80	$4.75	$4.35	$4.25@$4.50
Pocahontas mine run	Columbus	2.55	2.55	2.35	2.25@ 2.50
Pocahontas screenings	Columbus	1.75	1.60	1.70	*1.50@ 1.75*
Pocahontas lump	Chicago	4.75	4.75	4.35	*3.50@ 4.50*
Pocahontas mine run	Chicago	3.15	2.85	2.65	*2.00@ 2.75*
*Smokeless mine run	Boston	4.80	4.80	4.80	4.75@ 4.90
Clearfield mine run	Boston	1.95	1.95	1.80	1.60@ 2.00
Cambria mine run	Boston	2.45	2.45	2.35	2.10@ 2.60
Somerset mine run	Boston	1.90	1.90	1.75	**1.65@ 2.00**
Pool 1 (Navy Standard)	New York	3.25	3.05	3.05	*2.75@ 3.25*
Pool 1 (Navy Standard)	Philadelphia	3.15	3.15	3.15	3.00@ 3.25
Pool 1 (Navy Standard)	Baltimore	2.65	2.70	2.70	*2.60@ 2.65*
Pool 9 (Super. Low Vol.)	Philadelphia	2.65	2.40	2.35	2.25@ 2.50
Pool 9 (Super. Low Vol.)	Philadelphia	2.45	2.45	2.45	*2.25@ 2.50*
Pool 9 (Super. Low Vol.)	Baltimore	2.45	2.40	2.40	2.35@ 2.50
Pool 10 (H. Gr. Low Vol.)	New York	2.30	2.15	2.05	2.00@ 2.15
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2.15	2.15	2.15	*2.00@ 2.20*
Pool 10 (H. Gr. Low Vol.)	Baltimore	2.20	2.10	2.10	2.00@ 2.20
Pool 11 (Low Vol.)	New York	1.85	1.90	1.85	1.80@ 1.95
Pool 11 (Low Vol.)	Philadelphia	1.85	1.85	1.75	1.75@ 1.95
Pool 11 (Low Vol.)	Baltimore	2.00	2.00	2.00	**2.00@ 2.05**
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.85	1.70	1.70	**1.70@ 1.80**
Pool 54-64 (Gas and St.)	Philadelphia	1.75	1.70	1.70	1.65@ 1.80
Pool 54-64 (Gas and St.)	Baltimore	1.75	1.65	1.65	**1.60@ 1.75**
Pittsburgh se'd gas	Pittsburgh	2.65	2.65	2.65	2.60@ 2.75
Pittsburgh mine run (St.)	Pittsburgh	2.15	2.15	2.15	2.10@ 2.20
Pittsburgh slack (Gas)	Pittsburgh	1.65	1.55	1.40	1.30@ 1.50
Kanawha lump	Columbus	3.30	3.30	3.20	*3.00@ 3.25*
Kanawha mine run	Columbus	2.15	2.00	1.85	1.75@ 2.00
Kanawha screenings	Columbus	1.25	1.15	1.00	.90@ 1.10
Hocking lump	Columbus	3.25	3.25	3.15	**3.00@ 3.35**
Hocking mine run	Columbus	2.05	2.10	2.00	1.90@ 2.10
Hocking screenings	Columbus	1.10	1.10	.95	.90@ 1.05
Pitts. No. 8 lump	Cleveland	3.25	3.25	3.10	**3.00@ 3.50**
Pitts. No. 8 mine run	Cleveland	$2.15	$2.10	$2.00	**$2.00@$2.10**
Pitts. No. 8 screenings	Cleveland	1.55	1.35	1.30	**1.30@ 1.40**
Midwest					
Franklin, Ill. lump	Chicago	3.75	3.65	3.75	*3.25@ 4.05*
Franklin, Ill. mine run	Chicago	2.75	3.15	2.85	*2.50@ 3.00*
Franklin, Ill. screenings	Chicago	1.60	1.50	1.60	**1.15@ 2.50**
Central, Ill. lump	Chicago	2.50	3.50	3.35	3.00@ 3.75
Central, Ill. mine run	Chicago	2.25	2.85	2.50	*2.00@ 2.75*
Central, Ill. screenings	Chicago	1.60	1.60	1.35	*1.00@ 1.50*
Ind. 4th Vein lump	Chicago	2.95	3.55	3.50	*3.00@ 3.75*
Ind. 4th Vein mine run	Chicago	2.35	2.80	2.75	2.60@ 2.90
Ind. 4th Vein screenings	Chicago	1.55	1.95	1.75	*1.15@ 2.25*
Ind. 5th Vein lump	Chicago	2.70	3.05	2.80	2.60@ 3.00
Ind. 5th Vein mine run	Chicago	2.35	2.45	2.45	2.25@ 2.60
Ind. 5th Vein screenings	Chicago	1.55	1.90	1.50	*1.25@ 1.50*
Standard lump	St. Louis	3.35	3.10	3.10	*2.75@ 3.00*
Standard mine run	St. Louis	1.95	2.05	1.95	1.85@ 2.00
Standard screenings	St. Louis	.90	.90	.95	.85@ 1.00
West. Ky. lump	Louisville	2.90	3.00	3.00	*2.25@ 3.25*
West Ky. mine run	Louisville	2.45	2.00	1.90	1.75@ 2.00
West Ky. screenings	Louisville	1.10	.95	1.00	.50@ 1.50
South and Southwest					
Big Seam lump	Birmingham	3.75	3.75	3.75	*3.00@ 4.25*
Big Seam mine run	Birmingham	2.15	2.15	2.00	1.50@ 2.50
Big Seam (washed)	Birmingham	2.30	2.30	2.30	2.15@ 2.40
S. E. Ky. lump	Louisville	4.00	3.90	3.60	*3.00@ 3.25*
S. E. Ky. mine run	Louisville	2.20	2.10	2.20	*2.00@ 2.25*
S. E. Ky. screenings	Louisville	1.30	1.45	1.15	*1.00@ 1.20*
Kansas lump	Kansas City	5.75	5.50	5.00	5.00
Kansas mine run	Kansas City	4.00	4.25	4.25	4.25
Kansas screenings	Kansas City	2.40	2.50	2.50	2.50

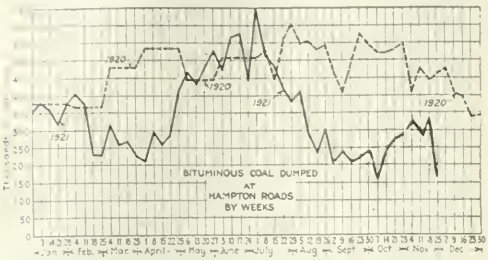
*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in heavy type, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	Nov. 14, 1921 — Independent	Nov. 14, 1921 — Company	Nov. 21, 1921 — Independent	Nov. 21, 1921 — Company	Nov. 28, 1921† — Independent	Nov. 28, 1921† — Company
Broken	New York	$2.61	.....	$7.60@$7.75	.....	$7.60@$7.75	.....	$7.60@$7.75
Broken	Philadelphia	2.66	$7.60@$8.20	7.75@ 7.85	$7.60@$8.20	7.75@ 7.85	$7.60@$8.20	7.75@ 7.85
Egg	New York	2.61	8.00@ 8.40	7.60@ 7.75	8.00@ 8.25	7.60@ 7.75	*7.75@ 8.00*	7.60@ 7.75
Egg	Philadelphia	2.66	8.10@ 8.35	7.75@ 7.85	8.10@ 8.35	7.75@ 7.85	*8.00@ 8.35*	7.75@ 7.85
Egg	Chicago	5.63	8.00**	7.15**	8.00**	7.15**	8.00**	7.15**
Stove	New York	2.61	8.75@ 9.25	7.90@ 8.10	8.75@ 9.25	7.90@ 8.10	*8.50@ 9.00*	7.90@ 8.10
Stove	Philadelphia	2.66	8.75@ 9.00	8.00@ 8.35	8.75@ 9.00	8.00@ 8.35	8.75@ 9.00	8.00@ 8.35
Stove	Chicago	5.63	8.50**	7.40**	8.50**	7.40**	8.50**	7.40**
Chestnut	New York	2.61	8.75@ 9.25	7.90@ 8.10	8.75@ 9.25	7.90@ 8.10	*8.50@ 9.00*	7.90@ 8.10
Chestnut	Philadelphia	2.66	8.50@ 9.00	8.05@ 8.25	8.50@ 9.00	8.05@ 8.25	8.50@ 9.00	8.05@ 8.25
Chestnut	Chicago	5.63	8.25**	7.40**	8.25**	7.40**	8.25**	7.40**
Pea	New York	2.47	5.50@ 6.00	6.05@ 6.45	5.50@ 5.75	6.05@ 6.45	*5.25@ 5.50*	6.05@ 6.45
Pea	Philadelphia	2.38	5.00@ 5.50	6.15@ 6.25	5.00@ 5.50	6.15@ 6.25	5.00@ 5.50	6.15@ 6.25
Pea	Chicago	5.63	6.60**	5.80**	6.60**	5.80**	*6.10***	5.80**
Buckwheat No. 1	New York	2.47	2.50@ 3.25	3.50	2.50@ 3.00	3.50	2.50@ 3.00	3.50
Buckwheat No. 1	Philadelphia	2.38	3.75@ 3.25	3.50	2.75@ 3.25	3.50	*2.50@ 3.00*	3.50
Rice	New York	2.47	2.00@ 2.40	2.50	1.75@ 2.25	2.50	1.75@ 2.25	2.50
Rice	Philadelphia	2.38	1.75@ 2.25	2.50	1.75@ 2.25	2.50	*1.75@ 2.00*	2.50
Barley	New York	2.47	1.25@ 1.50	1.50	1.00@ 1.25	1.50	1.00@ 1.25	1.50
Barley	Philadelphia	2.38	1.10@ 1.25	1.50	1.00@ 1.50	1.50	*1.00@ 1.25*	1.50
Birdseye	New York	2.47	.....	2.50	.....	2.50	.....	2.50

†Advances over previous week shown in heavy type, declines in *italics*.
**Net tons, f. o. b. mines.

running and shippers are finding New England an increasingly difficult outlet. General cargoes are scarce and bunkering requirements are thereby reduced. Many New River mines have closed lately because of high production costs, and this may tend to check the distress tonnage at the piers.

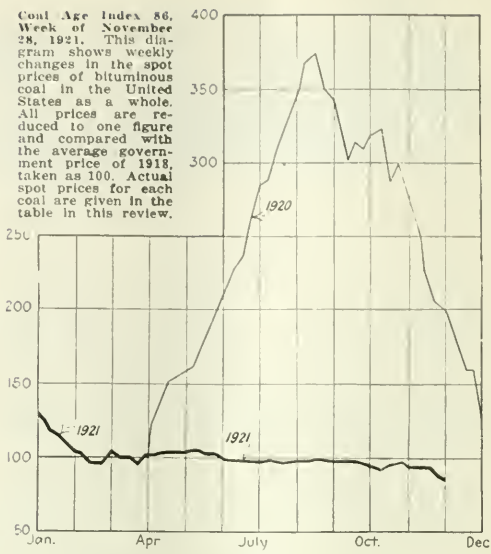


The depressed coal markets resulted in an increase of 47,017 in the number of idle freight cars on Nov. 15, compared with the total on Nov. 8. Of this increase 21,349 were surplus coal cars.

ANTHRACITE

Production recovered promptly after the holidays. The total output during the week ended Nov. 19 was 1,910,000 net tons, as compared with 1,942,000 in the last preceding full-time week. Retailers report their business as slowing down, while their yards are fast becoming filled. Many are already in such comfortable supply that reordering will be unnecessary until Jan. 1; perhaps even later.

The New England rail movement was 2,997 cars in the week ended Nov. 19, practically the same as during the preceding week. Lake dumpings at Buffalo were 86,600 net tons in the week ended Nov. 23, as compared with 38,300 in the previous week.



Coal Age Index 86, Week of November 28, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.

COKE

Beehive coke production increased 8,000 tons to 111,000 in the week ended Nov. 19. Independent plant activity is less although the Frick company has increased its output. Demand has failed to hold firm and Connellsville prices have softened on furnace coke, which is quoted $3@$3.10; foundry is unchanged, $4@$4.50.

Foreign Market And Export News

Coal Paragraphs from Foreign Lands

ITALY — The price of Cardiff steam first is quoted at 39s. 3d. on the Genoa market, according to a Nov. 28 cable to *Coal Age*. This is a drop of only 3d. from last week's quotations.

GERMANY—The production of coal in the Ruhr region during the week ended Nov. 14, was 1,835,000 metric tons, according to a cable to *Coal Age*, compared with 1,545,000 tons during the preceding week.

The total bituminous output in September was 11,607,160 tons (11,549,516 tons in September 1920); lignite, 10,358,568 tons (10,102,551 tons); coke, 2,278,047 tons (2,210,329 tons); briquets 520,560 tons (459,344 tons); lignite briquets, 2,471,189 tons (2,256,039 tons), according to the *Colliery Guardian*. The Upper Silesian production was 2,678,032 tons, as against 3,196,326 tons in September 1913. On the other hand, labor increased from 128,068 to 182,500 men.

INDIA—Tenders were invited, closing Dec. 1, for the supply of 100,000 tons of steam coal for the Bengal and North Western Ry. for twelve months beginning April 1, 1922. Tenders were submitted for the whole amount or for a portion only.

HOLLAND — The following are the latest quotations on the Rotterdam coal market: British, per gross ton, c.i.f. Rotterdam, 17.40 gulden or 30s. American per gross ton, c.i.f. Rotterdam, 23.23 gulden or $8.

SPAIN—The miners' syndicate in the Colmel mining region of Asturias has announced a general strike for the end of November in protest against the prevailing conditions. Thousands of miners are without employment owing to the lack of demand for Spanish coal.

Notes From the British Market

The Newcastle market has been quiet. Curtailment of production has been general. Prices show a decline of from 6d. to 1s. The Norwegian State Railways have ordered 20,000 tons of steam at 22s. 11d. f.o.b.

During October the Tyne shipped 1,143,237 tons, which is 599,030 tons more than in October, 1920.

Production for the week ended Oct. 29, was 4,210,200 gross tons. During the week ended Nov. 5, the output was 4,182,000 tons and in the second week of November, 4,373,000 tons.

The Admiralty has invited Welsh coal owners to render proposals for supplies for 1922. Owing to the extensive use of oil in the Navy the quantity of coal required for 1922 is not likely to exceed 500,000 tons. Exports are a little improved, especially to France, Italy, Egypt, India and South America. Supplies are still top heavy, owing to the domestic depression.

Exports Dull at Hampton Roads; Accumulations Are Diminishing; Coastwise Freights Soften

Export business was dull last week, the temporary revival recently noted failing to hold up. Movement to New England also fell off, and the total dumpings took a decided slump. Bunker business was holding its own, although general shipping is weak.

Reduced quotations are having little effect on the market. Accumulations are diminishing, indicating a hesitancy on the part of shippers to lay in more stock than for immediate needs. The faith in the market, which has hitherto been strongly in evidence now appears to be lacking.

Hampton Roads must look forward to some other outlet for coal than in foreign cargoes. For this reason the trade is much interested in the proposed construction of warehouses and piers, with its promise of increasing general shipping through this port, thereby bringing in ships for bunkers. This movement is one of the most important, from the point of view of the coal man, that has been undertaken here in years.

Freight rates to New England are showing a tendency to drop, barges and schooners being offered on the spot to Boston for as low as 90c., with correspondingly low rates for ports farther North on the coast. Foreign freight rates are at a standstill, apparently,

with variations in most cases of only 5c.@10c. per ton for specific spot cargoes, which are seldom offered.

PIER SITUATION

	Week Ended Nov. 17	Week Ended Nov. 24
N. & W. Piers, Lamberts Point:		
Cars on hand	2,033	1,905
Tons on hand	114,431	97,820
Tons dumped	125,818	75,829
Tonnage waiting	14,500	2,200
Virginian Ry. Piers, Sewall's Point:		
Cars on hand	1,556	1,511
Tons on hand	77,800	75,550
Tons dumped	129,239	45,512
Tonnage waiting	5,198	11,500
C. & O. Piers, Newport News:		
Cars on hand	1,418	1,466
Tons on hand	70,900	73,300
Tons dumped	35,376	39,537
Tonnage waiting	3,500	1,450

Pier and Bunker Prices, Gross Tons

(Foreign Bunker Quotations by Cable to Coal Age)

	Nov. 19	Nov. 26†
PIERS		
Pool 9, New York	$5.55@$5.75	**$5.60@$5.75**
Pool 10, New York	5.40@ 5.50	**5.40@ 5.60**
Pool 9, Philadelphia	5.50@ 5.80	5.50@ 5.80
Pool 10, Philadelphia	5.50@ 5.65	5.50@ 5.65
Pool 71, Philadelphia	6.00	6.00
Pool 1, Hamp. Rds.	4.75@ 4.90	**4.75@ 4.95**
Pools 5-6-7 Hamp Rds	4.25	4.25
Pool 2, Hamp. Rds.	4.60@4.75	4.65
BUNKERS		
Pool 9, New York	$5.95@$6.15	*$5.95@$6.10*
Pool 10, New York	5.80@ 5.90	5.80@ 5.90
Pool 9, Philadelphia	6.00	6.00
Pool 10, Philadelphia	5.75@ 5.90	5.75@ 5.90
Pool 1, Hamp. Rds.	5.00@ 5.10	5.00@ 5.10
Pool 2, Hamp. Rds.	4.75@ 4.85	*4.75*
Welsh, Gibraltar	45s. f.o.b	45s. f.o.b.
Welsh, Rio de Janeiro	65s. f.o.b.	65s. f.o.b.
Welsh, Lisbon	52s. f.o.b.	52s. f.o.b.
Welsh, La Plata	60s. f.o.b.	60s. f.o.b.
Welsh, Marseilles	125 fr. f.o.b.	125 fr. f.o.b.
Welsh, Genoa	45s t.i.b.	45s. t.i.b.
Welsh, Madeira	45s. f.a.s.	45s. f.a.s.
Welsh, Teneriffe	45s. f.a.s	45s. f.a.s.
Welsh, Malta	47s. 6d. f.o.b.	47s.6d. f.o.b
Welsh, St. Michaels	60s. t.i.b.	60s. t.i.b.
Welsh, Las Palmas	45s f.a.s.	45s. f.a.s.
Belgian, Antwerp	40s. f.o.b.	40s. f.o.b.
Alexandria	53s. f.o.b.	49s. f.o.b.
Bombay	35 rupees	35 rupees
Capetown	42s. 9d.	42s. 9d.

C.I.F. Prices, American Coal

(In Gr ss Tons)

	Nov. 19 Low Vol.	Nov. 19 High Vol.	Nov. 26† Low Vol.	Nov. 26† High Vol.
French Atlantic	$8.90	$8.70	*$8.65*	**$8.85**
West Italy	8.90	8.70	*8.65*	**8.85**
The Plate	9.00	8.80	9.00	8.80
Rio Janeiro	9.00	8.90		
Havana	7.00	6.75	*6.95*	*6.70*

These quotations are purely nominal and as far as can be learned, no business is being done in these markets.

Current Quotations British Coal f.o.b. Port, Gross Tons

Cardiff	Nov. 19	Nov. 26†
Admiralty, Large	26s. 3d.	25s.6d.@26s.
Steam, Smalls	19s.	18s.6d.@19s.6d.
Newcastle:		
Best Steams	23s.	**23s.@24s.**
Best Gas	24s	23s.
Best Bunkers	22s. 6d.	*18.6d.@22s.*

† Advance over previous week shown in heavy type, declines in *italics*.

Wage Reductions, Strikes and Idle Pits Mark Progress of British Coal Readjustments

Mines Working Less Than Four Days a Week—Wages Nearly Halved in Scotland and Some Other Fields—Operators Doubt Possibility of 20s. Coal

The British coal industry is rapidly going from bad to worse. So serious is the outlook for the miners that they called on the Prime Minister on Nov. 14 in an endeavor to obtain some sort of financial aid from the Government to keep the pits open. It was urged that the balance of £3,000,000 of the Government subsidy should be utilized to supplement the low wages prevailing. The Premier said he recognized the very serious situation in which many of the miners found themselves, but it was not possible to come to the aid of the coal industry as suggested. In the meantime, owners are asking for cancellation of that part of the Mining Act which provides for the contribution of a system of commitees and boards for the regulation of wages and conditions of work in the industry.

The Scottish miners have just undergone a cut of 4s. 2d. which brings their wages down to 9s. 8d. per day. South Wales colliers lose 3s. 5d. per day, the daily wage of laborers in that district being now 6s. 5d.

A big cut in the wages of Forest of Dean miners has been decided on by the Joint District Board. The pay will now be 7s. 5d. a day, as compared with 18s. 9d. at the beginning of the year.

The management committee of the General Federation of Trades Unions says: "The miners' representatives now admit that their mishandling of the coal industry has been the cause of disaster and the preventive of quick recoveries in industry. Coal costs seriously increase our present day troubles. The scheme recently put forward on behalf of the miners (i.e. a loan from the Treasury to the mining industry) is no remedy at all. To transfer the cost from the user of coal to the taxpayer is not to reduce the cost, but to relieve the miners at the expense of other workers."

Coal owners are pressing and have received a reduction of 25 per cent in railway rates in consequence of the heavy fall in export and shipment trades.

In Durham sixty-one coal mines have closed since the beginning of the year and nine new pits have opened in the same period. An illuminating instance of wage cuts is given in the following table which shows a comparison of the Northumberland miner's wage in October and November:

	October Wage s.	October Wage d.	November Wage s.	November Wage d.	Cut s.	Cut d.
Machine fillers	17	8 79	12	6 40	5	2.39
Mach. cutters	17	2 53	12	1.98	5	0 55
Coal hewers	16	2 01	11	5 13	4	8.88
Coal cutters (day)	15	7.75	11	0 71	4	7.04
Timbermen	10	11 43	7	8 89	3	2.54
Laborers	9	4.65	6	7 62	2	9.03
Surfacemen (day)	11	3 33	7	11 66	3	4.33
Surfacemen (piece)	14	6 27	10	3 18	4	3 09
Mechanics	13	6.67	9	7 12	3	11 55

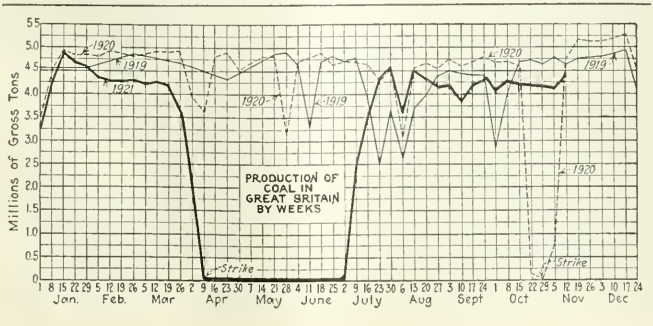
The severity of the cuts from January to November is shown here:

	January s.	January d.	November s.	November d.	Cut s.	Cut d.
Colliers	20	10.20	8	10.38	11	11.64
Laborers	17	9.50	6	5.37	11	4 13
Hitchers	18	2 17	6	9.23	11	4.94
Tinkers	18	11.50	7	5 97	11	0.58
Rippers	19	4.19	7	9 84	11	6.35
Haulers	19	1.86	7	7.19	11	5.67

A new agreement embodying the principles and provisions of the old Conciliation Board agreement was signed by the South Wales Joint District Coal Board at Cardiff on November 14. The schedule incorporates the terms of the national settlement and the arrangement is to run until September next, and after that will be terminable at three months' notice. An application was made by the workers' representatives for an allowance to the lower paid men. It was urged on behalf of the owners that an improvement in the trade could only be secured by reduced costs.

On an average the miners are working 3.9 shifts per week, while in many districts not more than 2 per week is the rule. The heavy fall in wages throughout Britain is indicated in the following table which shows the daily rates for collieries:

	March s.	March d.	November s.	November d.
Nottinghamshire	19	0	17	4
Northumberland	18	11	11	5
Kent	18	8	10	4
Derbyshire	18	3	16	9
Yorkshire	17	11	15	9
South Wales	17	10	8	10
Warwick	17	3	14	8
North Staffs	17	2	11	3
Leicester	17	2	14	9
Durham	16	6	11	3
Cannock	16	6	13	8
South Derby	16	6	13	8
Lancashire	16	5	11	4
Cumberland	16	0	9	1
North Wales	16	4	9	6
Forest of Dean	15	3	7	5
Bristol	14	11	7	6
Somerset	14	7	9	6
Scotland	17	0	9	8



Export Clearances, Week Ended, Nov. 24, 1921

FROM HAMPTON ROADS

For Atlantic Islands	Tons
Br. Schr. Vincent A. White, for Kingston	735
Nor. SS. Lom, for Kingston	1,008
Nor. SS. Cibao, for Kingston	1,019
Am. SS. Gleodoyle, for Martinique	1,173
Du. SS. Maashaven, for Barbados	3,818
For Cuba:	
Am. SS. Munwood, for Havana	2,996
For Nova Scotia:	
Br. Schr. Majorie E. Bachman, for Halifax	73

FROM PHILADELPHIA

For Brazil:	
Br. SS. Balzac, for Santos	3,310

Reports From the Market Centers

New England

BOSTON

Prospects Dull—Only Spotty Demand —Market Largely Restricted to Pocahontas and New River—Domestic Anthracite Somewhat Easier.

Bituminous—The market continues to drag along without sign of change. Many Pennsylvania operating interests that have usually been well supplied with orders now find themselves at their wits' ends to place even a small share of weekly output. In no part of this territory is there any apparent interest in quotations; buyers find themselves well stocked with fuel for December and January at the very least, and there is no disposition whatever to make purchases for more than 60 to 90 days ahead. The trade has been hammered so hard since Aug. 19, it is by no means surprising that current prices, many of them on the very lowest level that has obtained at any time during the fall, fail utterly to attract more than the few scattered consumers who for one reason or another did not buy when the first low figures were named. There is certainly no very encouraging outlook for steam coals in New England during what normally are the heavier winter months.

While among industries there is observed a better trend toward 1922, the improvement is so gradual that it will be a long time before any reaction on coal can be noted. In shoes and textiles there is a fair amount of business, but the machine trades, paper manufacturers, and several special lines are going through an extremely dull period. Several reorganizations have taken place among large producers and there are more than a few plants that are suffering from acute financial disability, but now that interest rates have come down there is a disposition among the banks to help along as well as may be the lame and the halt who are asking for relief. This will not extend, however, to the point of accumulating coal.

So long as all-rail tariffs remain on their present basis and there is no war to boost the value of water transportation, it is easy to see that the water route will be preferred. It is clear that the Hampton Roads agencies, drawing their supply in large measure from districts where the wage scale is usually on a lower basis, will maintain their present advantage here through the use of bottoms of relatively low operating cost. Certain of those shippers have their own rehandling plants at strategic points like Boston, Providence, New Bedford, and Portland, and in that way are the better able to move Inland.

Prices on Pocahontas and New River for Inland delivery are being held on a level of $6.25@$6.50 per gross ton on cars for Navy acceptable grades, but occasionally a lower price is still heard. Since a general move was made to curtail production, especially in the New River district, there have been fewer offerings of distress coal at railroad berths to be absorbed Inland, and it is a fair deduction that the current market is in that much better position.

The number of coastwise charters being made is quite limited, but rates seem to have changed in no particular. Commitments are made only from trip to trip, for no shipper is able to plan disposition more than a fortnight or so in advance. Large sailing vessels, 3,500 tons and upwards, together with some of the larger barges that are restricted to deep-water berths, almost go begging at 85c., Hampton Roads to Boston or Portland, the low rate that has been obtainable now for more than 60 days. Smaller craft naturally command somewhat higher rates, $1@$1.10 having been paid, but most of these latter are for wharves where delivery is made direct to consumer or to the smaller retail dealers, and in places east of Boston where less water is available.

Anthracite—Shipments are coming forward in such heavy volume that the pressure to get stove and chestnut is beginning to relax noticeably. Mild weather prevails, and unless we are to have three or four weeks of steady cold it may be expected there will be signs of easing up, temporarily. The demand in the fore part of the winter is to be largely dependent upon the weather; after that it will be interesting to observe the early stages of the expected discussion of wages at the mines.

Tidewater—East

NEW YORK

Warm Weather Affects Anthracite Demand—Independent Prices Suffer—No Tendency Toward Revival in Bituminous — Market Sluggish — Heavy Distress Tonnage Being Worked Off.

Anthracite—Warm weather has had its effect on the anthracite trade. So marked has been the depression that only a long period of low temperatures can restore some sizes to a healthy basis.

The present slowing down is looked at quite calmly by retailers as they have gone through many similar occasions. With the coal burning season young, conditions may change for the better on short notice. The trade could be worse and has actually been so many times—the difficulty being that dealers have grown accustomed to brisk demand during the years of the war.

When the weather is mild the retail dealers usually have a breathing spell before the winter rush begins. That seems to be just what is happening now, and the slow-down is actuated by unemployment and business conditions generally, which make people moe reluctant than ever to buy necessities before they really are needed.

Independent stove is down to about $8.75 maximum, when sold in conjunction with other sizes, and some operators are offering it at $8.50 if the buyer will take a fair proportion of egg or pea. Chestnut is also quotable $8.50 @$8.75. Egg is harder to move than ever. Pea has also weakened.

A serious oversupply exists in buckwheat, which is more responsive to weather changes than the other steam sizes. Loaded boats and tonnage on demurrage at the piers are being sacrificed. The market on rice is $1.90@ $2.25, and on barley $1@$1.35.

Bituminous—No tendency toward revival has been noted, the market remaining in the same sluggish condition as for some time past. A certain amount of business is being done right along, but the buying power is too feeble to give any buoyancy to prices or even sustain them at former levels.

At Tidewater this is particularly true, where the pressure to sell demurrage coal has brought about a state of demoralization even worse than that existing during the summer. Sending coal to Tide in advance of sale was then rarely indulged in, with the result that the market was comparatively free of distress coal.

But with the appearance and disappearance of the strike scare, this condition changed. More or less coal was shipped on consignment, while the accumulation was added to by the arrival at the piers of tonnage shipped on orders that were canceled after the coal left the mines. The quantity was not large enough so that it would have proved troublesome in a fairly active market, but it has been a burden in view of the prevailing stagnation.

Things were exceptionally slow in November because of the manner in which deliveries were speeded up during the second half of October. But consumers who have been out of the market cannot stay out indefinitely, and as stocks become reduced some recovery in the demand is inevitable.

With the end of the year approaching, however, they are expected to limit their purchases to correspond pretty closely with current needs, in order to conserve funds and make a strong cash showing in inventories.

PHILADELPHIA

Anthracite Displays Further Weakness —Dealers' Stocks Heavy—Retail Prices Soft—Steam Sizes in Light Demand—Bituminous Slow—Quality Coals Only in Demand.

Anthacite—Retail business is flat and dealers are at a loss to recall a parallel situation within the last ten years. There is no longer a question as to the cause of the lack of buying and that is, that the consumer is short of money and is husbanding such resources as he has to the utmost degree. Most of the business that now comes in is for small lots.

However, despite the inability of certain dealers to induce trade by reduced prices, the number who are more or less openly offering them increases, and the average for stove and nut is nearer $14 now rather than $14.50, and seems likely to go lower.

The week has seen much cancellation of orders and most of the independents are now offering all sizes, but among the larger shippers in this class there is yet no price concession offered.

At this time it would seem that nothing but some unusual wintry weather will revive the industry, and the fact

must be faced that Philadelphia rarely sees any rigorous weather much before the end of the year. At this time every dealer has enough coal in his yard to go right through until the first of the year.

So far the collieries have not lost any working time account of the easing off of trade, but nevertheless this is imminent, particularly among the independents, who are already getting an accumulation of coal behind the scales, especially egg and pea.

Steam sizes are in worse shape than any time this season, only barley being active in any degree, and with more than enough to fill all demands on this size. There is no difficulty to get a cut of 25c.@50c. on any of the independent steam sizes. The companies hold firm on prices, preferring to store rather than reduce the schedule.

Bituminous—Consumer conservatism is the prevailing note. Even the railroads which heretofore have been fair buyers seem to have eased up a bit, feeling that they stocked heavier than they ordinarily might have done. As is always the case in a buyer's market, there is the strongest kind of a demand for quality.

There are still plenty of instances of the producer of even good coals anxious to increase tonnage who will take an occasional flyer of a low price to close desirable business, but on the whole quotations have varied but little, although there is still a downward tendency to be noted. Nothing like a firm tone in this respect is expected before a spell of severe weather converts the buyer into a belief of a possibility of slow rail deliveries.

The Tide trade remains unchanged. There is some bunkering, but no activity, as there seems always plenty of coal on hand to meet the calls that come in.

BALTIMORE

Continued Unsatisfactory Conditions for Bituminous—Demand Abnormally Low—Anthracite Supply Gains with Warm Weather.

Bituminous—Reports from the local trade and producing sections which ship to this point show that the demand for soft coal of all kinds continues abnormally low and that many operators are not only selling below actual production cost but are running their mines on a basis as low as any operation at all will permit. It is hard to figure how general business, even in such a dull time as the present, is able to make out without more coal than is moving at present.

The only bright spot is that when business improves there must be a heavy purchasing almost from the start, as industries have been proceeding in the majority of cases without stocking up fuel for future needs. A break in the unusually warm weather for the season will will also play a heavy part in the price conditions, as there is no reserve at this point to call upon if winter snows and freezes tie up traffic. It would not be at all surprising to a majority in the trade here if one or both of these causes sent the market up with a run the first of the year.

The price on line business continues poor, the best grades of steam coal offering at $2.35@$2.50 in the majority of cases, with some of the more restricted lines of Pool 1 ranging $2.60@$2.65 per net ton, f.o.b. mines. Poorer steam grades continue in little demand and are offering freely at $1.75@$2.15. Best grades of gas lump are on the market around $2.35@$2.50, also, and mine run is offering with but few takers at $2 and less.

Bunker trading at this port is not at all brisk, best grades of both gas and steam coals are $5@$5.15 per gross ton, f.o.b. piers, before trimming. The export situation is a little brighter and November will show a fair increase over October. There is no healthy line of inquiry for the future, however, and export interests are by no means oversanguine.

Anthracite—Continued warm weather over the month of November is having its effect on the hard coal situation at Baltimore. The November run of coal here was short of the deliveries of October, but the lessened consumption and light calls from the purchasing public have enabled the majority of yards to maintain a fair reserve.

The shortage from normal supply here at this time is probably still around 100,000 tons, but unless severe weather is encountered in the near future this shortage will be made up to a considerable extent before the first of the year.

BUFFALO

Small Demand for Bituminous — No Change in Situation—Anthracite Only Fairly Active.

Bituminous—It is still reported that the trade in general has not yet recovered from the reaction of overstocking when it was feared that the miners were going to strike. There is coal on track at terminal points that was turned out some weeks ago and some of it is selling very low.

It is only the shipper who has a well-established trade that can say he is doing much now and he has to work hard for what he gets. Of course it is the shipper who has held his old customers pretty firmly who is going to go ahead fastest when the demand becomes normal. He has kept his men on the road when they did not earn their railroad fare and he is in about as close touch with the consumer as he ever was. Bituminous coal prices are unchanged.

Anthacite—Demand is fair but does not appear to be as heavy as it was. The weather has not favored buying and as there is no special urgency the consumers seem to have come to the conclusion that they can buy when they need coal and not hurry. The independent mine price is usually a dollar or so over circular and it is likely to go up rather than go down.

Lake shipments are still light, being 85,600 tons for the week ended Nov. 23, of which 26,000 cleared for Duluth and Superior, 23,700 for Milwaukee, 15,200 for Fort William, 7,200 for Sheboygan, 7,000 for Manitowoc and 6,500 for Chicago.

Coke—Most of the furnaces are idle or making their own supply through auxiliary local byproduct plants. Jobbers get some business in case a special make is wanted, being given the following oven prices as base: $4.15 for 72-hr. Connellsville foundry, $3.15 for 48-hr. furnace and $2.75 for stock.

Bituminous coal prices are: $2.75 for Youghiogheny gas lump, $2.50 for Pittsburgh and No. 8 steam lump, $2.25 for Allegheny Valley and all mine run, $1.50@$1.75 for slack, adding $2.36 to Allegheny Valley and $2.51 to other coals for freight.

Northwest

DULUTH

Zero Weather Arouses the Market — Many Rush Orders—Retail Prices Cut —Lake Receipts Dwindle.

Eleven degrees below zero, and a blanket of snow have done their bit at the Head of the Lakes in helping the coal trade. Docks and local retail dealers have been literally flooded with orders overnight.

Following the depression which was noted last week, retail dealers announced a cut in rates ranging from 65c. to $1.05 in bituminous. The break is attributed not only to slow sales but also to large accumulations and the certainty that the carry-over will be large.

Youghiogheny and Hocking lump have been cut from $8.80 to $8.25; run-of-pile from $8.30 to $7.25, and screenings from $6 to $5. Smokeless screenings have been marked down from $8.30 to $7.30. Hard coal retail prices are unchanged with the exception that buckwheat has been dropped from $10 to $8.50. The dock men are holding prices firm in spite of the retail drop.

Damaged screenings are moving at $2.50 and some few docks are selling regular screenings at $3 in order to move stocks. Other docks which are short are taking this opportunity to cover and the slack is being taken up. Buckwheat is a drug on the market and is being offered at prices of $6 and below, from list of $8.50.

A sheet of ice on the harbor has sounded the warning that shipping will soon end. Only ten cargoes were received here last week of which four were anthracite, and fourteen are reported on the way of which four are hard coal.

MINNEAPOLIS

Cold Weather Stimulates Movement— Bad Weather to Test Traffic Facilities —Small Orders the Feature.

Cold weather has served to stimulate the movement to the interior. October had seen a good tonnage, which fell off as soon as it was seen that there would be no rail strike. November had considerable snow and several sharp mornings when the temperature went well below freezing. Despite the backward tendency as to buying these were hints which caused orders to be placed.

The frequent snows will speedily put to test the efficiency of the railroads as to maintaining traffic operation. So long as there were no weather handicaps it was evident that with the limited tonnage moving the roads were equal to holding up to all offerings of freight and more. But it has been constantly predicted that the better situation was due to good weather and limited loads.

If snows continue as freely as they have for some days, it will soon show whether railroad men have "gone soft" completely in the matter of keeping the lines open. Many have thought that the coddling of Government control, with high wages and overtime and advanced titles for the work formerly done at less wages, all tended to make them incapable of measuring up to the capacity of private management of the old days.

The market on screenings has been fairly steady although not firm, due to

the limited volume available. The mild weather has given a steady outlet for them in this territory. Now that colder weather has prevailed, the larger sizes will be more in demand and the production of screenings will be increased.

The cold weather will test out the opinions of some in the wholesale trade that it will not take long to brace the market. Some have had a range of prices higher than others were quoting. Naturally this meant very little business but the holders insisted that they would get their price when cold weather struck, while the competitors would have sold considerable tonnage at a price which they regarded as cost or less.

Others fear that the general commercial depression is such that there will be at all times such competition for business that prices will have hard work to show any advance, despite the natural pressure when the demand picks up. It will turn upon how much the demand actually does pick up. Buying is apt to be confined to small orders, single tons or less at retail; small cars at wholesale, and less than the usual amount to the steam trade.

Cold weather will mean that they will come along twice as often as when larger orders were placed, but the financing will be that much easier to the buyer, while the seller will turn over his money quicker, and will be that much better off,—all but the dock or mining concern, which will be up against the usual situation of being asked to deliver coal instanter to offset constant delay by the purchaser in placing his order.

MILWAUKEE

Market Continues Dull and Depressed —Demand Fluctuates with Weather— Cargoes Still Arriving.

Dealers without exception report a dull and depressed market. The recent slight shading in anthracite had little effect in the way of stimulating buying, and the market continues to be governed solely by weather conditions.

Hard coal prices are not uniform. There is a variation of 10c. in the retail price of stove size, and 20c. on pea. This slight difference is maintained by only a few firms, however. The soft coal market is extremely inactive. Yards are well stocked, and very little coal is moving to the interior. Cargoes are still coming, however, and what the docks cannot take will be held afloat.

November Lake receipts thus far aggregate 94,579 tons of anthracite, and 212,108 tons of soft coal, against 88,355 tons of the former, and 277,029 tons of the latter last year. Quite a number of steamers are booked to deliver cargoes before the season closes.

The following are the rates current on both hard and soft coal:

BITUMINOUS

Splint or Yough. lump	$8 00	$9 25
Splint or Yough. lump, pile run	7 25	8 50
Splint or Yough. lump screenings	6 25	7 50
Hocking or Pittsburgh lump	7 75	9 25
Hocking or Pittsburgh pile run	7 00	8 25
Hocking or Pittsburgh screenings	6 00	7 25
Pocahontas lump, egg and nut		13 50
Pocahontas mine run	8 50	9 75
Pocahontas screenings	7 25	8 50
Illinois and Indiana lump	7 50	9 25
Illinois and Indiana screenings	5 50	6 75
Smith'ing	10 00	12 25

ANTHRACITE

Egg	$15 70
Stove	16 10
Chestnut	15 95
Pea	14 20
Buckwheat	11 50

Inland West

ST. LOUIS

Mild Weather Holds Up Everything— General Situation Is Extremely Discouraging—Steam Shows Improvement in Screenings Only.

The local situation is a hard one on the retailer. The warm weather has practically stopped even the small orders. It is going to take a couple of good weeks of stiff weather to put the retail business where it ought to be at this season. Scarcity of money and non-employment is the chief excuse for buying in small lots. Every retail yard in St. Louis is loaded with coal.

Screenings are fairly active but the demand is so light that the scarcity has not brought about the advance that would usually be expected. In a general way industrial plants are not running full. The situation is one that is discouraging to both retailer and shipper and especially so in view of the fact that the retailer has all his capital tied up in storage coal and the operator has all the storage coal that the railroads will allow him to hold in their equipment at the mine.

CLEVELAND

Coal Trade Still in Dumps—No Early Improvement Seen—Industrial Demand Depends on Trend in Steel Industry.

The coal trade sees only one coming development which may be depended upon to stimulate the demand. That is the renewed buying in anticipation of the wage struggle at the mines. This influence, of course, will not become effective until early next year. Any clear indications of the liklihood of a strike undoubtedly will start a buying movement against the eventuality of a mine shutdown.

In the meantime, little is expected in the way of renewed buying on any considerable scale from industries, although the present extreme slump, due to buying against the recent strike threats, probably will become less acute as accumulated stocks wear down. In other words, the industrial situation in this district probably will hold its own for the rest of the winter.

The iron, steel and allied industries, the overwhelming enterprises in and around Cleveland, are still running at about 50 per cent of capacity, but are not making much headway in pushing above that mark. Better buying by the railroads is one of the most encouraging features in the steel outlook, and leaders in the industry are convinced that 1922 will bring a good year in most products and possibly all. If the upturn in iron and steel comes on schedule next spring it will stimulate the coal trade and in the event of a looming coal strike something near to a scramble for coal might develop. For the moment, however, there is little cheer in the situation. Spot coal is moving slowly and when it does it is at distress prices, which operators contend do not establish a market. It is highly significant that contract coal is going at somewhat better quotations. The Lake season virtually is at an end. The retail trade remains quiet, with dealers stocks large and price concessions being offered here and there.

Bituminous coal receipts for the week ended Nov. 19, took a severe slump, being almost 1,000 cars less than in the preceding week. Total arrivals amounted to 1,134 cars; divided, 759 cars for industry and 375 cars for retail yards.

DETROIT

Bituminous Still Finding an Irregular Market—Incoming Shipments Are Small—Bargain Lots Sought.

Bituminous — Sales continue discouragingly small. Jobbers and wholesalers had expected a broader demand would develop with the coming of winter. Consumers of steam coal, however, are adhering to a hand-to-mouth plan of purchasing.

With factories and industrial plants running on production schedules much below their normal capacity, coal requirements have been largely reduced. This makes possible an irregular system of buying in small lots.

Buying in the domestic market is falling short of expectations. Stocks in retail yards have not been reduced to the extent the dealers had anticipated, and they are showing no disposition to add to their supplies.

West Virginia lump is quoted $3.15@$3.25; egg, $2.50; mine run, $2; nut and slack, $1.25. Ohio lump is $3@$3.25; egg, $2.40; mine run, $1.90; nut and slack, $1.15@$1.25; Pittsburgh No. 8 inch and a quarter is $2.40; three-quarter lump, $2.35; mine run, $2.15; nut and slack, $1.65. Smokeless lump and egg is $4.75; mine run, $2.65; slack, $1.60.

Anthracite — Household consumers are buying more sparingly than in previous years. The extensive unemployment and the high retail prices, $14.50@$14.75, are influences curtailing business.

COLUMBUS

No Increase in Demand—Steam and Domestic Stocks Are Heavy—Prices Are Still Weaker.

Little change has taken place during the past week. With warm weather prevailing retail business is slow. Dealers are only selling a small percentage of the usual tonnage for the time of the year and are not coming into the market to replenish stocks.

Retail prices show a tendency to soften but this is not material. Hocking lump retails $6@$6.50 while West Virginia splints are $7.25@$7.75. Pocahontas lump is $8.75@$9.25. Anthracite is fairly strong around $15 and domestic coke is $11.50.

Steam business is probably the weakest point in the market. While the reduction in the amount of lump produced as reduced screenings, still prices have not advanced. This is due to lack of demand. Manufacturing concerns are well stocked with adequate reserves. Ohio screenings are selling as low as 90c. and in some instances distress coal is going even lower. Mine run also shows a decline.

No date for the official closing of Lake navigation has been fixed. The T. & O. C. Docks at Toledo during the week ended Nov. 19 loaded 15,279 tons, making a total of 1 078,264 tons for the season. The H. V. Docks during the same week loaded 60,346 tons as compared with 97,696 tons the previous week, making a total of 4,454,172 tons for the season.

Production in Ohio fields is at a

rather low point. Many mines have been closed down entirely while others are working a day or two each week. The Hocking Valley output has been less than 25 per cent while the same figures prevail for Crooksville, Cambridge and Pomeroy.

CINCINNATI

Mine Closings Fail to Rally Prices — Distress Tonnage Increases — Retail Prices Also Soften.

In the face of reports that many mines have closed and will stay closed for some time, there was no rallying of the market this week. Even the retail market showed the effect of the accumulation of coal. Cancellations and rejections, now called in trade parlance "hold-ups," continue with increasing frequency.

Smokeless lump was quoted at $4.25 but sales agents were willing to take $4 and cars in distress sold as low as $3.75. Mine run dropped to $2.50, although the low for distress stuff seemed to be $2. Slack was fairly strong, because of the small make of prepared, and was held at $1.25.

Some bituminous mines were quoting $3@$3.25 for lump. Others sold down to $2.25 for soft gas offerings. Mine run had a wide range with $1.15 as low for accumulated coal and the top around $1.50. Slack sold 75c.@$1.15, the West Virginia offerings for the first time in months seeking the level of the Kentucky tonnage.

Retail prices were off 25c. Smokeless lump ranged $9.25@$10; mine run $7 @$7.25 and slack $6. Bituminous lump was $7@$7.25; mine run $5.50 and slack $4@$5.25.

South

LOUISVILLE

Mild Weather Curtails Domestic Demand—Industrial Situation Unsatisfactory—High-Scale Mines Closing.

Business is certainly "shot" at the present time due to general lack of demand. Operators who have unionized mines are having trouble in competing with those in eastern Kentucky and West Virginia that are not organized and have reduced wages.

The best eastern Kentucky lump in October was selling up to $3.75@$4, with some sales at $4.25. Today practically the top price is $3.25, with the bulk at closer to $3. Many mines are down and others are closing daily. The higher wage scale paid in southeastern Kentucky makes it impossible for the Harlan, Straight Creek and Jellico fields to compete profitably.

It is a case where the buyer is writing his own ticket, and where operators either have to accept the price offered, or close down and await a more favorable time. Retailers are selling very little coal. Industrial demand is dull. Production on a capacity basis grew by such leaps and bounds during the war that competition is very keen.

BIRMINGHAM

Market Extremely Dull—Weather Unfavorable to Movement of Household Fuel—Quotations Firm.

The trade is experiencing the most acute period of dullness that has obtained in the past six or eight months. Sales agents are receiving practically no inquiry and salesmen report that it is impossible to interest their customers in buying coal in any quantity. Consuming interests seem to be averse to laying in any stocks during the balance of this year, there being some intimation along the line that after the first of the new year buying will be on a little more liberal basis.

Little acceleration of movement is expected prior to the holidays, as it is thought that there will be slight interference with the half-time operations now being carried on in the commercial field and little voluntary idleness to hinder ample production for the needs of the trade. Quotations are shown in the Weekly Review.

Domestic buying is at a standstill and will remain so until continued cold weather sets in. Retailers are stocked up and there is little outlet for current production.

Southwest

KANSAS CITY

Retail Stocks Heavy and Trade Light—Screenings Short—National Organization, U. M. W., Gains Ground.

Conditions are the reverse of what might be expected at this season of the year bearing in mind the light production during the summer and fall. Retail dealers are loaded to the guards and a greater part of their working capital is tied up, and collections for the coal is slow.

The situation is further aggravated by a scarcity of steam grades resulting from little or no demand for prepared sizes. Illinois screenings took a jump to $1.90 and are scarce at that figure. Slack is plentiful at Kansas mines and the price remains steady. This district produces less prepared sizes than most fields and is not affected so much by the decrease in demand for lump and nut.

The Kansas mines are gradually resuming work and the outlaw strike seems to be exhausting itself. President Lewis has had his workers in the field and as Howat is in jail they have made progress. The national organization of the U. M. W. has been steadily gaining ground over the Howat organization. Prices are as follows: Northern Missouri lump, $4.75; mine run, $3.50; washed slack, $3.25; raw slack, $2.50. Arkansas lump is $7@$7.50; mine run, $3.75@$4.25; slack, $2.50. McAlester lump is $8.50; nut, $7; slack, $2.50. Springfield district Illinois lump is $3.50@$3.75; egg, $3@$3.25; slack, $1.90, and Franklin County lump is $4.25; egg, $4.05.

West

DENVER

Strike Fails to Hamper C. F. & I. Mines — Fremont County Operations Closed — Wage Reduction Application Withdrawn.

Miners in southern Colorado have reduced production, following the walkout Nov. 17, but the end of the first week found them unable to close down the eighteen mines of the Colorado Fuel and Iron Co. The sympathetic strike involving about 600 men in the Fremont District was so complete, and came at a time when production was so small, that the company decided to close these mines down indefinitely. No violence has occurred.

About 1,700 men were first involved, and at the close of the week about 90 per cent of them were working. There are still many loaded cars on track at the Fremont County mines, where the bulk of domestic coal comes from.

Miners are showing considerable interest in the announcement that the Keystone and Pike's Peak companies, operating in El Paso County, withdrew their applications for a 20 per cent wage cut filed with the industrial commission Sept. 26, which should have been acted upon by Oct. 26, but was not.

SALT LAKE CITY

Wintry Weather Coincident with Price Drop—Retailers in Stiff Competition—Wage Cut Predicted.

The first touch of wintry weather was coincident with the announcement that prices were to be lowered. Lump may now be had for $8.25, instead of $9.50, and other grades are reduced in proportion. Ogden dealers are conducting a price war.

One of the biggest concerns in the state announces the following as its new schedule at the mine: lump, $4; egg or stove, $3.50; nut, $3; screened slack, $1.75; straight slack, $1.25. Competitive feeling has been rather strong of late among the producers and the belief is expressed that prices will go still lower. According to an official of one of the leading operations, an effort will probably be made to get the miners to consent to a reduction in wages.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Market Continues Stagnant—Check-Off Decision Awaited—Prospects of Wage Scale Liquidation.

Sustaining of Judge Anderson's decree would probably mean a strike, and the expectation in coal circles is that the injunction will be sustained. Consumers show no interest in the matter by way of buying, for the market is altogether stagnant. Even sales of gas coal are quite limited.

A very moderate rate of operation is maintained, probably between 30 and 40 per cent, chiefly on contracts. Even the adjacent non-union districts, which

have been getting the major part of the business this year, are experiencing a weaker demand than a month ago. As to the steel industry, the best that can be said of it is that its rate of operation has not decreased in the past thirty days.

There is more or less gossip about the impending wage scale negotiations, to begin next February for the period from April 1. The view that the men would make a strong contest against any reduction, by demanding an actual advance, is much less prevalent than a couple of months ago, many observers now thinking that a moderate liquidation in the wage scale will be effected without much difficulty.

Slack continues quotable at $1.30@$1.50, being sacrificed as it has to be produced in filling screened coal contracts. Other grades are quotable at little more than asking prices, there being few actual sales: Mine-run, $210@$2.20; ¾-in., $2.60@$2.70; 1¼-in. domestic, $2.90@$3.25, per net ton at mine, Pittsburgh district.

UNIONTOWN

Frick Operations Increased — Coke Market Is Weaker—Sluggish Coal Demand.

Operations of the Frick company continue to advance steadily although the furnace coke market and independent plant activity remains at the point struck several weeks ago, when buying was suddenly suspended in some cases or sharply curtailed in others.

The Frick campany now has a total of 3,014 ovens in blast, all being at plants where the ovens are mechanically operated. The ovens burning are Calumet, 150; Collier, 200; Continental No. 1, 300; Hostetter, 260; Leisenring No. 1, 300; Leisenring No. 2, 200; Leisenring No. 3, 200; Lemont No. 2, 150; Standard, 100; York Run, 300; Youngstown, 150 and Colonial No. 1, 124.

Three dollars seems to be a firm figure for what furnace tonnage is moving but some operators are holding coke for price. The foundry market is quoted $4@$4.50 with indications of weakness.

The coal market likewise is sluggish. Thick seam coal is $1.75@$1.80, with $1.45@$1.50 for the thinner seams.

CONNELLSVILLE

Demand Fails to Increase—Prices Are Softer—Steel Corporation's Production Increases.

There has been a continued absence of coke demand. Idle merchant furnaces are indisposed to go into blast at this time, for furnaces that recently blew in are unable to ship all their current make, the consumption of merchant pig iron having evidently decreased in the past month or six weeks. The furnaces in operation seem to be fully supplied by their contracts, and thus there is no opportunity to sell furnace coke in any tonnage.

The decreasing production of merchant coke in the past three weeks has done no more than restore the balance between production and consumption, if it has done as much as that, while there remains a considerable accumulation of coke on track. There is no demurrage piling upon this coke as the cars are left on oven sidings, but if the railroads should get short of cars the coke would be hauled on railroad lines and demurrage would then begin.

The spot furnace coke market is a shade softer, with reports that $2.90 can be done, but there is question whether the price applies to standard grade. Foundry coke is in extremely light demand, and consumption has evidently decreased in the past few weeks.

The market is quotable $3@$3.10 for spot furnace and $4@$4.50 for spot foundry. No contract market has been developed. The remainder of the year would not constitute a contract period, while there has been little negotiating for next year. The Trumbull-Cliffs Furnace Co. is inquiring for 18,000 tons a month, beginning Jan. 1.

The *Courier* reports production in the week ended Nov. 19 at 35,340 tons by the furnace ovens and 33,340 tons by the merchant ovens, making a total of 68,680 tons, an increase of 6,150 tons, the increase in the furnace oven production being confined almost entirely to the Steel Corporation.

CENTRAL PENNSYLVANIA

Reduction in Tonnage Mined — Operators Refuse to Collect Strike Assessment.

Production remains about stationary. The month's output, up to and including Nov. 20, amounted to 38,097 cars. This is a reduction over the month of October, the daily average being 2,367 as against 2,381.

Acting under the advice of counsel, the operators, who are members of the Central Pennsylvania Coal Producer's Association, will refuse to collect a special assessment of $1 a month placed on the miners by the United Mine Workers for the months of November, December and January.

The assessment was levied to replenish the treasury which was greatly depleted by the strike in Mingo County, W. Va., and in Alabama. A special assessment is not a part of the check-off agreement.

No statement has been received from U.M.W. officials as to what stand will be taken on the refusal of the operators to collect the assessment.

EASTERN OHIO

Production Again Declines—Industrial Stocks Topheavy — Domestic Demand Weak—Prices Off.

A further slowing down is reflected in production for the week ended Nov. 19. The tonnage mined amounted to 383,000, or 61 per cent of rated capacity. This is 10 per cent lower than the rate during the preceding week. The association mines worked about 50 per cent of worktime and produced approximately 55 per cent of rated capacity.

Cumulative figures for the year show that this field has produced 16,546,000 tons as against a potential capacity for this period of 28,671,000 tons. About 56 per cent of the potential capacity has been produced, based on railroad ratings.

The volume of tonnage mined for railroad fuel account has not abated but, on the contrary, is somewhere between 40 and 50 per cent of output at the present rate of production.

During the past ten days industrial demand has retrogressed almost to the vanishing point. It is predicated that, under the present condition of manufacturing plants being well stocked as a result of the recent strike scare, and their fuel requirements being subnormal, little or no improvement can be expected from this quarter until after the first of the year. Industry generally throughout this section is barely holding its own, and traffic on the railroads has receded since the passing of the recent anticipated labor difficulties.

In the Lake trade there are no developments of any particular interest as the end of the season is rapidly being approached. There are some 3,000 cars on hand at the lower docks with the number of cars in transit decreasing daily and the cleanup of the season will be made shortly after Dec. 1. Indications are that the total movement for the season will be close to the 1920 total.

Retail yards are well stocked in anticipation of winter, but the continued mild weather has retarded increased demand from consumers. Furthermore, the supply of natural gas continues ample in many communities, and it is not expected that there will be a change in the retail situation until severe weather.

With the lethargy that exists in industrial demand, prices on spot coal have succumbed to weaker tendencies.

ANTHRACITE

Holiday Again Affects Production—Demand Slightly Decreased.

As usual something seems to interfere with the production of anthracite each week. Thanksgiving Day caused the mines to be closed throughout the region and in some cases caused a slack Friday.

It is probable that the number of holidays that have been taking place in the anthracite field during November has offset the slightly lessened demand for coal. All of the mines have been working full time with the exception of the holidays.

FAIRMONT AND PANHANDLE

Weaker Markets Depress Prices—Cancellations General—R.R. Fuel Production Maintained.

Fairmont

Aside from railroad fuel there was little coal produced during the week ended Nov. 19. Western shipments were at a minimum, a weak market in that section resulting in many cancellations. Even prepared coal was softer, ranging $2.50@$2.75; mine run was $1.45@$1.75 and slack $1@$1.55.

Northern Panhandle

The market was very inactive especially insofar as the West was concerned and production suffered slightly. The output of railroad fuel was sufficient to maintain the output at only 50 per cent of capacity. Demand for prepared sizes slumped so that about the only outlet was to Northern points.

UPPER POTOMAC

Sluggish Market Continues — Production Rate Unimproved.

Dormant markets continued during the week ended Nov. 19. With the extremely low prices it was impossible for mines to resume operation and only those few who had contract orders were running. Some Big Vein coal was being produced, however, and a few mines in Tucker County were operating, but elsewhere there was not much mine activity.

Middle Appalachian

LOW-VOLATILE FIELDS

Domestic Demand Weaker—Operators Hard Hit—More Mines Closing—Shortage of Cars.

New River and the Gulf

New River production was reduced to the very minimum during the week ended Nov. 19. Additional mines closed during the week, among them 14 operations of the New River Coal Co., which threw 3,000 miners out of work. Tidewater inquiries carried such low prices that few orders were accepted. With the smaller production of lump, which went to Western markets, nut and slack were a little stronger.

Cancellations materially reduced the Gulf output which was much below recent weeks. These cancellations affected Western shipments principally, although Tidewater shipments also were being curtailed. Prices under such conditions were soft, only lump being salable on a spot basis.

Pocahontas and Tug River

By requisitioning empties from the Pennsylvania and other roads the N. & W. succeeded in reducing a car shortage in the Pocahontas field during the week. These losses, however, were still heavy and about equal to those from "no markets." Tidewater business was small, the bulk of production moving West, where the lump demand had slumped a trifle. It was difficult to market other grades so that contracts after all, constituted the majority of the business.

Tug River production was limited to about 83,000 tons, both "no markets" and railroad disability being responsible for the curtailment of production. Western movement was the best, there being no demand at Tidewater. Prepared demand was also decreasing. Some of the larger mines shipped heavily to steel companies.

HIGH-VOLATILE FIELDS

Production Drops — Poorer Markets — Car Shortage More Apparent—Heavier Distress Tonnage.

Kanawha

With cancellations more or less general it was inevitable that production should undergo a decrease during the week ended Nov. 19. There was a good deal of distress coal on the market, resulting from operators shipping on consignment. This depressed prices further as the spot demand was unimproved.

Logan and Thacker

Logan producers were handicapped by poor transportation facilities. Not more than 40 per cent of capacity was being produced, although mines had orders for more coal than that. Demand was by no means general and was not strong enough to harden prices. There was a fairly large tonnage of mine run moving on contract and prepared sizes sold well on the spot market.

Williamson production suffered a decline, largely because of a suspension of Western orders. The output was not over 80,000 tons, with "no markets" still in excess of 100,000 tons. A car shortage also interfered with production to some extent. Railroad fuel shipments were a trifle stronger and mines worked about three days.

Northeastern Kentucky

There was a most decided slump in production, not more than 75,000 tons or 30 per cent of capacity being mined. "No markets" were responsible for more than 50 per cent loss and there was a marked slump in prepared demand.

Virginia

Production continued at the rate of about 60 per cent with only the larger plants in operation. Inquiries were being received but the best prices which could be obtained from these were lower than producers generally could afford to accept.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Dull Period Closes Many Mines—Market Stagnant and Prices Sag.

The dullest period of the year is now being faced and many more mines are down for want of business. This leaves only two or three of the larger operations running in the Straight Creek field. Many mines in Harlan County are also being closed and it is reported that the majority of those now running will soon cease operation unless conditions improve very materially.

With practically no demand, prices have fluctuated a great deal, good Harlan and Straight Creek block being sold $3@$3.75 and slack, 90c.@$1.25.

Middle West

MID-WEST REVIEW

Market Extremely Stagnant—Domestic Stocks Topheavy—Steam Coals in Ruinous Competition — Check-Off Settlement Necessary.

The coal market in the Middle West went to depressing levels last week, as practically no interest was shown by the public in purchasing either steam or domestic coals.

The domestic market proved to be particularly poor. Usually at this time of the year operators who produce a good domestic coal are swamped with orders, as late November is the peak of the season. The week's business booked by operators with mines in Indiana and Illinois does not equal the tonnage booked, for instance, in any week in July. In short, the domestic market can best be described as being in a state of paralysis, and whether or not this is merely a temporary phase or is going to prove permanent for the rest of the winter, is a matter under discussion.

The general outlook is pessimistic. The weather during the last week or so, has been unseasonably warm. This, of course, had some slight influence on the market, but not enough to have affected it entirely. Retail dealers have bought far more coal than they need. This has arrived and is in their bins, if they have the bin room, but more generally the coal is on the ground, as the great majority of dealers long since filled their bins to overflowing and are utilizing storage space in the open in the vicinity of their yards or along railroad sidings.

The public is not buying, largely because they haven't the money. The writer happened to be in a little town in Ohio during the early part of the week. The dealer there had his bins full to overflowing and advised us he saw no prospects in the immediate future for emptying them, as the farmers in a great many cases are so badly hit they have been unable to purchase more than one ton or so at a time, when they have been able to purchase at all, while in a great many cases they have discontinued the use of coal entirely, relying rather on the wood pile. Dealers report it is an easy matter to sell coal if one wishes to sell it to people of doubtful credit.

Steam markets are very dull. Illinois and Indiana operators have suffered to some extent from inroads of Eastern coal, as Eastern steam fuel has been shipped into Indiana as low as 60c.@75c. The Indiana operators are trying to hold their coal firm at $1.25 and in some cases $1.50@$1.75. Industries in the Middle West are not operating enough to consume even the meager tonnage which our mines are producing from week to week. Competition has reached the point where it is extremely harmful and prices on distress coal are consequently slashed to levels as much as $1 a ton below cost.

Unemployment in the industrial centers is general and the number of unemployed in some of our manufacturing centers is increasing rather than decreasing, as the daily press would have us believe. In a great many communities local organizations of business men have had to get together to raise money in order to keep the unemployed from actual want and suffering.

The coal trade is in a state of uncertainty and this unsatisfactory state of affairs will continue until the Circuit Court judges in Chicago come to a definite decision in regard to Judge Anderson's injunction against the check-off. Operators and wholesalers are having a difficult time to define their policy until a decision is reached. It is hoped that this will come at an early date. To say the least, the atmosphere of suspense is harmful to all concerned.

INDIANA

Warm Weather Hurts Retail Trade—Steam Market Extremely Sluggish.

Although prices, especially for domestic, appear to be a trifle stronger, the demand for any of the various grades is subnormal. Retailers declare that only approximately half the domestic coal for the winter has been placed. They have been doing all that possibly could be done to stimulate this sort of buying, but the public generally has turned deaf ears toward all warnings.

Most of the retailers have fair stocks. The big contributing factor in the slow movement of domestic coal has been the weather. There has been virtually no low temperature up to the present time.

Steam prices show no change. Because of a variety of quotations, it is difficult to get at an average price. Coal is selling at the mines for what it will bring, depending on how badly the company needs the money. For a time it seemed that the demand was increasing,

but during the past week there has been a severe slump. Many industries have failed to increase their production as was expected.

SOUTHERN ILLINOIS

Mild Weather Brings Congestion at Mines—Screenings Are Short—Domestic at Standstill — Railroad Tonnage Light.

Conditions in the Carterville field are as bad now as at any time during the summer.. A month ago there was a plentiful supply of everything except lump. Today lump is the cause of most of the trouble and screenings are now short. Domestic business is almost at a standstill everywhere. A little tonnage moves to the North. Elsewhere even inquiries are few.

Some mines have been idle for a week at a time. This has caused the independents to cut prices on all sizes and some quotations from the regulars are below the circular. Railroad tonnage has been light the past week. Car supply is plentiful.

Somewhat similar conditions prevail in the Duquoin field and in Jackson County, although working time at some mines is not as good as the Carterville average. Mt. Olive field conditions are beginning to cause distress among the miners. There seems to be no demand for either steam or domestic. Such screenings as are produced apply on contracts. Railroad tonnage keeps up fairly well.

The Standard field is feeling the effects of the warm weather to a worse extent perhaps than the other districts. It is almost impossible to move lump, while mines having railroad orders of mine run are about the only ones showing any steady work.

Domestic business in St. Louis has almost stopped on Standard coal. Steam business is fairly good on screenings. Operators are holding these back anticipating higher prices if warm weather keeps on, which will curtail production. Prices are shown in the Weekly Review.

WESTERN KENTUCKY

Demand Slow and Production Being Curtailed—Screenings Weaker but No Overproduction—River Markets Sought.

Operators are reducing production as the market is unable to absorb a heavy output. Mines are operating around two days a week. Screenings are hard to sell, but with production of prepared sizes considerably off, screenings are not seriously affected.

Western Kentucky is endeavoring to develop a better market on the lower Ohio and Mississippi, and there is a slow but steady increase in the amount of river equipment owned by operators. One large company is reported to have very well laid plans for barging coal to New Orleans, for export to Cuba.

News Items From Field and Trade

ILLINOIS

A. Mitchell, of the Mitchell & Dillon Coal Co., has been appointed commercial arbitrator for the Chicago Wholesale Coal Shippers Association. He will act with arbitrators to be selected by the operators and retailers. His selection was recommended as a means of co-operating with the Chicago Association of Commerce in coal matters. The arbitrators will constitute a standing committee to represent the trade in disputes within or without the coal trade itself.

The Binkley Coal Co., Chicago, has filed notice of increase in capital from $100,000 to $500,000 for proposed expansion.

A force of coal drillers are prospecting in the Elk Prairie coal field for the **Nason Coal Co.** of Chicago. This company expects to establish a mining site in the south part of Elk Prairie. Some surface land has already been bought by the company in that section.

INDIANA

The Ayrshire District Collieries Co., at Francisco, has increased its capital stock from $650,000 to $750,000.

Fire, which has smouldered in the **Whitcomb Mine**, west of Clinton, for more than a year, recently broke out near the lateral entry off the north main entrance of the mine, making it necessary to close operations until repairs are made.

The Fort Dearborn Coal Co. has announced that it will discontinue the district office in Indianapolis. Representatives in the Indiana districts will hereafter report to the main office of the company in Chicago.

KANSAS

The Atchison coal mines, heretofore held by the Carlisle and Waggener coal companies, have been acquired by W. L. Cook and Frederick Evans, Kansas City, Mo. The new owners plan to operate the property, which has been idle for a number of years past. New pumping machinery and operating equipment will be installed at an early date.

KENTUCKY

J. O. Watson, of Fairmont, W. Va. was a recent visitor in Pineville in connection with his interest on Pucketts Creek, Harlan County.

L. Y. Powell of the Alex. Y. Malcomson Coal Co., Louisville was in Pineville recently.

The Central Kentucky Block Coal & Mineral Co., Lewisport, is arranging for the immediate development of a large tract of coal property in that section. The company has a site aggregating about 20,000 acres, a portion of which only will be used at the present time. N. A. Cramer is manager.

Judge A. M. J. Cochran, of the Federal District Court, Lexington, has issued an order preventing **F. M. Maxey, Henry M. Miller, Charles W. White**, or the **Maxey Development Co.**, from interfering with the Fidelity & Columbia Trust Co., Louisville, receivers for the **Columbia-Panama Coal Co.** The order enjoins them from interfering in any way with the receiver in taking possession of all properties of the company.

Andrew P. Hillenbrand, Sr., Andrew P. Hillenbrand, Jr., and Oscar Hillenbrand, operators of the Progress Pressed Brick Co., have taken over the **J. H. Beckett Coal Co., Louisville**, and will operate as the **Progress Coal Co.**

Harry B. Kallaway has assumed general supervision of the Kentucky interests of the Bertha Coal Co., Pittsburgh, which includes the Sarah, Elsie and Jessie mines at Dalna, as well as the Isabella Mine at Blackey.

MISSOURI

The Central Missouri Coal & Mining Co., Jefferson City, recently organized, is preparing a list of machinery and equipment for installation at coal properties at Hibernia, where extensive development is planned. The equipment will comprise boilers, engines, conveyors, pumping apparatus and general mining machinery. A railroad line will be installed at the mines. John McManus, secretary-treasurer, is in charge.

NEW YORK

George M. Carpenter, Sr., European manager of the New York Coal Export Co., Inc., New York City, with headquarters in Paris, France, arrived on the French line steamer La Savoie. Mr. Carpenter has been in Europe, in the interest of the above company, for the past eight months.

Edward H. Zimmerman, New York manager of the Imperial Coal Corporation, returned recently after a tour of New England.

T. B. Cross of the Davis Colliery Co. was in New York on business recently.

H. B. Martin of the W. H. Greene Coal Co. and the Greenmar Coal Co., with headquarters at Elkins, was a recent visitor in Weston.

E. T. Christmas, formerly manager of the coal and coke export department, W. R. Grace and Co., New York City, has resigned to become resident manager in New York City of the Stonega Coke and Coal Co. and Wentz Co.

The Combustion Engineering Corporation, New York City, recently opened two branch offices, one at Charlotte, N. C., and the other at Seattle, Wash., where it is represented by Fryer-Barker Co.

OHIO

Following an agitation in which practically all coal operators and shippers of Ohio took a part, Governor Harry L. Davis of Ohio has given orders to the reorganized purchasing department that nothing but Ohio-mined coal shall be purchased for state institutions. This rule is to be adhered to without question during his administration. The question came up because of a purchase of West Virginia coal at an advance of $1.11 over the price for which Ohio coal of the same grade could be purchased.

The Peerless Lime & Coal Co., Canton, has been chartered with a capital of $50,000 to mine coal, lime and other materials. Incorporators are B. F. James, August Heiman, Felix Shipley, Albert Ess and Joseph A. Seifert.

Secretary R. R. Yeagley of the Indiana Retail Coal Merchants' Association was a recent visitor to the Cincinnati wholesale trade.

George Stahmer, president of the Fort Dearborn Coal Co., visited the Cincinnati offices of his corporation while returning to Chicago after a visit to the mining districts South and East.

C. B. Jenkins, general manager for the Hutchinson Coal Co., of Fairmont, W. Va., visited the Cincinnati offices of that corporation recently.

Homer L. North is now the Akron representative of the Wholesale Coal Co., Pittsburgh, succeeding **T. J. McNamara**.

PENNSYLVANIA

The Marion Mine of the **West Penn Coal Co.**, near Udell was put into operation recently after having been idle since last December. For the present the company will confine its activities to shipping coal, with the hope that before long manufacture of coke will be resumed.

The Laurel Mining Co., of which H. M. Kephart of Connellsville is president, resumed operations recently at its plant a mile west of Confluence, along the Western Maryland. The resumption marks the completion of improvements which have been in progress for several months. The tipples have been rebuilt, conveyors covered and a bin of 300 tons capacity erected.

In a spectacular fire that could be seen for miles, the tipple at the Tremont mine of the **Pittsburgh Coal Co.** between Fayette City and Belle Vernon, was completely destroyed recently. The loss will reach about $20,000.

George M. Crawford has withdrawn from the management of the Pittsburgh Mining Machinery Co. to form the Crawford Machinery Co., House Building, Pittsburgh. The new company will represent the S. Flory Manufacturing Co. in that district.

The Pittsburgh & Erie Coal Co. is taking advantage of being shut down by experimenting with an Oldroyd mining machine and an improved Halby loading machine in the mine at Braznell.

Holders of warrants for mineral rights under navigable rivers in Pennsylvania are not entitled to a patent from the State, if a long period of years is allowed to elapse after the issuance of the warrant. The **West Penn Power Co.** called in the Department of Internal Affairs, which issues patents to make a ruling on this matter and this department referred it to the Attorney General. The latter held that the company is not entitled to the rights. The warrant, now in the possession of the power company, was granted to A. M. Fulton in 1864, the survey having been returned to the Land Office and accepted in 1865. The Attorney General's Department in an opinion points out that the river was declared navigable by an act of 1798. An act of 1848 authorized the Surveyor General to issue warrants for areas not exceeding one hundred acres in the bed of any public navigable river in the State. The act of 1848, required payment of the purchase money to be made to the State within ten years. In this case the warrantee waited fifty-seven years before asking for the patent, and the state held him guilty of laches and of failure to comply with the statutory requirements and hence not entitled to a patent.

Improvements costing $10[illegible]000 are being made to the Audenried colliery of the **Lehigh & Wilkes-Barre Coal Co.** in the Hazleton district. Among the additions are office quarters and a wash house for employees. The work has been under way for some time and will be completed within two months.

A state charter has been issued to the **Gordon Co.** of St. Benedict. The capital stock is $30,000 and the purpose of the company is mining and preparing and shipping coal and the manufacture of coke. J. W. Peale, New York City, is treasurer and one of the incorporators, the others being G. E. Metzger, St. Benedict, Pa., and F. D. Peale, Summit, N. J.

Robert MacFarland, of Springdale, Alleghany County, has resigned as superintendent of the Oakmont Mine of the Diamond Coal & Coke Co., and has been succeeded by **David Ryan**, of Brownsville.

The H. C. Frick Coke Co. has decided to replace the old tipple at the Whitney plant of the **Hostetter-Connellsville Coke Co.** with a new tipple of modern design and much larger capacity.

F. F. Dickerman has been appointed receiver for the **Georges Creek & Phoenix Mining Corporation**, of Phoenix Crossing, Md., on a bill in equity filed by a creditor and with the consent of the company to a receivership being created. The company has an office in Philadelphia. It has valuable mining properties in Maryland, and has contracts with New York penal institutions and various railroads. It is claimed the company is solvent, having assets of approximately $200,000, against liabilities of $134,000.

Johnstown and New Florence capitalists have organized a company to be known as the **S. E. Dickey Coal Co.**, with headquarters in Johnstown, for the purpose of operating coal mines at New Florence on a tract of 1,380 acres of valuable coal land in that section. The coal is said to run 8,000 tons to the acre and is adjacent to the main line of the Pennsylvania.

The Pennsylvania Department of Mines will soon call a conference of the inspectors of both the anthracite and the bituminous regions to take further action regarding the prevention and subduing of mine fires. Many of these which in some instances have produced serious results have originated in abandoned mine workings.

TEXAS

The Darco Corporation, a subsidiary of the Aetna Powder Co., has begun the erection of a plant in Marshall, to cost $1,500,000, for the reduction of Texas lignite in the production of carbon to be used in the manufacture of numerous products. A tract of land underlaid with thick veins of lignite has been purchased by this company about ten miles from Marshall, and a standard gage railroad will be built from Marshall to the mines.

The City Ice and Fuel Company of San Antonio, which conducts a retail coal business, has filed an amendment to its charter increasing the capital stock from $85,000 to $112,500.

The Denver Ice and Fuel Co. of San Antonio, which does a retail coal business in that city, has been incorporated with a capital stock of $50,000. Incorporators are: Charles H. Gurinsky, B. Uhlig, Claude A. Nichols and J. E. Goggenshall.

New loading racks have been built and other new equipment installed at the **Bowie Coal Mines**, near Bowie, which reopened recently after a long shutdown.

The Anderson County Coal Co. has been organized at Palestine, and charter filed with the secretary of state. The company is capitalized at $100,000 and the incorporators are: J. J. Barry, Thomas F. McGim, W. J. Marshall and others. The company will develop extensive lignite beds in Anderson County near Palestine.

UTAH

The Utah Steel Corporation's plant may be considerably enlarged in the near future as a result of a merger with a California concern. Prominent coal men of Salt Lake City are interested in the project.

A group of 23 representative Salt Lake City business men were shown around several of Carbon County's large mines in connection with a plan of the Price Commercial Club to interest business men of the state in the city and county.

VIRGINIA

The Richmond office of the **Interstate Coal & Dock Co.**, has been closed and its business moved to Norfolk. Several transfers have been made in the Baltimore and Washington offices of this company.

The Heaton Coal Co. of Tacoma is planning development work, involving the purchase of electrical coal mining equipment. L. L. Heaton is president.

B. S. Wright, Norfolk manager for the Callaghan-Atkinson Co., has returned from New York where he had been on business.

Cosgrove & Wynkoop Co. has announced the closing of its Norfolk office, the business to be handled by another coal agency to be announced later. W. A. Shea, manager goes to the New York offices.

WASHINGTON, D. C.

The Gans Steamship Line, in a brief filed in the Supreme Court, opposes the application of **Barber and Co.**, and the **Nova Scotia Steel and Coal Co.**, for review of the $200,000 judgment in the lower court against the latter companies for failure to deliver a vessel at a fixed time under a charter party.

The Navy Department was sharply rebuked when the House Committee on Appropriations recently declined to recommend any of the more than $27,000,000 additional funds requested for the current year. Included in the amount was $12,500,000 for fuel for the balance of the year ending June 30, 1922. The committee took the position that Congress had refused these appropriations at the last session and that the Navy should have shaped its policy accordingly. At the last session the Navy requested thirty million dollars for fuel, which was cut to ten millions by the House. A revised estimate of 17½ million dollars was adopted by the Senate and reluctantly agreed to by the House.

Because it advanced for argument a rate case from Texas and the New York gas rate case the Supreme Court did not reach the **Morrisdale Coal Co.** case under the Lever Law for argument as had been scheduled. The coal case will not be argued until Dec. 5.

Representatives of the **Stoker Manufacturers' Association of America** have tendered the services of that association to the Department of Commerce and have expressed willingness to co-operate in any way with the department so as to make available reliable information in connection with the manufacture of mechanical stokers. The representatives also are interested in coal classification, which they discussed with officials of the Bureau of Mines. They urged that coal be sold and statistics collected on a B.t.u. basis.

Publication in England of the statement to the effect that **Secretary Hoover** has suggested the formation of an association which would include producers, consumers, dealers, transportation companies and all others importantly interested in coal has been called to Secretary Hoover's attention. He has made no such suggestion and the coal specialists at the Department of Commerce were at a loss to know on what such an article was based.

WEST VIRGINIA

President L. B. Ramsey of the Logan Fuel Co., which has its main office at Charleston, was in Logan County field during the latter part of October.

T. W. Arnett, president of the Antler Coal Co., Fairmont, has returned from a business trip to Cleveland. During his absence he was also present at a meeting of the Scottish Rite Masons and Osiris Temple Mystic Shriners at Wheeling.

A recent visitor in the Fairmont field was **C. K. Brown** of Morgantown, assistant director of mining extension school work at the West Virginia University.

R. B. Isner, who only recently became connected with the Old Dominion Coal Corporation is convalescing from a recent illness during which he was confined in a hospital at Charleston.

W. W. Woodruff of the Woodruff Coal & Iron Co., Pittsburg, was a recent business visitor in the Monongalia County field.

T. H. Johnson, of Belkaire, Ohio, president of the Chesapeake Coal Co. spent a few days in the Fairmont region recently, inspecting the plant of the company in which he is interested.

Carl Scholz, of Charleston, vice president and general manager of the Raleigh-Wyoming Coal Co., made a trip to Chicago recently on business connected with the company in which he is interested.

A visitor recently in the Charleston market was **Fred Legg** of Cincinnati, president of the Logan & Kanawha Coal Co.

A recent visitor at Heywood Junction was **A. D. Carr**, of the Seminole Gas Coal Co., Cincinnati, which operates the mining plant at that point.

W. J. Kelley of the Main Island Creek Coal Co., with headquarters at **Huntington**, paid the Cincinnati office of this company a recent visit.

The following coal companies in West Virginia have recently increased their capital stock: **Dartmont Coal Co.**, from $75,000 to $100,000; **Harlan Coal Co.**, from $400,000 to $800,000; **Union Fuel Co.**, from $50,000 to $100,000; **Canyon Coal and Coke Co.**, from $500,000 to $750,000; **Kelley's Creek Colliery Co.**, from $1,400,000 to $1,900,000; **Rex Colliery Co.**, from $150,000 to $175,000.

The Greenmont Coal Co., the Preston Coal Co. and the Ishpeming Coal Co. have filed certificates of dissolution in the office of Secretary of State of West Virginia and the **Homestead Coal Co.** has surrendered its charter. The **Deaker Hill Coal Co.** has withdrawn from the state.

C. E. Cowan, chief engineer of the Jamison Coal & Coke Co., with headquarters at Greensburg, Pa., spent a few days in the Fairmont region recently.

Early in September a preliminary organization of the **Mary Elizabeth Coal Co.** of Huntington was affected and general offices established by the company. H. H. Morris, who controls much of the stock in the new company, was chosen as its first president and much of the stock has been subscribed for. Development of the property of the new concern comprising about 2,000 acres in the Sewell seam located on the Milam Fork branch of the Virginia Ry. in Wyoming County is now under way and will be rapidly completed.

Wheeling people are behind the newly organized **Aetna Development Co.**, which with a capital stock of $150,000 will be active in the Northern Panhandle region. Principally interested in the new concern are Charles L. Sonneborn, John E. Stevenson, Charles C. Woods, Henry G. Stifle and Edwin F. Kline, all of Wheeling.

ALASKA

The general landoffice field agent reports that there has been some recent development on a vein of lignite on Chicken Creek, but that lack of transportation prevents a general use of the coal. The Government coal mine at Eska Creek was closed in September for the winter. Evan Jones has prospected a large vein of coal on his leasing unit and will supply coal for the local market and the Government railroad. The Navy has been doing considerable prospecting work near Chickaloon and Coal Creek and hopes to develop a high grade coal.

Traffic News

In the complaint to the I. C. C. the **Smokeless Fuel Co. and others**, of Charleston, W. Va., allege unreasonable demurrage charges on coal for transshipment by vessels at Norfolk and Lambert's Point, Va.

Mark McFadden and others of Detroit allege unreasonable rates on anthracite from mines in Pennsylvania to Detroit during federal control.

The Illinois Coal Traffic Bureau has been allowed to intervene in the complaint of the **Milwaukee Association of Commerce** relating to rates on hard and soft coal from Duluth and Superior, which are alleged to be prejudicial to Milwaukee.

A petition has been filed with the State Public Utilities Commission of Utah by the **Bamberger Electric R.R.** asking that the Utah Ry. be directed to institute joint through rates on coal from points to Ogden. A similar request in which the Utah and Los Angeles roads were defendants, was rejected a short time ago on the ground that to grant it would be equivalent to making the U. P. system "short haul" itself between Provo and Ogden.

In response to the Jones Resolution the Interstate Commerce Commission has transmitted to the Senate copies of contracts and agreements of American railroad companies with foreign steamship lines and Senator Ransdell, La., has introduced an amendment to the pending railroad funding bill to forbid settlements thereunder with roads acting as party to such agreements. Among the agreements, which appears to be the oldest, and which was to operate indefinitely, was one executed in 1867 between the Baltimore & Ohio and the North German Lloyd Steamship Co., for service between Bremen and Baltimore, under which the railroad agreed to build in Baltimore Harbor an adjoining coal yard. It was also stipulated that the railroad should deliver always for the use of vessels at the pier a sufficient quantity of the best fresh Cumberland coal at a price that was to be always 50c. under the market price at Baltimore and never exceeding $5 a ton.

The I. C. C. has authorized the **Great Northern Ry.** to establish rates on coke between Duluth and Wadena, Minn., the same as rates by the direct line between these points and to maintain higher rates at intermediate points. This authority shall not include intermediate points as to which the haul is not longer than that of the direct line between competitive points. The rates from Duluth to other intermediate points such as Albany to Hewitt shall not exceed the rate to Avon by greater amounts than the present rates to these intermediate points exceed the present rate to Avon. The rates shall not exceed the lowest combination of rates.

The Alabama, Tenoessee and Northern Railroad Corporation has requested authority to execute an agreement with the Coal and Iron National Bank of New York as lessor covering 250 gondola cars and 50 flat cars and to issue $372,000 of 6 per cent equipment trust notes thereunder.

The Lou-Nash Coal and Mining Co., operating a mine at Rentchler Station, is seeking assistance of the Illinois Public Utilities Commission to compel the Louisville and Nashville to install a switch at the mine.

Obituary

Albert E. Smith, 78 years old, president of the Liverpool Salt and Coal Co., Hartford, W. Va., and for many years a resident of Cincinnati died recently at Hartford, following a paralytic stroke. Mr. Smith had been in Hartford on business for a week and was preparing to return to Cincinnati when he was stricken and died several hours later. He was also president of the Jackson Coal Co., Cincinnati.

Eugene Frank Hartlaud, manager of the Pittsburg office of the F. A. Fish Coal Co., Toronto, died recently in Pittsburg. Mr. Hartland was widely known in the coal trade in Ontario and throughout the Pittsburg coal fields and will be remembered as having had charge for some time of the coal distribution of the Fuel Administration.

Numerous applicants are already in the field as the successor to **Thomas K. Adams**, Mercer, Pa., bituminous inspector who died recently. He was an inspector for forty years, being the oldest in point of continuous service and in years in the state's employ.

Charles F. Randolph, for the past seven years New York sales agent of Thorne, Neale & Co., died recently at his home at Tuckahoe, N. Y. He was at one time a director of the Wholesale Coal Trade Association of New York and had a wide circle of friends in the coal trade.

JOHN A. VERNER

With deep regret *Coal Age* chronicles the death after a brief illness, Oct. 10, 1921, of John A. Verner, one of the early state mine inspectors of Iowa. Mr. Verner was born and educated in Germany. He came to this country in the early seventies and as state mine inspector in Iowa for thirteen years was held in the highest esteem by all who knew him. Mr. Verner was a charter member of the Mine Inspectors' Institute of America. He was a strong advocate of the dangers of coal dust in creating and propagating mine explosions. Few men were better read in mining literature than Mr. Verner and his loss will be keenly felt by his many friends and associates.

Association Activities

New River Operators' Association

Conditions of inactivity in the New River field received the principal attention of operators at a meeting of the association held in Charleston on Nov. 9, the meeting bringing forth a large attendance. It was stated, as a matter of fact, that the attendance was larger than at any meeting in recent years.

Lack of market has caused a suspension of operations at fully three-fourths of the plants in the field, high wage costs eliminating producers from the market. As matters now stand, coal cannot be sold at prevailing prices except at a loss. C. C. Beury, head of the Beechwood Coal & Coke Co., presided in the absence of G. H. Caperton, who was out of the city. Although no mention was made of the "check-off," it is presumed that the meeting was originally called to consider that question.

Morgantown Wholesale Coal Association

The association is continuing its regular meetings at Morgantown, where it is holding weekly dinners. At the last meeting a number of questions of importance in the trade were discussed, the discussion taking a wide range. Although business conditions are not what might be regarded as very favorable, the opinion was expressed that better things might soon be looked for in the coal trade.

Northern West Virginia Operators' Association

Although the meeting seems to have been originally called for the purpose of considering the check-off decision, yet that question was not under official consideration at a meeting of the association held at Fairmont on Nov. 10. There were however fully 50 members of the association in attendance. Much time was devoted to a discussion of the Ohio freight rate differential. Secretary George S. Brackett, submitting a report on the hearing held by the I. C. C. at Atlantic City which he attended. Expression was given to the belief among the members that the West Virginia side of the case had been well presented and that on the basis of the evidence thus presented the commission would not sanction any widening of the differential.

Alabama Mining Institute

The Alabama Coal Operators' Association has been dissolved and the membership organized into the Alabama Mining Institute. Frank H. Crockard, president of the Woodward Iron Co., has been elected president of the institute, and Frank Nelson, Jr., vice president, with James L. Davidson as secretary. All of these officials held the same positions with the old organization. The aims and activities of the institute will be directed along practically the same lines as followed by the operators' association, but the membership will include men from every branch of the mining industry.

Publications Received

Some Conditions Affecting the Usefulness of Iron Oxide for City Gas Purification—University of Illinois. Bulletin 119. Pp. 62; 6 x 9 in. Charts and tables. Prepared under a cooperative agreement between the Engineering Experiment Station of the University, the Illinois State Geological Survey, and the Bureau of Mines.

Investigation of Warm-Air Furnaces and Heating System — University of Illinois Bulletin 120. Pp. 45; 6 x 9 in.; illustrated; charts and tables. The third bulletin of a series on warm-air furnace research by the Engineering Experiment Station.

The Monroe Gas Field—State of Louisiana, Department of Conservation. Bulletin 9; pp. 99; 6 x 9 in.; illustrated; maps and tables. Published by the Department of Conservation in cooperation with the Bureau of Mines. Report from the gas field located in the Parishes of Ouachita, Morehouse and Union.

The Determination of Oxides of Nitrogen—Department of the Interior, Bureau of Mines, Technical Paper 249. Pp. 13; 6 x 9 in.

Researches on Modern Brisant Nitro Explosives—National Research Council, business address: Secretary, National Academy of Sciences, Smithsonian Institute, Washington, D. C., pp. 35, No. 15, 7 x 10 in.

Coke Oven Accidents in the United States—Department of the Interior, Bureau of Mines, Technical Paper 299. Pp. 31; 6 x 9 in.; charts and tables. Covers accidents at coke ovens during the calendar year 1920.

Coming Meetings

The American Institute of Consulting Engineers, Inc., will hold its annual meeting Jan. 16, 1922, at the Engineers' Club, 32 West 40th St., New York City. Secretary F. A. Molitor, 35 Nassau St., New York City.

West Virginia Coal Mining Institute will hold its next meeting Dec. 6 and 7 at either Charleston or Huntington, W. Va. Secretary, R. E. Sherwood, Charleston, W. Va.

New England Wholesale Coal Association will hold its annual meeting Jan. 10, 1922, at Boston, Mass. Secretary, R. S. Townsend, 27 Kilby St., Boston, Mass.

Southern Appalachian Coal Operators' Association will hold its next meeting Jan. 27, 1922, at Knoxville, Tenn. Secretary, J. E. McCoy, Knoxville, Tenn.

Pike County Coal Operators will hold their annual meeting Jan. 6, 1922, at Pikeville, Ky. Secretary, F. E. Miller, Pikeville, Ky.

The Coal Mining Institute of America will hold its annual meeting at Pittsburgh, Pa., Dec. 7, 8 and 9. Secretary H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

American Society of Mechanical Engineers will hold its annual meeting Dec. 5-9 at the Engineering Societies' Building, 29 West 39th Street, New York City. Secretary Calvin W. Rice, 29 West 39th Street, New York City.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

Volume 20 NEW YORK, THURSDAY, DECEMBER 8, 1921 Number 23

Where the Coal Man Needs Enlightenment

WE ARE prone to say that if the people of the country knew more about the coal industry they would have less complaint to make—that the problem is to educate the public to the problems and needs of coal and thus to promote better feeling. There is, however, another side to the question: The education of the coal man to the problems and needs of other industries. We who would have the consumer of coal know that the coal man does not repose on a bed of roses and who appreciate the fundamental character of the coal industry may profitably study the troubles of other lines of industry. In such a direction would the Secretary of Commerce turn the attention of the coal producers, together with others engaged in mining both metals and oil.

Those who are directly in the business of exporting coal and coke other than to Canada, which is part and parcel of our domestic trade, are quite few in number, and the tonnage, even of the fields from which it comes, is but a small fraction of the whole. The fondest hopes of the most optimistic do not envisage an offshore movement of coal in excess of some 5 per cent of our total production, yet 25,000,000 tons a year sold abroad would lighten the competition and make more profitable the coal trade within our borders. Every coal producer and distributor therefore has an interest in our export coal trade, whether he be in position to supply the tonnage or be in the interior.

But there is another angle to the export market for American goods that brings the matter closer home to every one in the coal business. If, in round numbers, some 10 per cent of the goods and materials we can produce can be sold outside our borders, business and industry are prosperous, and when the markets of the world are paralyzed and we cannot sell our surplus, business and industry are flat. In 1920 there was exported from the United States around 10,200,000 gross tons of iron and steel products, representing approximately 23,000,000 net tons of coal, aside from that consumed in transportation. Of cement, sugar, copper products, vegetable products, condensed milk, paper, gunpowder and other manufactured goods requiring coal for their production there were exported some 2,500,000 gross tons, representing not less than as many net tons of coal. In other words, the quantity of coal shipped from this country by sea probably was equalled by the coal exported in the form of manufactured and semi-manufactured products. Every coal operator in the United States is interested in this form of coal exports, which is to say that he is interested, whether he realizes it or not, in our foreign export commerce in every phase.

The Foreign Trade Committee of the National Coal Association has a large task on its hands, for it has not only to promote export commerce by seeking to make the way more auspicious for those who are engaged in it by such means as are available to an organization of strength and prestige but it must as well convince the rank and file in the trade that it is on a worthy and worthwhile mission. Not only must the influence of the national organization be used to make the way less difficult for the exporter but the non-exporting coal producer must be helped to a fuller realization of the problems that beset our foreign trade in all its aspects.

Responsibility for Uncertainty

IT IS generally hoped and expected that the hearing on general freight rate reductions that will be initiated before the Interstate Commerce Commission on Dec. 14 will be made the occasion for a statement by the railroad executives of their position on coal rates. The country over, the air is surcharged with expectations of early decreases in the freight rates on coal, in answer to which the roads have made no official statement, although they are known to hold the opinion that they can and will volunteer no such reductions until railway wages fall. It has been unofficially reported that in answer to the petition of the iron furnace interests on the Lake front for reductions in coal, coke and limestone rates sufficient to equalize the reductions in iron ore for the Pittsburgh district, the executive committee of the American Railway Association passed a resolution two weeks ago to the effect that the rates on coal coke and fluxing materials would not be reduced, the prompt announcement of which decision would have done much to satisfy the situation.

Something more than silence on this question is demanded from the railroads. Too much has been left to inference. The imminence of reductions in freight rates on coal has hung over the market for months. It has not prevented buying for current requirements and has not deterred some stocking and so far cannot, therefore, be held to have seriously injured the business. But between now and the end of March, 1922, the country must take on large supplies as insurance against a mine strike in April and succeeding months, a strike of which there is as yet no certainty and some possibility of avoiding, but a strike for which old-time observers are looking as they do the eventuality of New Year's and the Fourth of July.

So long as there is the chance of saving 50c. or more per ton on freight by waiting just a little while, many buyers are going to delay taking on the storage they know they will require. For even a minority to enter a period of prolonged cessation of coal mining without ample supplies of coal would be serious. Responsibility for taking the uncertainty out of the minds of the buyers of coal rests with the railroad officials, even before the Interstate Commerce Commission. At the first opportunity in the hearing which starts next week the country should be informed how long it must wait for a reduction in the rates on coal.

Not Another Cocked Hat Incident

AS A RESULT of the efforts of the National Coal Association to have the weekly report of the Geological Survey on coal and coke transferred to the Department of Commerce there has been much speculation as to the ultimate fate of this valuable instrument and of the purpose of the coal operators in making the request on the President for the transfer of the work in the form in which they presented it. It will be recalled that some months ago the director of the Survey advised the association that the appropriation under which this report is being compiled and published was so nearly exhausted that he would be forced soon to curtail the work. The operators were informed that the compilation of the percentages of time worked and lost by causes, as represented in Table V of the weekly report, is the largest single item in the cost and that it would be necessary to discontinue it at an early date. It is doubtless because the data on which this table is based come entirely from the operators and their local associations that this message was conveyed to them in order that they, the parties most largely at interest, might make such provision as possible for its continuance.

It should be clearly understood that no other part of the weekly report is or has been at stake. The statistics of total production of bituminous coal, anthracite and coke—the most valuable feature of the report—is based entirely on figures furnished by the railroads. The published data on distribution, shipments through New England gateways, tidewater and Lake dumpings and distribution also come from the railroads and sources other than the operators. The weekly report of the Geological Survey as now issued is a development through several years of sources of information, a study of the needs of the industries and the country for that type of report and of a friendly liaison between the members of the Survey and those operators, railroads, consumers and others who supply the facts. That part of the finished reports contributed by the operators is small compared with the cost of putting their figures in shape for publication. It is this part that Director Smith has indicated he finds it necessary to forgo because of lack of funds. The remainder, we have every reason to believe, he has every intention of continuing.

In view of these facts there has been some surprise that the board of directors of the National Coal Association should ask the President of the United States for an executive order transferring not only the part of the weekly report to which they contribute and which is in jeopardy but the remainder as well to another department of the government. To rescue this important portion from the prospective scrap heap required and requires no order from the President. The weekly report was not inaugurated by executive order nor has it been specifically mentioned in the appropriation bills by the Congress.

If the Department of the Interior should find it necessary to curtail the report and the Department of Commerce is willing to assume the work, there is nothing in official red tape in Washington to interfere. This situation is quite generally appreciated, which makes it the more difficult to understand why the government relations committee of the National Coal Association should have gone out of its way to raise the issue of the transfer of this activity from the one department to the other, an issue raised in the Frelinghuysen bill and repudiated and repulsed by the same coal operators.

We are unwilling to give credence to the opinion held by some that the resolution to the President was prompted by a dissatisfaction with the work on the report in Mr. Fall's department and a desire to have it done by Mr. Hoover's. Such is not the temper of the men in the coal industry. It should be understood that the money that is available in the Department of Commerce is not in that bureau in which are found Mr. Morris and Mr. Wadleigh, devoted to foreign and domestic commerce in coal, but rather in the Census Bureau.

If the work be transferred it will fall to clerks trained in getting out reports at ten- and five-year intervals, and with no technical, sympathetic or understanding supervision such as furnished by the Geological Survey or possible in the Bureau of Foreign and Domestic Commerce. As for the transfer of surplus money now available from the Census Bureau to the Commerce Bureau, we can but suggest that the opportunity for and possibility of such is comparable to a transfer to the Survey of money that might be available in some other bureau of the Interior Department, as the General Land Office or the Reclamation Service.

Nevertheless, if Mr. Hoover will have the Census Bureau, which is temporarily in funds, undertake the clerical work of getting out the weekly reports on percentages of time worked and time lost because of car shortage, no market, etc., the continuity of a valuable record will be preserved until such time as the Geological Survey be furnished sufficient appropriation to do the work. To arrange this calls for nothing more than an informal conversation over the telephone between two men in Washington. The larger question of whether the statistical work on coal and coke developed by the Survey belongs there or somewhere else is a matter being considered by the Commission on Reorganization of Executive Departments of the Federal Government, a report from which is expected early next year.

WITH A TONNAGE PRACTICALLY EQUAL to 1920, the Lake season of 1921 has closed with no such furor or hetic finish as last year. In round numbers, 23,000,000 net tons of bituminous coal—cargo and bunker—were loaded at lower Lake Erie ports this year, which is much less than the more than 29,000,000 tons in the record year of 1918 but, compared with 22,750,000 tons in 1919 and 23,667,000 tons in 1920, is a noteworthy showing in view of the general depression in business.

The really significant thing about the figures this year, however, is not the total dumped but the quantity taken in at the Lake Superior American docks. From such data as are available now it is evident that the commercial docks on Lake Superior have taken as much coal this year as in 1918, when the total movement was some 3,000,000 tons greater than this year. In 1918 American docks on the upper lake received 12,727,000 tons, of which about 6,000,000 tons went to Ashland, Marquette and the copper range. The copper and iron mining industries have taken little coal this year, the railroads less than in 1918 and the iron and steel interests much less. The movement to American docks, commercial and industrial, this year has fallen little short of 10,000,000 tons. Plainly the Northwest is not only fortified for winter but well prepared against a shortage in the event of a strike next spring.

Plunger of Low-Temperature Carbonizing Retort Expels Product as a Bar, a Knife Slicing Off Briquets*

Process in Which No After-Treatment Is Provided — Raffloer Experimenting with Thirty-Five Foot Retort with Interior Convergent Flutings and Compressing Roller, Coal Being Carbonized in Two-Inch Layer

By A. Thau†
Oxelösund, Sweden

CONSIDERING that experiments in low-temperature carbonization have now consumed a period of twenty years, it may be thought surprising that this process has had so little development. Upon the other hand, the time that has elapsed indicates that extraordinary difficulties had to be surmounted. Those intimately acquainted with the circumstances know that the progress of the art has been delayed by the difficulties encountered in converting the residue into a marketable fuel. Upon this the economic value of the process hinges. Many, if not most, of the plants suggested and designed lack this essential property. A good example of this difficulty is that presented by the Coalite process in England, which, after twenty years of experimentation, part of which was on an extremely large scale, has only in recent years achieved satisfactory results and this only with newly-designed stationary retorts. A plant of this type and of commercial size has been erected at Barnsley, in Yorkshire.

Carbocoal, a Two-Stage Process

Another conspicuous example is the American Carbocoal process, which, after a comparatively few years of intense and well-directed experimentation at Irvington, N. J., reached the desired goal. What probably is the largest low-temperature carbonization plant in the world employing this process has been erected at South Clinchfield, in Virginia. Though for the Coalite process a good quality of coal is essential, the Carbocoal process is practically independent of the quality of fuel used as long as it contains sufficient gas to insure a closed circuit for operating the plant. In this latter process the semi-coke is pulverized, mixed with pitch and pressed into briquets, which are again carbonized, leaving a marketable fuel of homogeneous texture and high quality.

An ideal low-temperature carbonizing process would, of course, be one in which a marketable fuel of definite shape was obtained in a single operation. This also should insure the highest yield of byproducts, though the word byproducts is hardly justifiable in this connection. The use of a revolving retort would be highly desirable in a plant of this kind.

Though the suggestion of Fischer, mentioned in the preceding article, that a loose roller be placed inside the revolving retort to assure compression of the fuel while coking, could not, for obvious reasons, be adopted in a plant working on a large commercial scale, Raffloer has followed up this idea and brought out a plant of rather remarkable design. This combines the advantages of a revolving retort with continuous operation and compression of the fuel, obtaining thereby a residue of definite shape and of dense, marketable quality.

The retort is shown diagrammatically in the accompanying illustration, both in longitudinal and vertical cross section. It consists of a steel cylinder, *A*, provided with two annular rings, *B*, which rest upon rollers, *C*. At the charging end the retort closes, gas-tight, against the stationary end plate, *D*, which is of heavy cast iron. On the opposite end it fits in a similar manner against the face of the stationary chamber, *E*, which is open on the side toward the retort. The whole device is placed in an oven, *F*, built of firebrick, forming an annular heating space equidistant from the retort all the way round.

Underneath this oven, the heating-gas main, *G*, is suspended. This is provided at equal intervals with a number of vertical bunsen burners the ends of which pass through holes provided in the bottom of the brickwork, *F*, so that the burning gas plays upon the shell of the retort. In the top of the annular oven, *F*, passages, *I*, are arranged for the escape of the waste gases. In practice these are covered with sliding dampers for regulating the combustion. Above the oven, *F*, the connecting flue, *J* is installed. This is connected by means of a damper to a chimney flue or direct to the steel chimney, *K*.

On the inside the retort is provided with ribs which divide the inner surface into a number of longitudinal cells, *L;* these are slightly tapered, being narrower at the discharge end of the retort. Near the bottom of the retort rests a heavy cast-iron roller, *M*, guided by a protruding shaft running in a bearing in the end plate of the discharge chamber, *E*. The roller, *M*, is grooved lengthwise, its grooves corresponding to the projecting ribs of the retort shell, so that the space between the grooves momentarily underneath the roll covers the lowest cell, *L*.

Because the grooves of the roller, *M*, grip or mesh

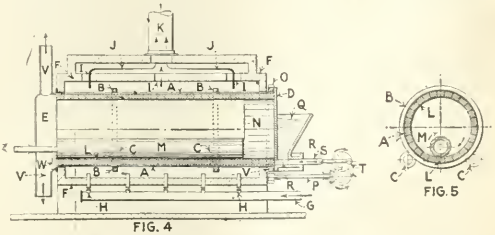


FIG. 4 FIG. 5

PLANT WHICH DISTILLS COAL AND MAKES BRIQUETS

The fine coal entering the cylinder falls into the cellular receptacles, *L*, and is compressed by the grooved roller, *M*, as the cylinder is revolved. Forced by the action of a ram, a mass of semi-coke is thrust out at *W*, where it is cut off by a knife so as to form a small brick of semi-coke.

*A sequel to A. Thau's article entitled "Devices for Speeding Low Temperature Carbonization and Procuring a Dense and Non-Friable Product," which appeared Dec. 1.

†Coke-works superintendent, Oxelösund Iron Works.

with the ribs of the cells, *L*, the roller revolves automatically with the retort and does not require a separate drive. Furthermore, the lowest cell, *L*, is always tightly covered. The roller does not reach entirely to the charging end of the retort, the distance not covered by it being taken up by the broad annular sleeve, *N*, covering the cells all around throughout its length, so that the fuel occupying the cells cannot fall out. Near the end wall, *D*, on the charging end, the retort carries a toothed driving ring, *O*, which meshes with the small pinion wheel of the driving shaft, *P*.

Feeds Coal Into Each Cell Separately

The casting forming the retort wall on this end is provided with a hopper, *Q*, taking the form of a steeply-tapered funnel. In the bottom of the end wall, *D*, a charging hole is provided, the cross-sectional area of which is proportionate to that of a cell, *L*. Outward, in line with the lower cell and the charging opening, the funnel, *Q*, forms a horizontal branch, *R*, in which a plunger, *S*, is moved by means of a connecting rod actuated by the common drive, *T*, which revolves the retort and operates the plunger. The stationary chamber, *E*, on the discharge end of the retort bears upon its top the pipe connection, *U*, that removes the gases evolved by the distillation of the fuel. At the bottom the chamber, *E*, forms a branch, *V*, through which the coke briquets are discharged. In operation this is designed like that shown in Fig. 2 of the preceding article, so that no gas can escape with the discharged fuel nor can air be drawn in at this point. The branch can also extend horizontally and be provided with a water-spraying device for cooling the briquets as they are being discharged.

The method of operating this retort is easily understood. The drive is so arranged that the retort is stationary while the plunger travels forward or inward and revolves only when the plunger has been withdrawn. A certain quantity of fuel which must be in a finely divided state falls to the bottom of the funnel, *Q*, filling the space behind the plunger, *S*. As soon as the retort comes to a stop, a cell, *L*, is in line with the plunger, *S*, and is covered by the roller, *M*. As force is necessary to move the fuel forward throughout the entire length of the tapered cell under the stroke of the plunger, the coal is compressed into a dense briquet of bar shape, of length proportional to the length of the retort.

Cut off Like Clay Brick but with a Knife

With each stroke of the plunger the fuel in the lower briquet bar is moved forward toward the discharge end of the retort, from which it protrudes a certain distance, corresponding to the stroke of the plunger. At the lowest point of the retort a knife is fixed in the chamber, *E*, and with the further movement of the retort, corresponding to the width of the cell, *L*, the protruding bar of fuel is brought against this knife and a definite length sheared off. The briquet thus formed then falls into the discharge pit, *V*, and is moved forward into the quenching channel. The retort thus does not move continuously but makes a short stop from cell to cell, permitting the plunger partly to charge and discharge, by a single stroke, each successive cell.

As the fuel must travel a certain distance before it becomes sufficiently heated to insure its amalgamation, the annular sleeve cover, *N*, is inserted to prevent it from falling out of the cells. During the charging and discharging operation, the lower cell in each case is completely closed on three sides, and is only open at its discharge end, allowing the coke to be pressed out.

Raffloer's retort, which as yet is in only the experimental state, will have a length of about 35 ft. and a diameter of from 80 to 100 in. Such a retort, 35 ft. long and 80 in. in diameter, has a heating surface of approximately 1,076 sq.ft. and with a layer of fuel 2 in. thick holds approximately 106 cu.ft. of coal, which in the compressed state has a specific gravity of from 0.8 to unity.

Allowing one hour for the coal to pass through a cell, the capacity of the retort would be equal to about fifty tons per day. The heating of such a retort is so regulated that the heat is lowest on the charging end and gradually increases toward the discharge, so that the coal is gently penetrated by the heat on its way through the machine. An average temperature of 842 deg. F. is maintained.

The advantages inherent to this ingenious process are too obvious to demand special comment. It should be mentioned, however, that this is the first design of a revolving retort yielding, without after-treatment, a marketable fuel of dense structure and definite size and shape. The tar oil obtained from fuel treated in this retort is lower in free carbon than that from any other low-temperature carbonizing device, as the gas is withdrawn from an atmosphere that is entirely free from coal dust or other fine particles, the fuel being firmly held between the ribs forming the cells.

Lengthening Life of Carbonizing Retort

As was mentioned earlier, cast iron and steel as used in low-temperature carbonizing retorts will not withstand heat continuously applied for any length of time, even though the actual temperature be comparatively low. The revolving retort is invariably made of steel plate, as the weight of cast iron prohibits its application in the shell of such devices. The effect of the heat upon the shell, however, is much less noticeable in a revolving retort than in a stationary one. This probably is because the gas flames do not impinge continuously upon the same spot as they do in the case of fixed retorts. Furthermore, in revolving retorts, where the same area is exposed to the direct influence of the gas flames for only a comparatively short time, the heat can distribute itself better and more evenly throughout the whole material.

Although the revolving retort is thus to a much less degree subject to the detrimental effects of the heat, a slow corrosion must, nevertheless, in time be reckoned with, and efforts to counteract it, as far as possible, are already being made.

In the American retort invented by Thomas, and shown on page 874 of last week's issue, the shell is provided with a double lining of firebrick, and the combustion flues are arranged between the linings so that the iron shell simply serves as a mantle and protecting cover and does not come in contact with the direct heat at all.

Another suggestion having the same end in view is under trial by American engineers. The attempt is being made to prolong the life of directly-heated steel shells of coking retorts by covering or coating their outside surfaces with a layer of aluminum. The results obtained are said to be highly promising, and the aluminum has proved to be a satisfactory protection against the scaling and porosity which the heating gases would otherwise cause.

COAL-LOADING SHOVEL AT BLANCHARD NO. 1 MINE, WYANO, PA.*

Stripping and Selling Coal on a Dead Market—II

Wire Brooms Deprecated—Contractors' Side-Dump Car with Side Boards Advocated—Sixty-Pound Rail and Three-Foot Gage Preferred—Strip-Pit Coal Not a Mixed Fuel—Action of Coal in Use Should Be Observed

By William G. Blanchard†
Pittsburgh, Pa.

THE stripping shovel employed at Blanchard No. 1 mine uncovers a cut of coal that may be as much as 110 ft. wide but which usually averages about 75 ft. in width. A 6-in. band of draw slate lies immediately on top of the main bed. The roof coal directly above this, which varies in thickness from zero up to 3 ft., being broken up by many partings, generally is so dirty as to be unmerchantable. As a result attempts are rarely made to recover any part of it, and the stripping shovel removes it with the roof slate.

In digging, this roof slate appears as an easily distinguishable white indicator, in contrast with the coal above and below it. A skilled operator, by exercising care, can uncover the main bed uniformly and with remarkable accuracy, neither digging into the coal nor leaving any appreciable amount of draw slate to be cleaned up by hand.

With a wide band of uncovered coal ahead of the loading shovel lying out in broad daylight and plainly visible to the watchful eye at all times, the coal can always be picked up and loaded into cars as a clean, merchantable product. Careful and intelligent supervision at this point will insure a coal as free from foreign matter as would be possible were it loaded from an underground working.

Study of the bed of coal under discussion will give the reader a better insight into the conditions which must be met in operation. The thickness of the coal ordinarily varies from 90 to 100 in. It is quite free from bands and slate partings with the exception of the two well-known Pittsburgh bearing-in bands which occur just below the middle of the bed and are separated from each other by only a few inches. In this locality one of the bands generally averages about $\frac{1}{2}$ in. in thickness and the other less than $\frac{1}{4}$ in., the whole representing on an average less than 0.75 per cent. of the entire height of the coal.

After the big shovel has stripped a section of coal the top needs no further cleaning except immediately in front of the coal shovel. Here the surface is scraped with ordinary square-pointed coal shovels. With reasonable care the top of the coal can be thus cleaned so thoroughly that practically no dirt is visible. Suppose, for the sake of argument, that $\frac{1}{8}$ in. of extraneous solid matter still remains over the entire surface of the scraped coal, although not visible to the naked eye. Even with such negligent preparation this impurity will compose less than 0.16 per cent of the total bed height. The figure normally attained probably is about 0.05 per cent.

The operator of the loading shovel should exercise great care so as not to dig into the bottom, under the coal. A good practice is to have the loading shovel leave about 1 in. of bottom coal in the pit. This is afterward lifted by hand, and as it breaks cleanly from the fire clay beneath, less than 0.25 per cent of ash-producing material is loaded from the bottom. This prac-

*The shovel is digging in preparatory to loading coal already stripped. It will proceed toward the foreground, which, it may be noted, is scraped ready for loading. The track is in the middle of the cut, which is its first position. After the coal has been taken out on this, the inner side, the track will be shifted toward the bank and the coal on the other side removed. The man on the right with the square-edged shovel is cleaning off the top of the coal. The course of the stripping shovel is so curved around the contour of the coal area that the end of the stripping appears to be visible, but, of course, that is not so.

†General manager, Blanchard Coal Co.

tice is simple and effective, and as the work is under supervision at all times its thoroughness is perfectly controllable.

From experience and careful calculation it is believed that the coal shovel loads less than one per cent of the foreign matter, including the bearing-in bands, and of this, much is removed on the picking table.

Consideration of these figures as well as practical experience have demonstrated that the use of such preparation equipment as mechanically-operated wire brooms or hydraulic machinery for cleaning the top of the coal is of no particular value, being only needless expense. Excellent results may be obtained by adhering to two simple rules: Scrape the top clean and keep up off the bottom.

For removing coal from a stripping operation no other conveyance on the market is so suitable as is the ordinary contractors' side-dump car. To use specially-constructed cars, those with either drop or gabled bottoms, or those of all-steel construction usually is unfortunate. At the end of a year or so, even if some of these specially-built cars remain in running order (which is doubtful), they usually will be discarded.

The chief advantages of the contractors' side-dump car are ruggedness and simplicity in operation. It will stand severe usage with little or no cost for upkeep and the doors will open and close with equal facility regardless of the season. As an illustration of the ruggedness of this car an instance may be cited where seven of these cars dropped off the end of the tipple shown in Fig. 1 through a distance of 54 ft., each loaded with six tons of coal. The fall was a sheer drop to the railroad tracks below, and yet the cars had only to be put back on the track and a few splintered planks replaced to restore them to service.

Even this type of car, however, is not all that could be desired for the movement of coal because it is comparatively heavy for such a relatively light material. Furthermore, the center of gravity of the car is so high, especially when side boards are used, that good hauling speed can be maintained only over the best of tracks. A careful check usually will disclose the fact that the haulage of the coal from the shovel to the tipple, including the laying and maintenance of the coal track in the pit, represents an appreciable expense, and seeing that it is advisable to haul the maximum load possible on each car, side boards should always be used.

At this plant trips consist of seven 5-cu.yd. Western cars with 12-in. side boards. Thus the trip has a capacity of about fifty tons. Without the boards the largest capacity attainable ranges between thirty and thirty-five tons. This smaller capacity would necessitate at least a 50 per cent increase in the number of daily trips to the tipple, if the same output was to be attained.

BLANCHARD COAL CO.

COST SHEET

Blanchard No. 1 Mine Year, 1921

	Operating Expense	Month*	Total
1	Car rating		
2	Tonnage		
3	Payroll		
4	Other labor		
5	Oils and greases		
6	Gasoline		
7	Sand		
8	Explosives		
9	Miscellaneous supplies		
10	Repair parts and spares		
11	Freight and express inbound		
12	Telephone		
13	Light		
14	Power		
15	Office supplies and expense		
16	Boarding house supplies less payroll deductions		
17	Stable feed and supplies		
18	Extra teaming		
19	Farm		
20	Miscellaneous expense		
21			
22			
23	Total operating expense		
24	Total operating expense per ton		
	Office Expense		
25	Office salaries		
26	Rent		
27	Telephone and telegraph		
28	Stationery and supplies		
29	Miscellaneous office expense		
31			
32			
33	Office overhead		
34	Office overhead, per ton		
	General Overhead		
35	Officers' salaries		
36	Fees		
37	Taxes (no excess profit or income)		
38	Insurance		
39	Interest and discount		
40	Auto operation		
41	Traveling		
42	Miscellaneous expense		
43	Mortgage interest		
44			
45			
46	General overhead		
47	General overhead, per ton		
48	Depletion at c. per ton		
49	Depreciation at c. per ton		
50	Total cost		
51	Total cost per ton		
	Sales		
52	Gross sales realization		
53	Gross sales realization, per ton		
54	Commissions and rentals		
55	Freight and price allowances		
56	Net sales realization		
57	Net sales realization, per ton		
58	Net profit		
59	Net profit, per ton		

*In the original cost sheet provision is made for each of the twelve months.

Track Amply Strong but Readily Movable

Sixty-pound rails have been found to be most advantageous for the coal track in the pit. The strength and rigidity of this size of rail allow the use of the minimum number of ties, yet it is not too heavy for the track gang to handle. It usually will be found that with a lighter rail so many additional ties will be required to prevent it from bending on the ungraded coal surface that the seeming advantage gained by its light weight will be lost. Furthermore, the lighter rail does not afford as much sanding area as does the heavier one. Rails weighing more than 60 lb. per yard are too heavy and cumbersome to handle effectively in the pit.

On the main lines leading from the pit to the tipple certainly not less than 60-lb. rail should be employed, and it usually will be found that for light rolling stock this weight makes an excellent track and insures rapid haulage. The chief factor in the maintenance of this main-line track is drainage. The importance of this item should never be overlooked and the line always should be deeply ditched on both sides with culverts provided to discharge the water to the outside of the hill at regular intervals. Neglect of this precaution means constant care, a poor track, slow haulage and numerous wrecks.

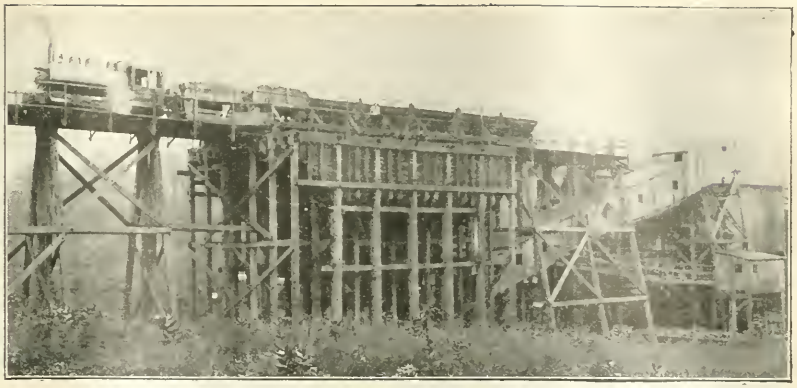
A 36-in. gage is used, as wider track widths do not work out to advantage. With greater distance between rails longer ties must be used, making the track much more unwieldy and more difficult to put down, take up or throw over.

At this operation an arrangement was made whereby the stripped coal could be screened and loaded from a

FIG. 1

Tipple, Approach and Storage Bin

The lessor of the tipple believed that the trips would rack, and the falling coal would strain, that building, so the approach and tipple were kept separate. The inclined shed on the right houses the conveyor which raises the coal to the screens in the tipple and serves also as a picking table.



tipple already erected and adjacent to the property. This tipple has three loading tracks beneath it, so that 1½-in. lump, ¾-in. lump, mine-run, nut, nut-and-slack, slack, or straight ¾-in. slack can be made.

The approach to this tipple presented quite a problem. A rule was made prohibiting all tying of the approach to the existing structure, as it was feared that such a procedure would cause vibrations to be transferred from the approach to the tipple. Fig. 3 shows the layout finally effected. It has been operating satisfactorily. All bents were set up on sound, substantial mud sills without the use of any concrete whatever. During the two years in which the structure has been standing not a single bent has had to be elevated or realigned.

Coal trains dump into the center of a 500-ton storage bin which is lined with sheet steel and has a discharge opening measuring 36 x 42 in. From the bin the coal proceeds over a reciprocating plate feeder onto a 4-ft. rubber belt that serves both as a picking table and as an elevating conveyor. By this it is delivered to chutes, discharging either to the screen or to a single-roll crusher below. One 15-hp. motor operates the belt and feeder, giving a capacity of more than 200 tons per hour. The coal is picked as it passes along the belt and highly satisfactory results are attained by this practice. Small screens in the plate feeder discharge the coal to the belt with the slack underneath, and, as the belt is wide and flat and has a uniform slow travel, the moving coal can be watched without unduly tiring the eye. What little slate is present travels with the lump and can be easily seen and removed.

The single-roll crusher with all the conveying machinery was built of standard Jeffrey parts adapted to this particular layout and plans. During the process of loading, the railroad cars are spotted under the tipple by means of Fairmont car retarders. The control handles have been so arranged that from one point on the lower deck of the tipple the conveyor can be stopped and started, or any of the cars on the loading tracks can be dropped when necessary. With this layout it has been found that four men and two boys can thoroughly pick and load up to 2,000 tons in a 10-hour day.

Inspection of the cars while loading will show whether the picking is being done effectively. A written report on each car loaded is made, including the appearance of the coal, the thoroughness of the preparation and the fulness of the car This last item is included because only railroad weights are used, and by this report the company is able to detect any loss from bad-order cars which may occur between the tipple and the weighing point.

Costs are analyzed by checking each item at the end

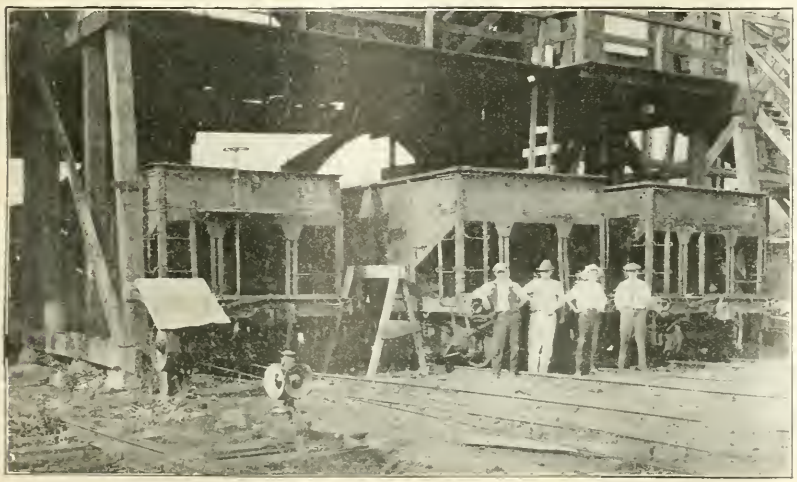


FIG. 2.

Under the Tipple

Three tracks under a single tipple span is a somewhat unusual arrangement. Note the retarder on the left which regulates the passage of the car under the tipple. From right to left the men are: W. G. Blanchard, general manager; C. M. Blanchard, mining engineer, formerly of Birmingham, Ala.; P. W. Rainier, superintendent, formerly in the gold dredgings of South Africa, and C. A. Snyder, shipper and chief clerk.

of every month, and as an aid in so doing the cost sheet shown herewith is used. This sheet gives the various items, each of which is highly important. The totals at the end of the year supply some real and accurate information. The superintendent each month is furnished with a sheet showing the operating expense for the preceding month. This materially assists him in keeping down the costs. In addition to this, expenses are further analyzed under the heads of water-system operation, drilling and shooting, stripping-shovel operation, coal-shovel operation, coal hauling and tipping.

In order to market a stripped coal successfully one must know this particular fuel from A to Z. Many analyses should be made from samples taken in the different parts of the property both from points on and along the crop and on and along the cuts back into the hill. A careful study of the results will show just what classification the particular coal in question will come under, and, more important still, the amount of extreme variation in these analyses from point to point on the property.

One condition not always considered is that usually in an underground mine during the day's run the various small cars of coal will come from such widely separated points that the analyses from day to day will be fairly uniform. But if the individual analyses were taken from different faces in various parts of the mine, wide variations would be found.

In the stripping plant, on the other hand, the entire loading for any given day comes from a comparatively restricted area, so that the average analysis will be that of the coal for that particular location. And so from day to day, the loading being from different parts of the property, analyses will vary accordingly. This, then, is the reason why one must know the extent of these variations, and thus be able to judge beforehand whether their maximum value in either direction is likely to make the coal unsuited for a given customer's requirements.

The appearance of the coal should be studied carefully and a daily record kept to show whether it is coming out black and shiny or whether it carries a red

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DAILY STRIP-PIT REPORT, BLANCHARD COAL CO.

Weather Conditions

Clear		Hot	
Cloudy		Warm	
Rain		Mild	
Snow		Cold	
H. Wind		Zero	

BLANCHARD COAL CO.

..... MINE DAILY REPORT

TOTAL MEN WORKING..... 19.

Monthly Total Cars Loaded to Date.....

Estimated Total Monthly Tonnage to Date.....

Car Supply

No. of unconsigned loads on hand 7 A.M.....
No. of empty and part loads on hand 7 A.M.....
Additional empties received during day.....
Total available empties for day.....
Tons of coal in bin 7 A.M.....

No. of cars loaded.....	140	110	100	80	Total Tons
Lump.....					
Slack.....					
Run of mine.....					
Total.....					

Started loading.....
Ended loading.....
Delay No. 1..... hrs. cause.....
Delay No. 2..... hrs. cause.....
Delay No. 3..... hrs. cause.....
No. hours worked.....
Empties left unloaded.....
Of which..... were received before 7 A.M.
Of which..... were received before 10 A.M.
Part loads left under tipple.....
No. of unconsigned loads left.....
Note.....

Stripping Shovel

Morning position (.....) (.....)
Evening position (.....) (.....)
Yardage.....
Started digging.....
Stopped digging.....
Delay No. 1..... hrs. cause.....
Delay No. 2..... hrs. cause.....
Delay No. 3..... hrs. cause.....
No. hours worked.....
Note.....

Coal Train No. 1

Train empty or loaded 7 A.M.....
First dipper received.....
Last car dumped.....
Delay No. 1..... hrs. cause.....
Delay No. 2..... hrs. cause.....
Delay No. 3..... hrs. cause.....
No. of trips.....
No. of cars per trip.....
Total cars.....
Note.....

Coal Train No. 2

Train empty or loaded 7 A.M.....
First dipper received.....
Last car dumped.....
Delay No. 1..... hrs. cause.....
Delay No. 2..... hrs. cause.....
Delay No. 3..... hrs. cause.....

No. of trips.....
No. of cars per trip.....
Total cars.....
Note.....

Coal Train No. 3

Train empty or loaded 7 A.M.....
First dipper received.....
Last car dumped.....
Delay No. 1..... hrs. cause.....
Delay No. 2..... hrs. cause.....
Delay No. 3..... hrs. cause.....
No. of trips.....
No. of cars per trip.....
Total cars.....
Note.....

Coal Shovel

Started loading.....
Stopped loading.....
Delay No. 1..... hrs. cause.....
Delay No. 2..... hrs. cause.....
Delay No. 3..... hrs. cause.....
No. of hours loading.....
No. cars loaded.....
No. tons loaded.....
Note.....

Water Pump

Started..... Stopped.....
Started..... Stopped.....
Started..... Stopped.....

Total hours.....

Note.....

Drilling and Shooting

No. holes drilled.....
Average depth.....
No. feet drilled.....
No. men working.....
No. of hours drilling.....
No. holes shot.....
Locations [(.....) (.....)] [(.....) (.....)] [(.....) (.....)]
[(.....) (.....)] [(.....) (.....)] [(.....) (.....)]
[(.....) (.....)] [(.....) (.....)] [(.....) (.....)]
No. kegs of powder used.....
No. sticks of dynamite used.....
Note.....

Signed.....

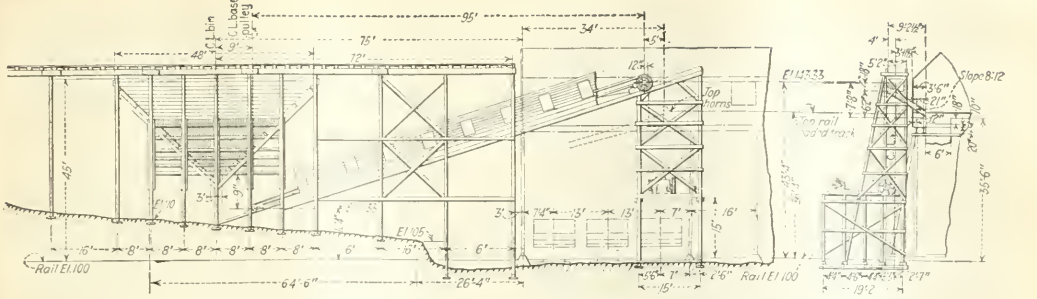


FIG. 3. DETAILS OF APPROACH, STORAGE BIN AND CONVEYOR. THOSE OF TIPPLE NOT SHOWN

The tipple is old, having been built for mine cars. The location of the horns and the level of the loaded track is noted on the right in the side elevation. The tower at the head of the elevator stands on its own foundation, and the approach is entirely separate from the tipple, being 3 ft. clear of the tipple end. The bin will hold 500 tons. The size of this bin makes it necessary to place the trestle stringers more than 45 ft. above the top of the railroad rail, causing the approach trestle to be unusually high.

or a clay stain. All the clay-stained and red-stained coal should be checked carefully to see whether the analysis has been affected by the action which caused the discoloration. It usually will be found that it has not, and that the stain injures only the appearance and not the fuel value of the coal. The structure of the coal itself also should be studied, in order to determine its friability as compared with that of other fuels. This will be a valuable aid in placing it in the hands of the proper customer.

In addition to these investigations, which can be made at the strip pit, many trips should be taken to watch the coal while being fired and to study the results obtained in as large a variety of equipment and under conditions varying as widely as possible. A careful study here usually will show that the value of the coal for industrial purposes does not depend altogether on its appearance or its laboratory analysis, for in many instances an inferior-looking, badly stained coal will develop a more effective heat than will a black shiny fuel from another mine, even though that coal has an equal or better laboratory analysis. Of course, some coal will give widely different results when burned in different types of stokers, and some will give widely divergent results in the same stoker. It probably is safe to say that even the poorest coals, if they have any body or firmness of structure, will burn with satisfactory results in many modern types of stokers. Selection of any fuel is, of course, a problem in balancing prices and freight rates against effective heat units, ash disposal and the like.

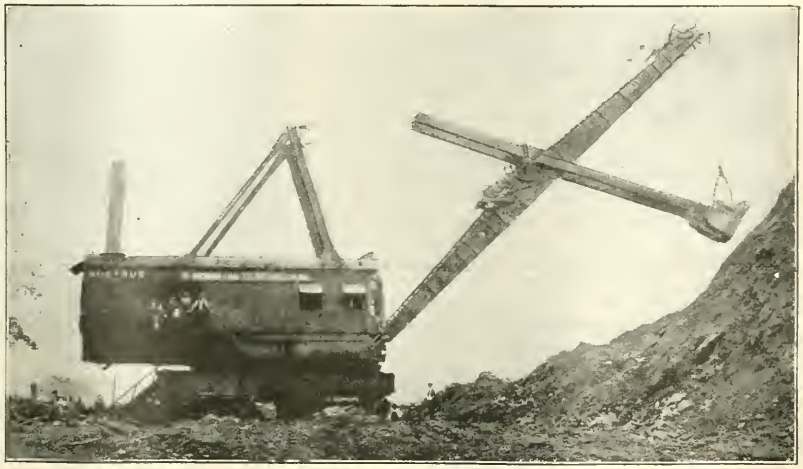
Armed with the knowledge above suggested one can select a list of consumers who can use a particular coal to advantage. Then with a little persuasion one usually can obtain from them, even in a dead market, sufficient business to operate the plant profitably. It has been my experience that the average coal buyer is neither as "hard shelled" nor as "hard boiled" as he generally has the reputation of being, and that a quiet talk, based on a full knowledge of and confidence in your product, will convince the most skeptical. Then, if an order is obtained, all that remains for the producer to do is to live up to his sales representation. This should not be difficult, provided the right coal has been sold in the right place and no results have been promised that cannot be obtained in everyday practice.

Take, for an example, the coal coming from the Blanchard No. 1 mine, under discussion. It is a high-grade Youghiogheny, or Westmoreland, gas coal in which the sulphur content will consistently average less than 1 per cent. The ash will vary somewhat but will run about 8 per cent. The heat content of a pound

FIG. 4

Three Hundred and Forty Ton Shovel

This shovel will handle in one day as much as 300 men and 100 teams. In this view the shovel is "dead-heading" over barren land to the next area to be stripped. As passage had to be made over soft ground the shovel had to be carefully handled.



of the dry coal will range pretty consistently between 14,000 and 14,500 B.t.u. no matter whether the fuel is red-stained or black and shiny. The coal burns freely to a powdery ash without clinkering. It gives off its high gas yield freely and easily and furnishes its results in producers that are mechanically agitated. It makes an excellent byproduct coke of high porosity and firm structure, such as is required for blast-furnace operation. The amount and character of the sulphur content are such as to make the coal particularly suited for metallurgical heating, yet it serves excellently where boilers must be pushed to high overload capacity. In such a case, because of the low moisture content, the character of the ash, and the structure of the fuel itself, a ton of this coal under a boiler in many instances will evaporate more pounds of water than will a ton and a half of some so-called high grade steam coals.

Armed then with this knowledge, which has been gained through wide experience under the most rigid comparisons and tests, it is not particularly difficult for one to go out and market this coal intelligently and honestly, knowing that the product when fired will fully justify all that has been said of it.

Producer Gas, Deriving Little Sulphur from Coal, Makes Good Iron-Works Fuel

WITH the failing supply of natural gas many attempts have been made to find some suitable substitute fuel. Among those tried have been pulverized coal, water gas, crude oil, and gas from coke-ovens, blast-furnaces and producers. Though each of these seems to possess its own peculiar advantages, pulverized fuel, petroleum and producer gas appear to be particularly adapted to use in plants remote from coke ovens or blast furnaces.

"Clean cold producer gas from bituminous coal" was made the subject of a highly interesting and instructive paper presented by C. F. Kaufman before the Metropolitan Section of the American Society of Mechanical Engineers at Newark, N. J., Friday evening, Oct. 28, 1921. In this paper and the discussion that followed some details were brought out that may be significant to coal producers, particularly those of the West and Middle West.

Extract Tar From Gas With Spun Glass Mat

Producer gas may be utilized either raw—that is, hot and containing all the tar given off from the coal—or cold with the tar extracted. Of these two the latter seems to be the more advantageous method. Extraction of the tar is fairly easy, the gas being first passed through a mat of spun-glass wool and then through an extractor not differing greatly in principle from the eliminator used in steam lines. Tar thus withdrawn from the coal is returned to the producer and sprayed over the top of the fuel bed. Here it is largely broken up or "cracked" into gas. Tar coming from the coal where reutilization of this kind is practiced is of a much more liquid character than when it is not returned to the producer.

Another, and for metallurgical work a highly important, consideration is the fact that only a small portion of the sulphur contained in the original coal is finally delivered with the gas. At one large plant using this fuel in the manufacture of high-grade alloy and tool steel 93 per cent of the sulphur in the coal is left behind by the gas. The quantity of this element, therefore, that may be absorbed by the metal from the fuel used in the process of manufacture is comparatively small. This would render the gas from a fuel relatively high in sulphur quite suitable for ordinary purposes of metallurgy, such as steel making, steel forging and heat treatment.

Don't Roast Ash at High Temperature

The actual quantity of sulphur carried over with the gas depends upon many factors. The first of these is the form in which this substance occurs in the coal. If present as pyrite it is readily carried off in the ash, but the manipulation of the producer will strongly influence the percentage that will find its way into the gas. Thus continuous roasting of the ash at high temperature tends to drive sulphur over with the gas. Organic sulphur also is highly susceptible to expulsion in a gaseous state. The treatment of the cooling water also affects the quality of the gas. If part of this water runs to waste and makeup is introduced to take its place much sulphur is carried away with the rejected water. If the cooling water is continuously recirculated it soon becomes saturated and can, of course, remove no more sulphur from the gas.

Many Types of Plants Use Producer Gas

Several well-known users have employed this fuel for years past. The Ford Motor Co., both at its Highland Park (Mich.) and Walkersville (Ont.) plants, does miscellaneous heat treating with producer gas made from Ohio and Kentucky coals. The A. O. Smith Co., of Milwaukee, Wis., for years did similar work, using Ohio coal. The Jeffrey Manufacturing Co., of Columbus, Ohio, does much heat treating and forging, using producer gas from many different coals, for this firm usually buys its fuel from its customers, and these, as everyone knows, are scattered over an extremely wide range of coal territory. The Dayton Engineering Laboratories Co. does heat treating and forging with producer gas made from either West Virginia or Kentucky coal. The Standard Horse Nail Co., of New Brighton, Pa., and the Reliance Manufacturing Co., of Massillon, Ohio, use Massillon coal in gas producers. The former uses producer gas on light forging work and in the making of horseshoe nails. The Reliance company uses the gas for heat treating steel in rotary furnaces.

Have Not Drawn Fires for Over Three Years

The uses to which producer gas can be and is even now being put are legion. Not only is it suited to metallurgy but also to power generation both in the internal-combustion engine and under the steam boiler. It also finds application in soldering, brazing, annealing, tempering, smithing and similar furnaces, in glass manufacture, in the making or cooking of cereal food products and the like. Producers as now made are quite reliable and one plant is now in operation the fires of which have not been drawn for more than three years. Because of its cleanliness, flexibility and ease of control it would appear that this fuel will find even wider application in the future than it has in the past.

Correction.—On page 611 of our issue of Oct. 13, 1921, the statement was made that the Spencer heater was the "product of the Spencer Heater Co., of Scranton, Pa." For some months past this furnace has been manufactured by the Standard Heater Co., of Williamsport, Pa.

Light Air Hammer with Half-Inch Hose To Be Used in Place of Hand Pick

TO MEET the demand for a light, easily-handled air pick or drill a machine of that type weighing only 16 lb., having a length of 17 in. and requiring only a ½-in. air hose has recently been made. This machine was primarily developed to meet the demand of the coal mines of France and Belgium for a tool of this character which would take the place of the hand pick in mining the thin beds and working the narrow places of the many fields in those countries having limitations of that kind. It has proved successful and popular for the work for which it was designed, and its use has been extended accordingly from the coal fields of the European Continent to those of Great Britain and elsewhere. It is now offered in this country for any of the many purposes for which its light weight, the character of its blow and the type of cutting tools employed may seem to adapt it.

In coal mines the "pick hammer," as it is called, may be used to advantage as a substitute for the hand pick in doing any kind of work that a hand drill can perform, such as trimming walls, taking up bottom coal left by mining machines, brushing roof and cutting hitches in walls and rock. This hammer may be used also for cutting emplacements for timbers and the like. On construction work it may be employed for scaling down loose rock from the walls of excavations, demolishing brick walls and subsequently cleaning off the bricks, for chipping or smoothing off concrete surfaces, and for the light work of concrete removal, for loosening up the broken or disintegrated rock in foundations, and for many other similar tasks frequently encountered by the miner, contractor, builder or quarryman.

PICK HAMMER DRIVING SPIKE IN TIE

With much poetry of motion the hand sledge driver delivers his blows. He may plant them well but certainly not as rapidly as does an air hammer and the work is more wearisome to the hammerman. The slogan of today is "Let the tool do the work and it will be done." The adage proves even truer than that of Benjamin Franklin: "If you want anything done do it yourself."

CUTTING A HITCH IN THE COAL

The job could be more easily done by bringing up the empty from the rear and using it as a platform, but it can readily be accomplished as shown, for the hammer is light, and the pipe line is not heavy, so it is easy to cut the hitch with the tool held well above the head.

The pick hammer consists of a cylinder provided at the rear end with a D-handle and at the forward end with a spring tool retainer for holding the pick or other tool used. A hollow cylindrical or shell valve, actuated by differential pressure, regulates the admission of air. The hammer or piston reciprocates within the valve proper, thus providing a long stroke without excessive length of tool or undue weight. The drill is controlled by pressure on a trigger, which is placed in the grip of the handle, where its action will not be hindered by accumulations of chips or dirt.

This hammer strikes a hard, snappy blow, giving abundant power for the work for which it is intended. The machine will operate satisfactorily on any air pressure from 45 to 100 lb. per square inch. The tools are held in place, as stated above, by a steel spiral spring of special temper. This also dampens the blow when the hammer is running light. The result is that pick breakage, as well as damage to the tool itself, is small.

The lightness of the tool retainer prevents the machine from being nose heavy—that is, from having at the front end an undue weight that would tire the operator. The smoothness with which this tool operates and its freedom from vibration make it unusually easy to handle.

Two long cap screws by which the D-handle is secured keep the various parts in place. No screw joints are employed. All parts are either drop forgings or tool-steel bars, machined to proper dimensions and working clearances. They are made of special alloy of steel, carefully heat-treated by special processes so as to obtain maximum life and resistance to wear. All parts are interchangeable, and are subjected to rigid inspections and tests.

It is claimed for the pick hammer that it consumes

only a small quantity of air per unit of work accomplished and that its efficiency is maintained throughout a period of long service, that its smooth operation eliminates undue fatigue upon the operator and that repairs will be infrequently needed. Ordinarily the tool used in this hammer is the sharp pointed pick or gad. Other forms of working tools may be supplied or made up by the customer to suit his individual requirements and the work to be done. The diameter of the cylinder is 1¼ in. and the shank of the pick steel has a cross-section of ⅞ x 2¾ in. The tool is made by the Sullivan Machinery Co., of Chicago, Ill.

Belt Conveyor by Sagging More Closely in Accord with Grade Lowers Building Costs

TWELVE miles south of Pittsburgh, Pa., on the Peters Creek branch of the Pennsylvania R.R., the Gould mine of the Bertha Coal Co. is operating a small acreage of the Pittsburgh bed. The mine output is shipped mainly to gas-producer plants and pottery manufacturers. The coal underlies two adjoining hills situated due east and west of each other. The west side has been in operation for about five years, whereas the east side is still under development. A wooden tipple with shaker screens stands at the foot of the hill at the western side of the valley. Coal from the old workings is lowered to the tipple by means of a self-acting or gravity plane. The output from this side has not been sufficient to keep the tipple running at anywhere near full capacity.

In order to increase the mine production the company decided to open the east side. Two advantages would be gained by this means. In the first place, the closer the daily output can be made to approach the tipple capacity the less will be the preparation and loading cost; second, as the acreages on both sides are small, mining should proceed as rapidly as possible. The coal area on the east side covers approximately 35 acres.

Belt Conveyor Easy To Install and Operate

Upon investigating the new property the company found that the landing point from which the coal must be conveyed across the valley was approximately 224 ft. from the tipple. Furthermore it was at an elevation of 35 ft. or more above the mean valley level, or about 20 ft. above the discharge point on the tipple. The problem presented, then, was to provide an efficient means of conveying coal from the east side to the tipple at a cost that would be in keeping with the limited acreage available.

It was decided that the most feasible method of coal transportation would be by means of a belt conveyor. However, a straight line joining the dumping point on the east side with the tipple showed that a belt conveyor following such a line would require a trestle containing a number of high bents, involving an expense for building not warranted by the limited acreage.

In February, 1920, a conveyor was completed that effected marked savings in bent timbering. The trestle, or conveyor frame, was built with a curve or belly that materially decreased the bent heights required. The conveyor line follows a compound curve with slopes of from 12 to 18 deg., the smaller value being on the tipple approach. The bents were placed on 14 ft. centers, and their heights vary from a minimum of 10 ft. to a maximum of 19 ft. Had the conveyor been built on a straight line, the greatest height of bent would have been approximately 35 ft. This would have required heavier timbers than those used in the modified construction.

As finally installed the bent construction essentially consists of 6 x 6 in. or 8 x 8 in. built-up legs resting upon two-way mudsills. These are tied together transversely by 2 x 6 and lengthwise by 2 x 8 in. pieces.

Five-pulley troughing belt idlers are used for carrying the load with a flat-pulley return on the under side. The 30-in. composition belt with its accessories was furnished by the Robins Conveying Belt Co. A 20-hp. Imperial direct-current motor drives the conveyor.

The daily output at present is about 800 tons, most of the coal coming from the old workings. Rooms have not yet been driven in the new mine, so that only heading coal is being produced there. For this reason the conveyor is being operated intermittently, quickly disposing of a trip when it is dumped. The capacity of the conveyor is estimated at 2,000 tons per eight-hour day.

BELT CONVEYOR AT GOULD MINE SEEN FROM TIPPLE

At first glance one would think the coal would roll down the grade, especially the last lumps in a train load. The grade is the maximum generally conceded for belt conveyors, being 18 per cent. Coal is discharged upon the belt conveyor by means of a shaker feeder. The foot walks on the sides are 3-in. plank placed upon the top of 2x6 in. tied-in members.

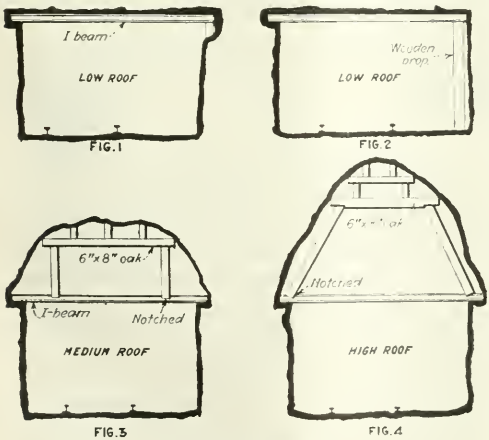
Methods of Supporting Roof of Roadways Adopted at the Indianola Mine

By Alphonse F. Brosky*
Pittsburgh, Pa.

THE coal mined at Indianola is the 7 ft. 6 in. Upper Freeport bed, which has a weak roof. Steel timbering is employed almost universally throughout the mine, except in the rooms. When depreciation and ultimate expenditure are considered, the operator as a general rule can well afford to install correctly designed steel sets, even though they may cost three or four times as much as wood sets of equal strength. Consequently this mine uses steel timbers, not because wood cannot be employed but rather on account of economy and safety.

Mouths of entryways are supported by steel I-beams of various weights, steel H-beams, and steel-timber sets supplemented by various forms of concrete construction. All haulageways and manways are carefully whitewashed. The extensive electric lighting which has been installed in this mine is no small item in increasing the efficiency of underground operations and certainly makes conditions not only safer but more pleasant.

In the main bottom on the north, or load, side of the shaft, 12-in. steel I-beams are used as collars. These are supported by 8-in. I-beam legs. The latter are connected to the collars by angle brackets and rest on small concrete footings. They are placed on 5-ft. centers. Fifty feet of timbering on each side of the shaft is capped with heavy wooden lagging, and the roof is well supported with heavy wood blocks and timbers. To prevent lateral thrust, the timber sets are made rigid by the use of heavy wooden separators between collars, and tied together by 1-in. steel rods. The legs, of course, are anchored to the concrete footings. The entry is double-tracked for 600 ft. from the shaft to the knuckle, and the span over the roadway consequently is rather long, the collars being approximately 18 ft.



FIGS. 1 TO 4. METHODS OF TIMBERING AT INDIANOLA MINE

Fig. 1—Steel I-beam or H-section used as a collar with one end on the lower surface of a hitch in the coal and the other on a short post inserted in another hitch. Fig. 2—Similar beam supported on lower side of hitch at one end and on a prop at the other. This method of support will be replaced by that in Fig. 1 with longer beams than are now used. Fig. 3—Timbering and steel beams for caved roof. Fig. 4—Steel beam, timber set and filling-in material where the roof has caved inordinately.

*Bituminous Editor, *Coal Age*.

FIG. 5. STEEL TIMBERING AT LANDING

Twelve-inch steel I-beams are used as collars and 8-in. I-beams as legs, and latter being connected to the collars by angle brackets. The legs rest on concrete footings and are spaced on 5-ft. centers. Many wood blocks are used above the collars and for 50 ft. from the shaft on either side the roof is heavily lagged.

in length. The same type of timbering is used on the south, or empty, side of the main bottom as is employed on the north.

All the turnouts from the main entry near the shaft are spanned by 24-in. I-beams, which act as supports for 12-in. longitudinal I-beam collars. These latter are connected to the larger beams by angle brackets and bolts. The larger transverse beams may rest either upon the coal, on pillars of brick or concrete, or on heavy wooden posts. To protect the salient angles of corners formed by main turnouts brick pilasters have been erected. This provision keeps turnout junctions clear. Otherwise the unprotected corners might be crushed.

From the knuckle northward, as the entry is single-tracked only, a different style of timbering is used. Steel I-beams or H-sections are utilized as collars, one end resting in a hitch in the coal while the other is carried on a short wooden sprag or leg, which also is supported on the rib, as shown in Fig. 1. All these beams are cut to a standard length. In many places the width of the entry is too great to permit both ends of the beam to rest on the ribs. In such cases one end is carried on the coal and the other on a wooden prop, as shown in Fig. 2. This type of support is used only to a limited extent and will be replaced later by that shown in Fig. 1, wherein longer beams are utilized. Where wooden props are employed, they not only obstruct an otherwise clear passage but are dangerous because they may be knocked out by a derailed car or trip or by a projecting load of rail or props.

At one place, a butt entry in the northeast section, the roof is very high and has begun to arch. Here another type of timbering is used. As shown in Figs. 3 and 4, it is a combination of steel and wood and might well be called a composite or Gothic set. A 12-in. I-beam rests on the coal of both ribs at the usual height of the roof. An ordinary three-piece wooden set is placed above and rests on this beam. The wooden timbering is 6 x 8-in. oak.

Where the roof extends only a few feet above the transverse steel beam the type of timbering shown in Fig. 3 is employed, and if the roof is six or more feet above the steel collar that shown in Fig. 4 is used. The legs of the wooden set are notched where they rest upon the I-beams so as to prevent their being readily dislodged. It has been found that black graphite paint is a better preservative for use upon steel timbering than is red-lead paint.

By Fusing Iron with Its Silicide a Metal Is Made Resisting Corrosion and Erosion

FOR many years mine managers have been seeking a metal that will resist corrosion and erosion. A metal has been found which has those qualities in a marked degree. It contains approximately 69 per cent silicide of iron (Fe_2Si) and 29 per cent of iron with small percentages of manganese, sulphur, carbon and phosphorus present as impurities. It is known as Duriron.

It was not developed for mine use but for handling chemicals and has so far had little use at coal mines. The Brazil Collieries Co. has been using a pump liner of this metal and has found that where a bronze lining would last two months and, indeed, even less, a Duriron liner gave excellent service for two years before it needed replacement. The old mine of this company had extremely corrosive water, the drippings from the slate of the roof being full of free acid. It was so bad that common black pipe lasted only two or three weeks in this class of service. Duriron pipe would have saved this loss, but, unfortunately for the industry, it was not tried.

It has been known for many years that an iron of high silicon content possesses remarkable properties of acid resistance, but extreme difficulties in commercial production limited its manufacture until a few years ago. About ten years ago an English firm attained excellent results with such a metal, known as Tantiron. This became widely used in Great Britain before the war and to some extent in the United States.

Naturally some Americans saw the possibilities in the manufacture of a similar alloy and their experiments resulted in the organization, in 1912, of the present Duriron Co., at Dayton, Ohio, for the manufacture of the metal Duriron. However, it was only after hundreds of experimental heats and mixtures that the preferable constitution for the product to be termed Duriron was attained. Tantiron at that time, it may be said, had a silicon content of about 11 per cent and nearly 2 per cent of manganese.

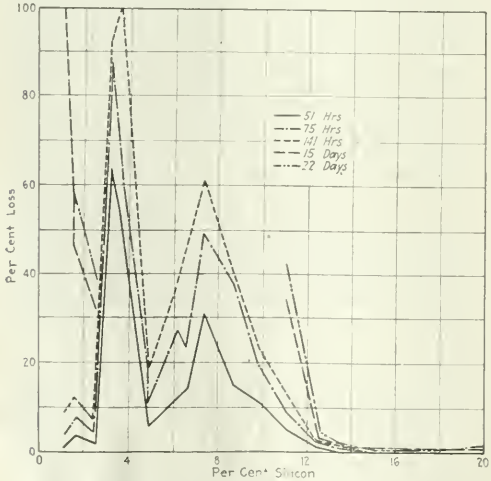


FIG. 1. GRAPH SHOWING ACTION OF 10 PER CENT SULPHURIC ACID ON IRON-SILICON ALLOYS

By rightly proportioning the silicon a metal highly resistant to the action of sulphuric acid is obtained. The graph shows clearly the value of high silicon.

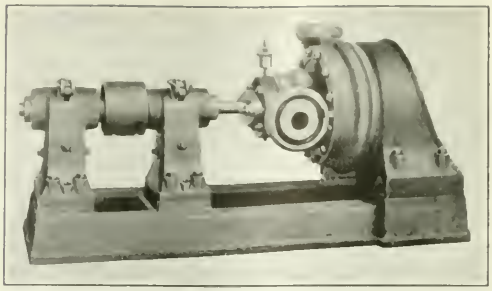


FIG. 2. MOTOR-DRIVEN DURIRON CENTRIFUGAL PUMP

The base is specially designed for direct connection to any type of motor. It runs at a speed of 1,760 r.p.m.

As most acids rapidly destroy iron and affect iron silicide only slightly, it may readily be seen that their action on equipment made of this silicide would be negligible and entirely uniform. This compound, however, is not commercially practicable because it is extremely hard and brittle. Any other metal added to soften or toughen it opens it again to attack by acids. To date the best combination seems to be the formula mentioned above.

Tests by the U. S. Bureau of Standards on Duriron are given in Table I. They show that the amount of corrosion caused by sulphuric, nitric, hydrochloric, acetic, phosphoric, oxalic, picric, oleic and pyrogallic acids and by aluminum potassium sulphate, copper sulphate, ammonium chloride, ferric chloride and bromine is alike relatively small, bromine and hydrochloric acid being least resisted. The test was made cold and lasted 120 days, but concentrations were used for the pickling of Duriron far stronger than are found in mine waters. The reader will note that in the case of sulphuric acid 95, 25 and 10 per cent of acid were used. Yet the loss was small. The temperature ranged from 59 deg. to 68 deg. F.

TABLE I—CORROSION OF DURIRON IN SULPHURIC ACID

Concentration of Acid by Weight, Per Cent	Per Cent Loss	Depth of Corrosion, Inches per Year
95	0.007	0.0000206
25	0.016	0.0000463
10	0.025	0.0000685

As the corrosion increased as the quantity of acid decreased it would seem desirable to extend the experiments further so as to see at what point a reverse condition would take place, such as is found with hydrochloric acid and less certainly with nitric and phosphoric acids. As is well known, some extremely concentrated solutions are less active in the corrosion of certain metals than those which are not so strong, whereas further dilution reduces the activity considerably.

In addition to extreme resistance to the action of sulphuric acid shown by the above table, Duriron possesses such hardness that it is almost proof against erosion or abrasion. All machining operations must be performed by grinding with specially made abrasive wheels. The most difficult part of the production of such an alloy is not in obtaining the proper chemical combination to give resistance to corrosion, but lies in the development of foundry technique which will overcome the difficulties of producing the metal in standard commercial forms. The earlier years of American manufacture were devoted to gaining such knowledge, with the result that an ample supply of efficient apparatus for the manufacture

of explosives and lethal gases was available to meet the call of the government when the United States entered the war.

Besides the difficulty of manufacturing Duriron in commercial forms it has been a problem to evolve such standard designs as would meet the usual needs of manufacturers or users of corrosives. This, of course, allows production at lower price than if each problem were met by a special design and casting. Many difficulties which seemed at first to be insurmountable have been overcome and additional progress is constantly being made.

The ready adaptability of Duriron makes easy the procuring of special forms of apparatus, though great ingenuity in design often is required to overcome the handicaps imposed by the peculiarities of the metal, such as high coefficient of expansion, extreme hardness and lack of machining quality.

Fig. 1, taken from a paper read by O. L. Kowalka, appearing in the Transactions of the American Electro-Chemical Society, Vol. 31, 1917, pages 205 to 212, shows how the percentage of loss in 10 per cent sulphuric acid depends on the percentage of silicon in the iron. The minimum loss is sustained where the percentage lies between 14 and 15 per cent. Duriron used roughly the former percentage. Note how adding about 3.5 per cent of silicon gives poor results, 5 per cent much better, 7.5 per cent results not so good, the best results being where 14 per cent and over are used.

Duriron castings are made up to nine tons in weight. Single-stage centrifugal pumps with 2-in. and 3-in. suction are already being manufactured by the Duriron Co., Inc., of Findlay St., Dayton, Ohio. They are so constructed that the packing cannot be touched by the corrosive water, as the suction is always under vacuum while the pumps operate.

Anti-Friction Belt Bearings Save Power, Making Longer Belts Permissible

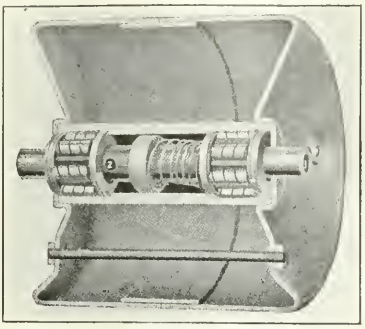
EVERYONE knows that rolling friction is vastly less than sliding friction and that ball and roller bearings consume only a fraction of the power that plain bearings require. Many modern machines would be well nigh impossible were it not for this fact. Perhaps the best known example of a machine of this kind is the automobile. Here both ball and roller bearings are used to carry the weight of the machine, and to reduce friction in various parts of the driving mechanism.

Substitution of anti-friction bearings for those of older and less efficient type may sometimes be profitably made in machines of a design whose usefulness has been long established. At least most mining men are familiar with the way in which the roller bearing has increased the efficiency and flexibility of even such a crude device as the ordinary mine car. As time goes on this type of bearing is being adapted to other kinds of equipment.

One of the latest of these adaptations is to the troughing idlers of belt conveyors. The Stearns Conveyor Co., of Cleveland, Ohio, uses either plain babbitt, Hyatt roller or ball bearings upon the idlers of its conveyors. The accompanying illustration shows one of these idler pulleys fitted with roller bearings.

This pulley is of somewhat unusual construction. It consists of two cold-drawn sheet-steel cups held together by three through bolts. The two cups are maintained in exact alignment by an internal circular sheet or cylinder welded inside of one cup and projecting beyond its mouth. This telescopes into the mating cup, holding the two firmly in line.

Ball, roller or plain bearings are provided, turning on a hollow and, in the case of the roller bearings, a hardened and ground steel shaft. Encircling this shaft and lying within a sleeve extending between the two bearings is a helical steel spring. At one end this rests against a bearing while the other bears upon a cupped



ROLLER BEARING NOW APPLIED TO BELT CONVEYOR EQUIPMENT

The grease gun is applied at *1* and the grease passes through the shaft and out at *2*. Here it fills up the chamber around the shaft and, pushing back a sliding piston, enlarges the space to be occupied. A helical spring which resists this motion keeps the grease in continual compression.

washer fitting fairly close upon both sleeve and shaft yet free to move endwise within the one and upon the other. A hole is drilled from the outside to the interior of the shaft just beyond the position of the washer when the spring is relaxed.

It will be seen from the above description that grease under the action of a suitable gun may be forced into the space between the shaft, the sleeve, the bearing and the spring-actuated washer, thus forming a reserve supply capable of lasting under ordinary service for a year or more. These rollers should be greased, however, once every six months, thus making it absolutely certain that they will not run dry.

Tests conducted upon troughing idlers provided with ball or roller bearings of this type show some interesting results. It has been found in comparing roller with plain bearings—as stated above, this firm makes both—that the roller bearing requires only about one-half as much power to operate as does the one fitted with plain babbitt journals. This is an important consideration to bear in mind when selecting a conveyor belt.

Suppose, for instance, that an installation is to be made for moving coal horizontally over a distance such that if the conveyor is built in one section and the idlers are fitted with plain bearings the pull upon the belt would be destructive. In such a case a second section with its separate and independent drive would be necessary. With roller bearings, however, the entire distance could be covered with one section of conveyor, thus not only decreasing the cost of installation but entirely obviating the degradation resulting from the transference of the coal from one belt conveyor to another. Furthermore, with a short conveyor a lighter belt may be used or the same belt will give longer service.

Problems of Operating Men

Edited by James T. Beard

Wiring a Mine for Locomotive Haulage

Scheme to Reduce Amount of Equipment and Cost of Installation — Use 20-Ton Locomotive on 5 Per Cent Grade and Two 8-Ton Locomotives on Level Haul, in Place of Six 8-Ton Machines Over Entire Haul

MY attention was attracted to the very complete and well worked out answer to a question asked at the last Mine Inspectors' examination at Pittsburgh, Pa., *Coal Age*, Sept. 8, p. 384, relative to wiring a certain shaft mine for haulage and machines. We have since been analyzing this question and desire to submit the following scheme, which requires less equipment and is more economical.

While it is true that mine locomotives have a rated speed of 8 mi. per hr., at full load, it hardly seems wise to take this as an average running speed for an 8-hr. day. Numerous delays due to lack of cars, derailments and accidents of various kinds are bound to occur in the operation of a mine. For that reason, we would suggest estimating on an average speed of 6 mi. per hr., on the main haulage road.

Again, it is stated that sanding the rails will give an adhesion of 30 per cent of the weight of the locomotive resting on the drivers. As in the reply given, we will assume that the 5 per cent grade is against the loads and occurs between the shaft bottom and the first parting. This grade is but a short distance (1,760 ft.), a fraction of the total haul.

While it is true that, for a short distance, a locomotive can safely exert a 30 per cent pull, it has occurred to us that it would be more economical to use a heavier locomotive on this section of the road and employ much lighter locomotives on the level haul, instead of making each locomotive haul the entire distance, when it would only work to its full capacity on the grade.

On this basis we have made the following calculation, assuming a speed of hauling of 6 mi. per hr. Referring to the accompanying sketch, the 20-ton locomotive, hauling on the grade between *A* and *B*, a distance of 1,760 ft., or $\frac{1}{3}$ mile (round trip $\frac{2}{3}$ mi.), will make $6 \div \frac{2}{3} = 9$ round trips per hour, or $9 \times 8 = 72$ round trips in an 8-hr. day.

To be more conservative, we will estimate on this locomotive making 70 trips a day. But the daily output is 2,500 tons of coal and adding 40 per cent for the weight of the cars, the total weight hauled in a day is 3,500 tons; or $3,500 \div 70 = 50$ tons per trip.

Taking the track resistance as before, 30 lb. per ton, or $1\frac{1}{2}$ per cent, and adding 5 per cent for the grade, makes a total of $6\frac{1}{2}$ per cent of the weight of the cars, or $0.065 \times 50 = 3\frac{1}{4}$ tons, or 6,500 lb., which is the drawbar pull when hauling up this grade.

Again, we may take the gross tractive effort of this 20-ton locomotive as 25 per cent of its weight, or $0.25 \times 20 \times 2,000 = 10,000$ lb. But from this must be subtracted 5 per cent for grade and 1 per cent for internal resistance, making 6 per cent, or $0.06 \times 40,000 = 2,400$ lb. resistance, leaving a net tractive effort of $10,000 - 2,400 = 7,600$ lb., which is amply large.

The total length of haul being 2 miles and that of the grade but $\frac{1}{3}$ mile, makes the length of level haul $1\frac{2}{3}$ miles (round trip $3\frac{1}{3}$ mi.) At a speed of 6 mi. per hr., a single locomotive will travel $6 \times 8 = 48$ mi. in an 8-hr. day and be able to make $48 \div 3\frac{1}{3} = 14.4$, say 14 round trips a day.

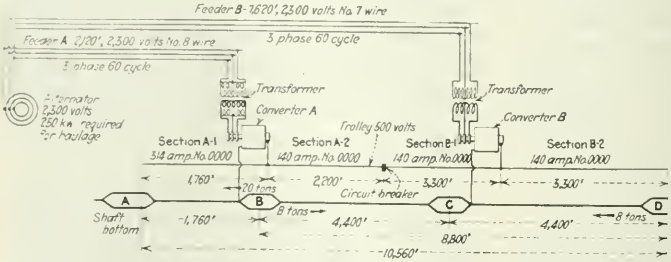


DIAGRAM SHOWING PROPOSED POWER TRANSMISSION ON A 2-MILE HAUL UNDERGROUND

Estimating the total weight of coal and cars hauled, per day, as 3,500 tons gives $3,500 \div 14 = 250$ tons per trip, which is too great a load for a single trip, such a trip being awkward to handle and requiring long partings. We will therefore use two locomotives on the level haul, each pulling a trip of 125 tons (250,000 lb.). Again, taking the track resistance as 30 lb. per ton, or $1\frac{1}{2}$ per cent, gives a drawbar pull of $0.015 \times 250,000 = 3,750$ lb.

As before, we will assume a gross tractive effort of 25 per cent of the weight of the locomotive, or $0.25 \times 8 \times 2,000 = 4,000$ lb. Then deducting 1 per cent for internal resistance, or $0.01 \times 16,000 = 160$ lb. gives a drawbar pull of $4,000 - 160 = 3,840$ lb., which is also amply large. These results show that one 20-ton locomotive operating on the grade and two 8-ton locomotives on the level haul will suffice.

Arrangement of the Schedule

Referring to the figure, the schedule will be so arranged that, while one 8-ton locomotive hauls a loaded trip from *D* to *B*, the other small locomotive will haul an empty trip from *B* to *D*, passing the first at *C*. At the same time, the 20-ton locomotive is hauling smaller trips from *B* to *A*.

Assuming that the two 8-ton locomotives are installed at a cost of $5,000 each and the 20-ton locomotive at a cost of $8,000, the total cost for these machines is $18,000, as compared to six 10-ton machines, at a cost of $36,000, a saving of $18,000 on this item alone. Using two men on a machine, the operating force is reduced from twelve to six men, at a saving of about $40 per day, or $10,000, per 250-day year. Also, in place of seven partings, there will be but four.

To determine the wiring, we must estimate the current required for hauling a loaded trip up the 5 per cent grade and a loaded and an empty trip, respectively, on the level haul.

The haul up the grade we estimated previously as requiring a drawbar pull of 6,500 lb., while the total resistance of the locomotive was 2,400 lb., making a total of 8,900 lb. We estimated the loaded trip on the level to require a drawbar pull of 3,750 lb. and the locomotive resistance was 160 lb., making a total of 3,910 lb. For the empty trip on the level, these items were: drawbar pull 1,500; locomotive resistance 160 lb., making 1,660 lb.

Hauling on the level, the two locomotives are working at less than full load and the speed will be greater, say 10 mi. per hr., which will give a

large allowance for delays from any cause. Multiplying these several tractive efforts in pounds, by the speed of hauling, in feet per minute, and that product by 0.746 and dividing the result by 33,000 and again by the efficiency of the motor gives for the wattage required, in each respective case, the following: Upgrade haul 157,000 watts; hauling loaded trip on level, 70,000 watts; hauling empty trip on level, 37,000 watts.

As shown in the figure, one converter is located at *A* and a second at a distance of 5,500 ft. away, or 1,100 ft. inby from *C*. Allowing 360 ft. for extending the conductor, from the generator in the power house, down the 300-ft. shaft to the bottom, makes the length of the feeder *A*, 2,120 ft. long.

Maximum Condition in Section A

The maximum condition in Section *A*-1 occurs when the 20-ton locomotive reaches the top of the incline, in hauling a loaded trip. Assuming a 500-volt circuit the current required, at this point, is 157,000 ÷ 500 = 314 amp. The voltage drop in the rails is about 4 volts. The drop in a 0000-wire is 0.0497 volts, per ampere, per 1,000 ft., making a total of 1.76 × 314 × 0.0497 = 27 volts. This makes a total of 27 + 4 = 31 volts drop, which is not excessive.

At the same time, an 8-ton locomotive hauling a loaded trip may enter Section *A*-2, at a distance of 2,200 ft. from the converter. The current required by this locomotive is 70,000 ÷ 500 = 140 amp. An 00-wire would give a drop of 27 volts; but, since the remaining circuit requires 0000-wire, we will use that wire throughout the level haul, for the sake of uniformity.

Maximum Condition in Section B

At Section *B*, the maximum condition will occur when the loaded locomotive approaches the circuit breaker; or when it leaves the inby parting *D*. The current is 140 amp. an the drop at that point 27 volt. The same calculation serves for both branches of Section *B*.

The maximum power required in Section *A* is 157,000 + 70,000 = 227,000, say 230,000 watts, including the inefficiency of the converter. At 100 per cent power-factor, the area of feeder wire for this section is, assuming a three-phase system of wiring

$$A. = \frac{2{,}120 \times 230{,}000 \times 1{,}080}{10 \times 2{,}000 \times 2{,}000} =$$

13,164 *circ. mils.*

A No.-8 wire, having an area of 16,510 circ. mils will be used. By the same formula a No.-7 wire is found to be sufficient for Feeder *B*.

A comparison of this arrangement with the one previously outlined shows both the initial cost of the haulage unit and the power required, materially less, while the trolley wire installation is somewhat higher. However, the difference will be greatly in favor of the new arrangement.

Charles M. Schloss.

Denver, Colo.

Bent Links in Car Hitchings

Delay caused in gathering trips when car links are bent—How the links come to be bent—Trouble and possible injury in coupling cars.

FOR some time past I have been reading many suggestions by contributors, regarding the more complete extraction of coal, more efficient methods of haulage and other matters in which the operation of mines can be improved. Different writers have told how much time is lost in handling the coal from the face to the tipple. Others have spoken of ways in which time could be gained. I have seen no mention, however, of one thing that has always appealed to me as a chief source of trouble or loss of time, in haulage, in the mine.

All who are familiar with the coupling of cars, in making up trips where the common link-and-pin hitching is in use, cannot fail to appreciate what I have to say in regard to crooked or bent links being a great hindrance in the work. This form of hitching is the one commonly used in coal mines and is far superior to the three links and two clevices sometimes employed.

Bent Links the Cause of Much Ill Temper and Injury

As we all know, car links are bent by reason of their hanging low and not functioning properly when the cars are bumped together by a motorman, in making up a trip. The result is that the oncoming car rides the link that is hanging down, bending it and jamming the bumpers together.

It frequently happens that when the cars are pulled apart the forward car is derailed by falling to one side. This causes serious delay in putting the car again on the track and is almost certain to cause a rise in temperature among the train crew. Each time it happens the links are bent more and more and it becomes extremely difficult to make the coupling.

Many a "snapper" has had his hand crushed when attempting to make a coupling with a bent link. Of course, it will be understood that I am now speaking only of cars having center bumpers and using the link-and-pin hitching. It is a mystery to me that more tripriders and snappers have not been crippled in this way.

At times, a coupling link is bent when dumping a car of rock, at the surface, and attaching a chain to the link to hold the car from going over the dump. The chain should be attached in some other way, as the link is almost sure to be bent by the jerk of the heavy car on the chain.

Proposed Remedy Expensive

Some will say, "Take all links off when they are bent and send them to the shop to have the blacksmith straighten them. This would be an expense that would cause a howl when the cost-sheet is turned into the office. To straighten the links of three or four hundred cars, in daily use in the mine, would keep one blacksmith busy and we must look elsewhere for a remedy.

It seems to me, that some means should be employed to avoid links being bent, in the coupling of cars, when making up trips in the mine. It may be possible to design a bumper in a way that will hold the link up, instead of permitting it to hang down. If this can be done in a manner that is simple and inexpensive it will be the means of avoiding much loss of time in the making up of trips, to say nothing of avoiding accidents to tripriders or snappers, who must make the coupling. I hope that some of our practical men can offer suggestions along this line that will eliminate the trouble.

Mayport, Pa. James Thompson.

Better Mining and Marketing

Efforts to stabilize coal prices hopeless, until a more constructive agreement is reached between operators and miners—Excessive overhead charges when mines lie idle—High cost of production the result—How long will the public pay these high prices?

NOT LONG AGO, there appeared in *Coal Age* (Sept. 1, p. 325), an editorial entitled "Coal Industry Lags in Merchandising Knowledge," which drew attention to one important factor operating to produce the present high prices of coal.

I recall reading the editorial with deep interest at the time, and am now reminded of it by a second appearing in the issue, Oct. 13, p. 565, entitled "Better Mining and Marketing" and giving a more hopeful outlook for the future of the industry.

The numerous conventions and conferences, held within the past few months for the purpose of discussing coal problems with a view to stabilizing the price of fuel, have succeeded in establishing one fact in the public mind; namely, the industrial wheels have been spragged heavily, by the lack of co-ordination between the operating and the merchandising ends of the industry.

Constructive Plan Needed

To the suffering public it would seem that, unless a more constructive plan is forthcoming within the next few months, the people will call upon their legislators to take a hand in this merry warfare and put both parties to the controversy out of business. In the minds of many intelligent men interested in the coal business, government ownership of mines is becoming each day, more clearly the only solution.

The city of Windom, Minn., today, is burning coal, at 25c. a bu., under her power-plant boilers. In Iowa and Nebraska, farmers are burning corn in their houses instead of coal. In one instance, I am informed a farmer contracted his surplus of corn, at $5.40 a ton, to another party for use as fuel. When corn, at this price, can compete with coal, at $11.50 per ton, it would

seem that the situation is serious enough to require investigation.

Briefly stated, coal operators, with few exceptions, are not running their business to serve the public. The people are anxiously watching as the supply of coal goes down and the price gets higher and higher. While the public are paying from $8 to $15 a ton for their coal, the miner is receiving practically the same wages. The benefit of the overcharge appears to be swallowed up in the overhead expenses.

Study the Situation

Is it a fact that there are too many mines and too many miners? The army of underground workers has increased until it numbers, today, 600,000 men who are digging coal or performing other work in the mines. Studying the facts, in the light of the contention of the miners that what they want is steady work and the further fact that our mines are running but one or two days a week, makes it appear that there is great need of constructive coordination in the industry.

Naturally, the miner will resist any attempt to reduce his wages, as long as there is so little hope of his obtaining steady work. In this locality alone, within a radius of 5 miles, there are five mines, with an average capacity of 4,000 tons per day, or a total output of 20,000 tons of coal mined here in a single day. Each mine employs, on an average, 600 men, making a total of 3,000 mine workers.

At still another mine, 250 men are putting out 1,500 tons of coal a day. This mine, however, shut down, last Spring, for an indefinite time. All of the mines I have mentioned are fully equipped wth modern appliances, having been in operation from eighteen to twenty years.

Many Idle Days at the Mines

Last January, work in the mines began to slacken and reached the low ebb in April, since which time the mines have been operating one or, at the most, two days a week. In that time, one mine ran 59 days and another 40 days, the latter having been closed for the past two months, on the plea of making repairs. The other three mines in this district work but little better than the two just mentioned.

Many of the miners here own their own homes and are largely dependent on their labor in the mine. It requires no high mathematics to convince any one that when a mine lies idle for a day or more, the overhead charges still continue and the cost of production is increased. Certainly something should be done to equalize the work and eliminate these idle days.

It would seem that one great need of the coal industry, today, is to combine the various sales departments of different companies into one so-called syndicate, who would be charged with making an equable distribution of the coal mined, with a view to keeping the mines running on full time.

Staunton, Ill. PLAYFAIR.

To Mine Large Coal

Points to consider in mining large coal —Drive rooms on face of the coal— In solid shooting, use permissible powder, tamped with clay—In machine mining, drill no hole beyond cutting and avoid excessive charge of powder.

HAVING read with interest the excellent letter of George Edwards, in regard to securing a larger percentage of lump coal, *Coal Age*, Oct. 13, p. 586, kindly permit me to offer a few suggestions from my own experience, in this regard, both in solid shooting and machine work.

In the first place, I have found it of great advantage to advance the rooms on the face cleats of the coal, driving the productive entries on the butts and turning the rooms at right angles to them. When this plan is followed the coal invariably breaks in larger lumps than when the rooms are advanced on the ends of the coal. I regard this as an important point.

Again, the location of the shots and the charging and tamping of holes is important. At least two old experienced miners should be authorized to inspect all holes and give needed instructions to the younger miners, insisting on all holes being tamped with clay to obtain the best results.

In machine mining, no holes should be drilled deeper than the cutting and all shots should be carefully inspected before permission is given to fire. Both in solid shooting and in machine work, care must be taken to avoid excessive charges and only permissible powder must be used.

In my experience, much of the trouble, in mining small coal, comes from the fact that so many miners now working in the mines have had little experience and know partically nothing as to what is required to gain a larger percentage of lump. Also, many of the older miners have grown careless in this regard since the adoption of the run-of-mine basis of payment.

Crawford, Tenn. OSCAR H. JONES.

Inquiries Of General Interest

Load on Knuckle Sheave, Hoisting on Incline

Load on Haulage Rope Calculated from Track and Grade Resistances of Loaded Trip—Load on Knuckle Sheave the Resultant of Parallelogram of Forces

TO settle a dispute that has arisen between two men, regarding the load on a knuckle sheave when hoisting a trip of five cars up an incline, on a grade of 22½ per cent, I am submitting the question to *Coal Age* for solution.

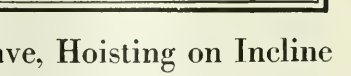
The sheave at the knuckle is 42 in. in diameter and a 1-in. steel haulage rope passing over it hoists and lowers the trips. Five cars are hoisted at a time, each car weighing 1,100 lb. empty and carrying 2,500 lb. of coal. The entire weight of a loaded trip is, therefore, 5(1,100 + 2,500) ÷ 2,000 = 9 tons. Assuming that the trip has reached a point 100 ft. below the knuckle, it is desired to know the load bearing on the sheave wheel at the knuckle. S. D. HAINLEY.

Osceola Mills, Pa.

In solving this problem, we will assume a track resistance of, say 30 lb., per ton of moving load. As usual, the grade resistance is taken as 20 lb., per ton of load, for each per cent of grade. This being a fairly steep incline, however, both the track and grade resistances must be estimated on the normal pressure due to the weight resting on the incline.

A 22½ per cent grade corresponds to an angle of inclination whose tangent is 0.225, or an angle of 12 deg. 40 min. The normal pressure on this plane is, therefore, 9 × cos 12° 40′ = 9 × 0.97566 = 8.78 tons.

For a grade of 22½ per cent, allowing 20 lb., per ton, for each per cent of grade, the grade resistance is 20 × 22.5 = 450 lb. per ton. Adding to this



the 30 lb. per ton, for track resistance, gives a total resistance of 480 lb., per ton of moving load estimated on the normal pressure on the incline.

Finally, then the load on the rope due to both the track and grade resistance is 8.78 × 480 = 4,214 lb.

From the parallelogram of forces formed by the two branches of the rope passing over the sheave, each carrying a load of 4,214 lb., the load on the sheave, represented by the diagonal of the parallelogram, or the resultant of the two forces, is 2 × 4,214 × sin ½(12° 40′) = 8,428 × sin. 6° 20′ = 8,428 × 0.11031 = 930 lb., nearly, which is the load on the sheave at the knuckle. In this solution, we have ignored the weight of the rope 100 ft. in length, which is comparatively so small as to be inappreciable.

Examination Questions Answered

Tennessee Mine Foremen's Examination, Held at Knoxville, Oct. 18, 1921

(*Selected Questions*)

QUESTION — *Why does firedamp explode in a safety lamp, without causing an explosion of the gas by which the lamp is surrounded?*

ANSWER—A firedamp mixture, surrounding a good safety lamp, may become highly explosive before slight explosions will be observed to occur within the lamp. Previous to that, the only observed effect is the enlargement and agitation of the wick flame in the lamp, followed by a sharp crackling sound. The gas entering the lamp must be quite "sharp" and reach the maximum explosive point, before any explosion can take place in the lamp. Then, only slight balloons of flame will form and explode in the lamp.

The reason is that the condition within the lamp is modified and rendered less explosive by the admixture of burnt air consisting of variable portions of nitrogen and carbon dioxide. Owing to the presence of these extinctive gases, an explosion within the lamp must be very violent before it will have sufficient force to drive the flame through the gauze of a good lamp and ignite the gas outside.

QUESTION—*Are there any conditions under which it would be unsafe to use a safety lamp? If so, name them.*

ANSWER—Yes. A safety lamp is never safe except when handled by an experienced man who understands all the conditions that must be observed to insure safety. A lamp is never safe when exposed to a strong air current or rush of air, or when exposed for too long a time to a firedamp mixture surrounding it, or when defective in any way, due to the gauze being injured or the lamp improperly assembled. The lamp is not safe if it is tilted so as to permit the flame to impinge against the glass or the wire gauze, or if permitted to fall. It must be kept clean and carefully examined previous to use.

QUESTION—*What effect would carbon dioxide have on marsh gas when these are mixed together?*

ANSWER—Carbon dioxide being an extinctive gas produces a depressing effect on the inflammable or explosive condition of marsh gas. If carbon dioxide is added to a mixture of marsh gas and air at its most explosve point, in the proportion of one volume of carbon dioxide to seven volumes of the firedamp mixture, it has the effect of rendering the mixture non-explosive.

QUESTION—*What percentage of firedamp do you consider the most dangerous; and what gases enter into the composition of firedamp and in what proportion?*

ANSWER—A mixture of pure methane and air (firedamp) containing more than 9½ per cent of gas; or, in other words, above its maximum explosive point, is more dangerous in a mine than a mixture below the maximum explosive point. The reason is that any addition of air to the former, which is liable to happen in the mine at any time, will make it more explosive, while addition of air to the latter makes it less explosive. The most violent explosion occurs when the mixture contains 9½ per cent of gas.

The term firedamp, in this country, refers to any inflammable or explosive mixture of air and gas. Commonly speaking, it is a mixture of pure methane and air, in any proportion between the lower and higher inflammable limits. At the lower limit, the mixture consists of one volume of gas to forty volumes of air, while the proportion of gas to air, at the higher inflammable limit is 1:2.4. The former contains 2.5 and the latter 29.5 per cent of the gas. Any mixture lying between these two limits is either inflammable or explosive and is properly termed "firedamp."

QUESTION—*What noxious gases are produced by fires and explosions of firedamp, in mines?*

ANSWER—The chief gaseous products of fires or explosions of gas, in mines, are carbon dioxide and carbon monoxide, the proportion of the two gases produced being dependent on the quantity of air present at the time, which determines whether the combustion is complete or only partial. A plentiful supply of air insures complete combustion and carbon dioxide only is produced. On the other hand, if the supply of air is limited, the combustion is not complete and some carbon monoxide results.

QUESTION — *State your views as to the cause of explosions and what precautions you would adopt to prevent them?*

ANSWER—The primary cause of a mine explosion is the ignition of gas or dust, mixed with air in such volume and proportion as to produce a sudden and violent combustion. Whenever undue accumulations of gas or dust are permitted in the mine and there is danger of these being ignited, by the flame of a shot or a lamp or the sparking of wires, an explosion is imminent.

In order to avoid the danger of an explosion of gas or dust, strict rules and regulations must be made and enforced, in respect to the examination of all working places at regular intervals. No accumulations of dust must be permitted at the working face or on the roadways; and, if necessary, these must be cleaned and sprinkled at regular intervals. If the mine is generating gas, all holes should be examined, charged and fired by competent shotfirers. Special attention must be given to the ventilation of the mine and safety inspectors should be employed to examine all working places, at brief intervals throughout the day, while the men are at work.

QUESTION—*Would you consider a dusty mine dangerous though not generating gas?*

ANSWER—Yes; if not properly inspected and managed, a dusty mine is dangerous, even though free from gas. The fine dust of an inflammable coal, thrown into the air by a blowout shot and ignited by the flame projected into the dust cloud, will start an explosion that may be propagated throughout the mine.

QUESTION—*Explain the principle of explosion doors, in connection with the ventilating apparatus of Class-A mines.*

ANSWER—The purpose of explosion doors in mines generating gas and specified as "Class-A Mines," in the Tennessee law, is to relieve the pressure due to a possible explosion and thus prevent the damage that would otherwise be done by the blast. In the majority of cases, where explosion doors are not provided in the fan drift, for the protection of the fan in case of an explosion, not only the drift leading to the fan but the fan itself will generally be destroyed. The blowing open of the explosion doors prevents this destruction.

Question—Upon entering a mine in the morning, you find it generating gas; how would you make your inspection, with the air or against it?

ANSWER—The only safe way to inspect a mine that is generating gas is to proceed with the air. By so doing, the fireboss has a safe retreat open to him, at all times, and is not in danger of being surrounded by the gas provided he takes the necessary precautions to avoid such an occurrence. On the other hand, when advancing against the air the fireboss is liable to be trapped, there being no way of escape open to him when he reaches the gas.

QUESTION—*Should a fireboss report dangerous conditions owing to gas and dust in a portion of the mine, what precautions should the mine foreman take to safeguard the employees?*

ANSWER—Much will depend on the conditions that exist in the mine. The duty of the foreman, when informed of a dangerous condition existing in a certain section of the mine, is to promptly withdraw the men from that section and, if necessary, from the entire mine, before taking any steps to remove the danger. In performing that work, employ only experienced men.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

THERE are multiplying evidences that domestic business has "turned the corner" and is gradually but surely emerging from the deflation period that began about the middle of last year, according to the current issue of *The Guaranty Survey*, the monthly review of business and financial conditions issued by the Guaranty Trust Co. of New York. Two outstanding indications of the improvement are cheaper money, with its concomitant easier credit, and the more or less widespread industrial revival.

"A building boom is sweeping the country," the *Survey* continues. "There is decided betterment in the textile trades and the shoe and leather industries report progress. Our surplus copper is gradually being marketed at prices that tend upward. There is increased output of iron and steel, and the railroads are coming back into the market. Business failures are less numerous. Unemployment generally is decreasing, and savings are increasing.

"The banks of the country have been able, since the establishment of the Federal Reserve System, to aid in effecting a more orderly general readjustment of industry following a period of inflation than was possible so long as our banking system remained extremely decentralized. Such service, particularly in the last year and a quarter, has been of incalculable benefit to the nation's business. But the avoidance of a general collapse of credit, such as was repeatedly experienced before the organization of the Federal Reserve System, has necessarily tended to prolong the period of readjustment.

"Meanwhile, through the gradual liquidation and utilization of accumulated stocks of commodities, the way has been prepared in a number of industries for an increased volume of production for current consumption. The check to the downward course of general prices in this country and abroad has lessened the incentive to defer contemplated purchases, and this condition supplements the depletion of hold-over stocks in creating an enlarged demand for current production.

"How prolonged will be the period required for the complete resumption of the country's business activity on a normal scale must depend in considerable degree upon the progress of industrial and financial recuperation in other countries which consume American products."

Roads Place Big Equipment Orders

Equipment and rail orders awarded by the leading railroads of the country during the last month or so are estimated at $50,000,000, with inquiries now in the market on orders valued at half that amount. Additional orders for 400,000 tons of rails are pending, and steel and equipment manufacturers are expecting a record year in purchases for 1922. Orders are expected to come in speedily as soon as Congress passes the railroad refunding bill, which will greatly assist the roads in financing their requirements.

The Texas & Pacific Railroad Co. is reported to have placed an order for 15,000 tons of steel rails with the United States Steel Corporation for delivery next year.

The American Locomotive Co. has closed a contract for fifteen 145-ton Mikado and ten 158-ton mountain type locomotives for the Seaboard Air Line. It is estimated that the contract calls for the expenditure of about $1,250,000 by the railroad.

Orders for 127 modern steel passenger cars have been placed by the Chicago, Burlington & Quincy R.R., it was announced Nov. 29.

Jersey Mills Reopen

The Argo Mills Co. announced last week that work would be resumed at its Gloucester (N. J.) plant within a few days.

Freight-Car Loadings Gain 33,625

Loading of revenue freight during the week ended Nov. 19 totaled 786,671 cars. This was an increase of 33,625 cars over the week before, when loadings were reduced by the observance of Armistice and Election days. Tabulations show, however, that while the total for the week of Nov. 19 was greater than for the week before the average per day was less. Compared with the corresponding week last year the total for the week of Nov. 19 was a reduction of 102,467 cars, while it was 67,930 cars less than for the corresponding week in 1919.

Harvester Works Back to Normal

That the Springfield (Ohio) works of the International Harvester Co. would resume practically normal operation within a week was announced Dec. 1 by Plant Superintendent Charles Smart. About 700 men will be employed. Increased orders from dealers warrant the action, according to Mr. Smart.

Cotton Mills Work Full Time

For the first time in several months the cotton mills at Fall River, Mass., which are controlled by the Knights Corporation have resumed full-time operation and the management announces that it is looking forward to marked improvement in the cotton industry in the near future.

Less Idleness in Pittsburgh

That unemployment continues to decrease in the Pittsburgh district is indicated by the semi-monthly report of the Pennsylvania Bureau of Labor and Industry, which shows that as of Nov. 15 there were 51,400 men out of work in that district, as compared with 52,400 Nov. 1 and 55,050 on Oct. 15. The report also shows that in the Johnstown district unemployment increased from 7,810 Nov. 1 to 8,985 on Nov. 15. The total number unemployed in the state as of Nov. 15 was 271,430, as compared with 276,350 Nov. 1 and 288,625 Oct. 15.

Blast Furnaces Resume Operations

The Steel & Tube Co. of America, Chicago, according to the *Iron Age*, having completed overhauling and improving its blast furnaces and coke plant at Mayville, Wis., formerly known as the Northwestern Iron Co., expected to resume operations Dec. 1 with a normal force.

Willys-Overland Sales Still Good

The Willys-Overland Co. at Toledo reports but slight cessation of selling activities with the advent of winter. The good business of the autumn is still continuing and the prospects for the new year are exceptionally bright.

Competitive Costs and Marketing Methods in the Sale of American Coals Abroad*

Overseas Trade of 1,500,000 Tons Monthly Would Give Employment to Idle Mines and Ships — Reduced Overhead in Mining Industry and Lower Freight Rates to Tidewater Also Likely

By Charles A. Owen

THE average person in the United States must be confused by the complicated and generally unintelligible statistics and statements made and published from time to time of our exports, and more particularly our coal exports. We have been led to believe that the large and profitable export business of the past five years could be expected to continue indefinitely without the careful study of economic conditions both here and abroad and the working out of a broad policy necessary to its permanency.

The coal industry, like all others, has had attracted to it a great number of speculators, whose sole purpose was to make money while the high prices prevailed, without the organization and expense necessary to the building up of a permanent business. The situation here has not been unique, however, as in England, France, Holland, Italy and other European countries the same conditions existed.

The statistics stated will be for bituminous coal only, and as this discussion is limited to overseas trade I shall exclude tonnage exported to Canada, which amounts to approximately fourteen million tons per year, and also tonnage exported to South America, Central America, Mexico and the West Indies, amounting to 3,500,000 tons to 5,500,000 tons annually during the past five years. This business, amounting to a total of approximately eighteen million tons annually, should be retained by us at all costs. (Bunker business amounting to six million to nine million tons annually, which we can expect to retain, is not included in this article). Similar methods of marketing and co-operation by all concerned must obtain for these markets as for the overseas trade.

Coal for export overseas originates generally from the States of Pennsylvania, West Virginia, Maryland, Virginia and Kentucky, as the mines in these states carry the low transportation rates to tidewater. The railroads serving these fields have excellent port facilities for efficient loading of vessels. The present capacity of the railroads and piers is much greater than we will need if the loading demand is fairly evenly distributed throughout the twelve months of the year. These districts produce normally about 280,000,000 tons annually and contain both low-volatile and gas coals of superior quality which can compete favorably with the best coals produced abroad. During the year 1920, when we exported overseas about 20,000,000 tons, we drew from these districts approximately 7½ per cent of the tonnage produced.

American and British Export Trade Compared

A comparison of figures of production and consumption of bituminous coal of the countries comprising our overseas market, exclusive of Great Britain, shows a shortage of production normally of from 35,000,000 to 40,000,000 tons annually. Great Britain is our competitor for this trade. Great Britain's production varied from 287,000,000 tons in 1913 to 240,000,000 tons in 1920, from which was exported from 72,000,000 tons in 1913 to 25,000,000 tons in 1920. Our overseas exports of coal for the same years were from 2,000,000 tons in 1913 to 20,000,000 tons in 1920, and for the seven months ending Aug. 1, 1921, about 8,000,000 tons, of which approximately 2,000,000 tons were shipped to Great Britain during the strike. During the month of September our overseas shipments dropped to 300,000 tons. I have given you these figures to separate our overseas business from the total tonnage exported.

France has been the largest purchaser of coal, consuming an average of over 15,000,000 tons above production. The remainder of the normal demand is mainly in Holland, Norway, Sweden, Russia, Germany, Switzerland, Italy and Mediterranean countries. Europe will not increase its coal production above pre-war figures for a great many years, and I believe that, if handled carefully and intelligently, we can do an overseas export business of from 10,000,000 to 15,000,000 tons annually of American coal. Our ability to retain this trade from year to year will, of course, first depend upon our being able to furnish quality, service and competitive c.i.f. prices.

By furnishing quality we mean good grades of coal, well prepared, screened if so desired, and this quality maintained through shortage of production, giving the same attention to the foreign customer that we are giving to our customers at home, being willing within reasonable limits and tolerances to guarantee our product. There has been a great deal said about the dissatisfaction in Europe with the quality of American coals, but I find that generally the overseas trade which we have supplied like our coals and with comparatively few exceptions are satisfied with the quality of the product we have furnished. We cannot expect our foreign customers when paying railroad and water freights in amount three or four times the value of the coal at the mines to accept an inferior quality of coal. England has always recognized this fact and has given her export business the best grades of coal produced. The overseas market requires a great deal of large or lump coal and our important domestic consumers should be educated to the use of slack coal instead of run-of-mine, stokers being now generally used in our large plants.

Success in Export Trade Dependent on Service

Service is most essential to the success of our overseas trade. Prompt, careful and intelligent handling of cables, orders and letters, accuracy and care in fixing of charters and dispatch in loading are all-important. The foreign buyer is much more particular than the domestic buyer and not inclined to overlook errors or negligence on the part of the supplier. Here the English excel us because most of the exporting houses are old establishments with well-trained employees, familiar with all the details of the shipping and export business and with a definite knowledge of how to please each customer. It must be remembered that few of the producers of coal in this country have had much experience with the laborious but necessary details of the shipping and banking business which are a part of every export shipment. Competitive prices are the most difficult, not so much on account of our production costs but because of the many factors entering into the final c.i.f. cost.

A comparison of mine or transportation costs from available statistics means very little, as all prices are too unbalanced. The mine costs from the Eastern producing districts have varied from an average of about $1 per ton in 1913 to as high as $3.50 per ton in 1920 and are today approximately $2 per ton. Railroad freights are about double the 1913 rates. Ocean freights have dropped from a peak of $30 or more a ton to $5 a ton, and all other charges including profit have varied accordingly. The value of our bituminous coal f.o.b. ports from which shipped, 1913 to 1916, was about $2.50 a ton; in 1919, $4.70 a ton; in 1920, $8 a ton and today it is about $5 a ton. English coal for the year 1913 was valued at 14s., or $3.50, a ton, while during the year 1921 to Aug. 1 the

*An address delivered at the twenty-fourth annual convention of the American Mining Congress, Chicago, Oct. 17-22, 1921.

range of value was from £3 5s., or $12.35, a ton, to an average for the month of August of £1 16s., or $6.85, a ton. These figures show our value at tidewater approximately $2 a ton below the English value, even with the British Government subsidy on labor costs and the practice of the English exporter to make the export price a competitive one at the expense of the domestic consumer.

Costs during the past five years of English coal are exceedingly difficult to obtain and mean little to us. This fact, however, is clear—if England, by subsidy, whether it be by labor, on shipping, or otherwise, delivers its coal at a lower price than cost to the foreign market, then we must either do the same thing or have an arrangement with England by which certain markets will be open to us with clean and fair competition based on actual costs delivered. If this is done we can easily compete successfully for a fair share of the overseas trade, which we need and should enjoy, provided our costs are brought down to a proper level.

Labor, as Usual, the Biggest Item of Cost

Coal costs c.i.f. depend largely on four items of which labor makes up approximately 70 per cent of the total. These are f.o.b. mine cost, railroad freight to tidewater, ocean freight and overhead charges and profit. Labor must be reduced throughout the Eastern districts as soon as possible to the 1917 level or lower, so that total costs f.o.b. mine will be not more than $1.50 to $1.75 per ton. Railroad freight rates should be reduced on coal for export to a maximum of $2 a ton, and while water freights are as low as possible under our present government regulations, our laws should be changed so that our merchant marine, which should be privately owned and managed, can compete under our flag with the ships of other flags. I believe it possible to reduce our rates from 50c. to $1 a ton if restrictions are removed now in effect under the LaFollette law. It is now profitable for us to deliver good grades of steam or gas coal to Mediterranean ports at from $10 to $11 a ton as against English quotations of $9 to $10 a ton.

Let us consider further our English competition. The settlement of the English coal srike in July was accomplished by the granting by the government to the miners of a £10,000,000 subsidy which was to be used for the purpose of paying labor a certain portion of the difference between the wage scale offered by the mine owners and that asked by the mine workers. At the end of three months' operation every mine owner was dissatisfied, the government fund was practically exhausted and the cost of coal to the English consumer was too high. They have, however, regained their export trade and are now shipping to foreign markets three and a half million tons monthly.

Exchange Situation Hampers American Competition

The greatest factor against us in competition for foreign trade is the high value and constant fluctuation of the dollar in exchange. This adds actually almost 20 per cent to our delivered prices. You can, therefore, see that under present conditions it is very difficult for the American exporter of coal to compete with England.

I have great admiration for the English people but it is not clear to me why we should continue to finance England and allow her to use our money for subsidies which have the effect of excluding our coal from the European trade, thus driving our coal-carrying ships from the seas. If subsidies are necessary in order to allow us to compete, let us have subsidies in the form of reduced freight rates, both railroad and ocean. Thus our mines will be given the extra work and our merchant marine, which we should keep at all costs, will operate.

The principles of marketing coal for export are similar to those necessary to successful salesmanship in the domestic market. I am convinced it requires American management and, as far as possible, American salesmen. This necessitates the settling of our young men permanently in the centers of activity, learning to speak the native language fluently, becoming on friendly terms with the business men of the community, and becoming a part of the country. I think it better to have offices rather than agents and do as much business as possible direct with the consumer. This is a slow and tedious undertaking but certainly pays in the long run. Some of our most prominent exporters have followed this plan successfully and American coal offices can be seen in all the principal cities of Europe.

English exporters have a decided advantage on account of the short distance to their European markets and also because of prompt delivery. They can deliver coal to practically all European ports within ten days to two weeks of receipt of order. Our delivery requires about double this time. The chance of fluctuation of exchange or market prices is not so great. Another feature is the matter of small cargoes. Our deliveries are mostly in large vessels in order to get the advantage of low freights. Comparatively few consumers can handle this amount of coal at a time, requiring the splitting of the cargo to two or more customers. The English cargoes are smaller, necessitating less of this undesirable work and added expense. The greatest advantage at present, however, is the friendly status personally of the English manager, who has established himself just as our managers must do. The problem of overseas coal exports is primarily ours, but as its success is of such prime importance to all, our government at Washington should co-operate with us so that the problems that appear from day to day may be worked out with its co-operation. The coal exporter must be encouraged and helped, as the profit he receives will be small compared to the benefit to the country at large.

The banking business of the country must get a better understanding of export business and cease to be merely a collection agency. The information given relative to credits should be more thorough, so that losses will be at a minimum and if credits be extended it must be with their help and co-operation.

Investment in Foreign Enterprises Helpful

The foreign branch of the American banking institution I believe an excellent thing and it is to be hoped that through this influence our people will invest more and more in foreign enterprises. Both Germany and England's strength, both countries having shown what real value exports are to the people of their country, have in the past encouraged investment in the railroads, public utilities and industries of the country with which trade was desired. Their people become a part of the banking, industrial and social life wherever they are and one might say they are trading with their own interests. Financial interest in a project gives the investor a voice in its management and it naturally follows that through an advantage of this sort a great deal of foreign business is done.

It in a way gives to the business men of the investing country the refusal of the business at the competitor's price. This has always been true of the export coal business of the principal industries of South America and governs a great deal of the European business today. As we encourage our industries to bid for foreign trade, investment of our money will naturally follow as our men become established and business will increase rapidly on this foundation. When we think of establishing an additional office in this country for the purpose of increasing our sales, the territory is first worked out carefully so as to be sure of sufficient business of the kind suited to the coals we handle to warrant the expense necessary to a permanent establishment. We next pick the man whom we think is best suited to this territory, and certainly great care is used in this selection, as he is to be the foundation of the business. We then unpretentiously set out doing missionary work, getting acquainted, and during the first year do very little business.

As our manager becomes acquainted we form a banking connection in the city in which the office is located. In time our man becomes a member of the principal club or clubs, learns to know his competitors, the banking and business men of the district in which he has been placed, and at the end of two or three years is firmly established and doing a profitable business. The sale of coal and American products in export trade can be permanently established only by this same method, unless the difficulties to be overcome are greater and the adaptation of our men

to the situation more difficult. The whole problem becomes more complex and several years may elapse before the foreign branch is on a permanently paying basis.

During the year 1918 Congress passed the Webb law, allowing combinations in industry for the purpose of foreign trade. Several combinations have been formed under this law and meetings have been held by those interested in the export of coal upon the call of the export committee of the American Mining Congress. The coal trade failed to work out a satisfactory plan of organization and the matter was dropped. I believe this was a mistake. We should have co-operation either through a combination or pooling of interests or by the establishment of a coal export association composed of all those interested in coal exports. Such an association, with the help of the export committee of this body and the National Coal Association could accomplish great things in the working out of our problems and would be beneficial to all those in the industry, large and small. For the average producer of coal the export business has little interest. If he were to explain this lack of interest he would point to the small percentage of our production involved and the difficulties connected with the business. However, an overseas export of coal of 1,500,000 tons monthly would give employment to approximately 20,000 idle mines and more than one-fourth of our idle ships and would bring to this country in exchange for the labor and service $15,000,000 monthly. Not only would the coal trade benefit directly, but the business of the entire country would be accelerated.

Summing up, we should have:

Reduced wages of mine workers and overhead costs.

Reduced freight rates for coal to tidewater for export.

A definite plan for payment of the Allies' debts to the United States, which would stabilize exchange rates.

A revamping of laws governing shipping, so that ships under our flag could compete unrestrictedly with those of foreign flags.

Co-operation in the coal industry so that problems of the export trade could be presented at all times as a unit.

Immediate action looking to a solution of these problems is necessary if we are to compete successfully in the overseas coal export trade.

N. Y. Interborough Roads Use 770,000 Tons of Coal, at $7.35 Per Ton; B. R. T. Fuel Costs $6.93

SOME INTERESTING information concerning the coal consumed by the Interborough Rapid Transit Co., and the prices paid was elicited from Frank W. Hedley, president of that corporation, during his examination on Nov. 28, by the Transit Commission in its inquiry into the New York transit situation.

Contracts for supplying the 770,000 tons or more of coal required have been made for a number of years with the Consolidation Coal Co., Berwind-White Coal Co. and the Logan Coal Co., but for the past two years, Mr. Hedley said, the full needs of the company have not been contracted for, about 10 per cent of the tonnage required having been bought in the open market. As a result of buying distress coal at various times, Mr. Hedley said, he has been able to purchase at $5.50 a ton coal which sold in New York harbor during the war for $20 a ton.

Mr. Hedley, replying to former Supreme Court Justice Clarence L. Shearn, counsel for the commission, said that the contracts now in force provide for a sliding scale of prices. Regarding this feature Mr. Hedley said:

"The contract that we are running on now from the two large companies—that is, the Consolidation Co. and the Berwind-White Co.—contains a minimum and maximum quantity of coal that we are to take. That is, we must take the minimum and we have the privilege of taking the maximum. That gives the company an opportunity of still continuing to buy spot coal in the harbor here, if it can get coal cheaper than its contract price; and if the coal should go up, then the company has the advantage of calling upon our contractors to furnish the maximum at the contract price."

"But I do not understand the sliding scale yet," said counsel.

"Well, the sliding scale part of it is that the price is fixed per ton—that is, the long ton, 2,240 lbs.—delivered at the pier at each of our power houses."

"That is for a year?"

"Per ton per year, yes; and if the price of labor at the mines goes down—in other words, if the cost of producing the coal out of the mines into the cars is reduced by means of reduction of labor costs—the company gets the entire benefit in the reduction of its price of those labor costs. Should there be any reduction in the freight rates, which I personally feel that we are certainly going to get, the company will get all the advantage in the reduction in the freight rates. If there is any reduction in war tax, the company will also get that. But, on the other hand, if there is any increase of labor, any increase in freight rates, any increase in war tax, the company will have to pay that much more for its coal. I feel that is all in favor of the company getting coal cheaper."

Mr. Hedley said that the contract had been approved by the commission and that the coal companies had agreed that if a concern buying a similar quantity and character of coal should get a better price, his company should have the same advantage. He said that the price for the coming year's contract was $6.95, as compared with $7.70 last year, and that he thought "personally we are going to get a dollar off it within the next year."

The average price of coal for subway and elevated roads during 1921 was $7.35, while during the same period the average cost to the Hudson & Manhattan Co. is $3.82 per ton. Asked to explain the difference in cost Mr. Hedley said the coal for the Hudson & Manhattan Co. is delivered in New Jersey; there are no unloading charges, no pier charges, no lightering charges and no harbor charges. He added, in reply to questions, that "the only way they could possibly have got that $3.82 price was by a long-term contract made prior to the war. There is no contract, I believe, that could have been made by any person, even with Jersey City delivery, for the character of coal that we use at anything like the prices you have mentioned."

"Apparently," said Mr. Shearn, "that was not the result of the long-term contract made before the war, because in 1914 their price was $1.69 a ton; 1915, $1.62; 1916, $1.61; 1917, $2.19; 1918, $3.72; 1919, $3.83 and 1920, $3.58."

Mr. Hedley said the Interborough Co. bought "navy coal" and that if the Hudson & Manhattan Co. bought "the same kind of coal as we buy, I would say that I don't believe the figures you have quoted are correct."

Mr. Hedley was told that the reports showed that the Brooklyn Rapid Transit Co. was paying this year $6.93 per ton for its coal, as compared with $7.35 paid by the Interborough Co., that the average price for the Interborough coal in 1920 was $5.74 and the B.R.T.'s $5.35, and in 1919 the average prices were $5.41 and $4.81, respectively.

"There is no reason that you can think of, is there, why there should be that difference in price?" asked Mr. Shearn.

"No," replied Mr. Hedley; "they get their coal from the Consolidation Co. and from the Berwind-White Co. I don't know whether they get it from anyone else or not."

Continuing Mr. Shearn said:

"Well, it appears that there is this difference year by year as you go back. In 1917 you were paying $3.07 and the B.R.T. was paying $2.55. Well, there is not very much difference there. In 1916, as I say, you were paying $2.93 and the B.R.T. was paying $2.35; in 1915 you were paying $2.90 and the B.R.T. was paying $2.28."

Record Peace-Time Reserves of Coal Disclosed by Survey of Stocks November 1

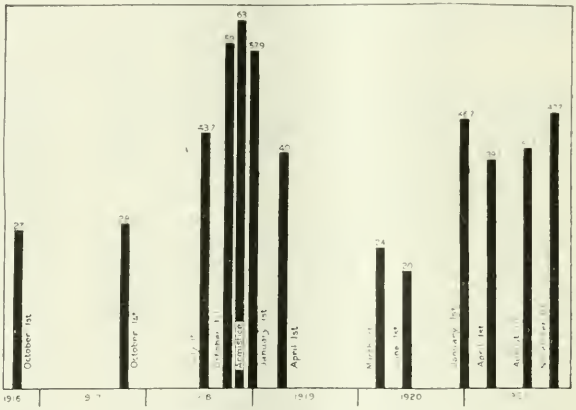
Surplus of Bituminous About 47,000,000 Tons—Decreased Rate of Consumption Makes Number of Days' Supply Unequalled—Utilities Well Fortified—Northwest and New England Have Abundance

STOCKS of bituminous coal in the United States on Nov. 1, 1921, are estimated by the Geological Survey and the Census Bureau, after a joint investigation, at 47,400,000 net tons, sufficient for 43 days' requirements at the average rate of consumption in the three months August to October inclusive. Although the total quantity on hand, exclusive of coal in transit, on Nov. 1 was less by 16,000,000 tons than the 63,000,000 tons of stocks two years previously on Armistice Day, the estimates of the government are that, because of the decreased rate of consumption obtaining this year, the present storage is equivalent to the requirements of 43 days compared with 45 days two years previous; 42 days on Jan. 1, 1919; 31 days on April 1, 1919; 18 days on March 1, 1920; and 15 days on June 1, 1920. The estimates for 1921 indicate the supply on Jan. 1 sufficient for 39 days; on April 1, 36 days; Aug. 1, 39 days; Nov. 1, 43 days.

Because the abnormally low rate of consumption in 1921 is such a large factor in calculating the stocks in terms of days' supply it is significant to note that supply in tons, now around 47,000,000, was exceeded in the autumn and winter of 1918, but at no subsequent or previous time, according to available records. What is true of the country as a whole with respect to stocks of bituminous coal is also true with respect to individual industries. Byproduct coke plants and steel mills report a smaller quantity of coal on hand than at the peak in November two years ago, but quantities which at the reduced rate of operation insure a greater number of days' supply than any previous period recorded. The same is true of public utilities, both gas plants and central power stations.

Stocks of coal in the hands of retail dealers are shown by the report of the Geological Survey and Census to be sufficient for an average of 47 days at the rate coal was distributed in the three months ended Nov. 1. The dealers handling bituminous received more than they distributed in that three month period, whereas dealers handling anthracite distributed slightly more than they received, their stocks decreasing from an average of 50 to 47 days.

These figures are, of course, for the United States as a whole and there are many variations when local conditions are taken into consideration. Some of these variations are shown by the accompanying diagrams. Even the figures for the states are averages, and it follows that many individuals, both among industrials and retail dealers, as well as their customers the householders, are far below the average. The accompanying tables, showing the days' supply of bituminous coal in the hands of consumers in each state, give an indication where was placed a considerable portion of the more than 6,000,000 tons storage by which



TOTAL COMMERCIAL STOCKS OF BITUMINOUS COAL, OCT. 1, 1916, TO NOV. 1, 1921

Figures represent million net tons and include coal in hands of railroads, industrial consumers, public utilities and retailers. Coal for steamship fuel, on Lake docks, and in transit is not included. Figures for 1921 are subject to revision.

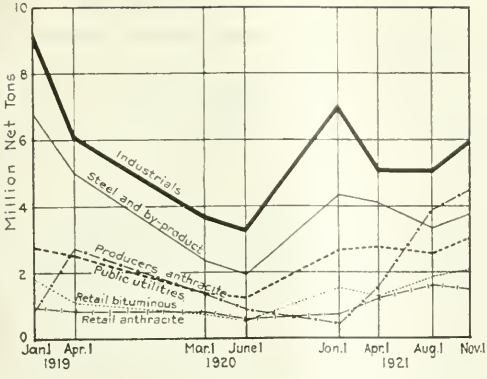
DAYS' SUPPLY OF COAL ON HAND, RECEIPTS AND CONSUMPTION OF CERTAIN REPRESENTATIVE CONSUMERS, AUG. 1 AND NOV. 1, 1921
(Based on all reports received from selected lists of consumers up to Nov. 25, 1921. Figures in days and net tons)

	Industries Other Than Steel and Coke	Steel Works	Byproduct Coke Plants	Coal Gas Plants	Electric Public Utilities	Retail Dealers Bituminous	Total Bituminous (Excluding Railroad Fuel)	Retail Dealers Anthracite
Number of plants reporting	2,330	216	70	111	790	1,293	4,810	841
Stocks on hand Aug. 1, 1921	5,758,886	1,814,289	2,327,320	700,775	3,175,167	2,119,357	15,895,794	2,049,490
Received Aug. 1 to Oct. 31	10,715,626	3,634,992	7,324,499	886,501	7,332,206	4,900,656	34,794,480	3,653,707
Consumed Aug. 1 to Oct. 31 including yard losses	9,537,210	3,624,783	6,833,734	814,228	6,609,042	4,694,408	32,113,405	3,785,569
Stocks on hand Nov. 1	6,937,302	1,824,498	2,818,085	773,048	3,898,331	2,325,605	18,576,869	1,917,628
Daily consumption Aug. 1 to Oct. 31	103,665	39,400	74,280	8,850	71,837	51,026	349,058	41,148
Days' supply Aug. 1	56	46	31	79	44	42	46	50
Days' supply Nov. 1	67	46	38	87	54	46	53	47

TONS OF COAL IN HANDS OF SELECTED LISTS OF IDENTICAL CONSUMERS WHO REPORTED ON EACH OF EIGHT DATES, JAN. 1, 1919 TO NOV. 1, 1921
(In Net Tons)

	Number of Identical Establishments Reporting	1919 Jan. 1	1919 April 1	1920 March 1	1920 June 1	1921 Jan. 1	1921 April 1	1921 Aug. 1.	1921 Nov. 1
Byproduct coke plants	57	3,381,140	2,383,305	1,210,000 *a*	800,000 *a*	2,261,039	2,256,007	1,640,109	2,020,884
Steel plants	215	3,448,850	2,626,596	1,130,000 *a*	1,168,000 *a*	2,051,932	1,830,724	1,695,726	1,732,295
Other industrial plants	2,061	9,138,191	6,065,104	3,650,945	3,247,370	7,018,126	5,100,982	5,074,124	5,956,970
Coal-gas plants	108	691,183	597,636	286,679	195,941	573,611	674,566	700,487	772,129
Electric utility plants	256	2,098,978	1,927,929	1,069,866	1,049,793	2,101,007	2,103,223	1,868,743	2,255,046
Retail coal dealers	1,080	1,817,117	1,136,788	758,924	535,218	1,514,382	1,274,828	1,844,349	2,066,027
Railroads	100	11,742,847	(*b*)	3,520,385 *c*	2,898,057 *c*	7,542,247	7,540,380	(*b*)	8,958,389
Total bituminous	3,877	32,318,306	23,337,000 *b*	11,627,000 *d*	9,895,000 *d*	23,062,344	20,780,710	20,574,000 *b*	23,761,790

(*a*) Includes estimates for so large a number of plants that the total is subject to a possible error of 20 per cent. (*b*) No data available for railroad fuel on this date. Estimate included in total. (*c*) Because of differences in form of reports, data are not entirely comparable with those on other dates shown. The 1920 figures are, if anything, low. (*d*) Subject to errors mentioned in notes (*a*) and (*c*); probably low.



FLUCTUATIONS IN TONNAGE OF COAL IN STORAGE, JAN. 1, 1919, TO NOV. 1, 1921

Lines in diagram show tons on hand at selected lists of establishments on dates mentioned. The lists are incomplete but as the same establishments are included for the several dates the figures are comparable.

DAYS' SUPPLY OF SOFT COAL IN HANDS OF REPRESENTATIVE INDUSTRIAL CONSUMERS AND PUBLIC UTILITIES, AUG. 1 AND NOV. 1, 1921

(Figures represent number of days stocks would last at current rate of consumption, *a*)

State	Industries Other Than Steel and Coke: Plants Reporting	Days' Supply Aug. 1	Days' Supply Nov. 1	Electric Utilities: Plants Reporting	Days' Supply Aug. 1	Days' Supply Nov. 1	Coal-gas Plants: Plants Reporting	Days' Supply Aug. 1	Days' Supply Nov. 1
Maine	28	97	127	2	56	47	2	162	177
New Hampshire	32	131	141	4	83	55	1	71	52
Vermont	42	124	122	(b)	(b)	(b)	(b)	(b)	(b)
Massachusetts	280	116	125	45	99	111	10	85	93
Connecticut	72	167	173	15	52	48	2	107	122
Rhode Island	59	121	132	4	40	72	1	92	85
Total New England	513	124	135	70	83	90	16	93	102
New York	154	69	87	23	36	41	4	114	123
New Jersey	97	73	79	25	110	105	1	29	26
Pennsylvania	124	41	48	48	47	55	3	72	75
Maryland	31	29	33	12	32	59	3	59	75
Delaware	24	64	76	2	33	36	(b)	(b)	(b)
District of Columbia	9	10	40	2	22	22	(b)	(b)	(b)
West Virginia	45	12	12	17	40	48	(b)	(b)	(b)
Ohio	135	30	41	72	56	85	6	28	38
Indiana	111	42	46	51	32	42	8	50	38
Illinois	137	21	33	44	26	34	9	61	51
Michigan: Northern Peninsula	17	413	414	37	82	94	13	74	85
Michigan: Southern Peninsula	103	71	88	37	82	94	13	74	85
Wisconsin	90	66	78	28	42	51	5	136	162
Minnesota	60	105	164	34	43	55	2	12	20
Iowa	28	18	28	55	23	42	3	104	81
North Dakota	6	9	12	12	8	20	2	5	16
South Dakota	2	35	40	9	31	52	(b)	(b)	(b)
Nebraska	10	7	17	29	24	34	(b)	(b)	(b)
Virginia	30	39	46	16	19	19	3	20	22
North Carolina	50	66	68	13	62	69	5	27	31
South Carolina	44	87	106	9	97	87	1	12	22
Georgia	34	71	84	8	78	79	2	43	46
Florida	6	58	57	2	54	93	1	26	64
Kentucky	27	18	24	23	24	42	4	18	41
Tennessee	80	33	40	12	23	33	3	22	32
Alabama	34	49	53	8	46	33	3	87	85
Mississippi	23	54	56	11	19	50	4	15	14
Missouri	80	26	41	44	19	27	(b)	(b)	(b)
Kansas	38	42	51	17	25	60	(b)	(b)	(b)
Oklahoma	19	74	85	5	11	37	(b)	(b)	(b)
Arkansas	18	73	86	3	30	55	(b)	(b)	(b)
Louisiana	2	16	19	3	33	33	1	120	119
Texas	29	12	14	8	16	22	1	28	40
Colorado	32	50	52	15	12	20	1	23	24
New Mexico	4	271	207	9	30	36	(b)	(b)	(b)
Arizona	7	815	763	(b)	(b)	(b)	(b)	(b)	(b)
Utah	27	51	55	(b)	(b)	(b)	(b)	(b)	(b)
Nevada	5	55	39	(b)	(b)	(b)	(b)	(b)	(b)
Wyoming	3	3	7	6	13	15	(b)	(b)	(b)
Montana	15	112	125	5	15	38	(b)	(b)	(b)
Idaho	13	51	43	(b)	(b)	(b)	2	14	44
Washington	13	31	53	3	77	95	4	23	27
Oregon	3	50	113	(b)	(b)	(b)	(b)	(b)	(b)
California	4	263	243	(b)	(b)	(b)	(b)	(b)	(b)
Total United States	2,336	56	67	790	44	54	111	79	87

(*a*) The rate of consumption used is the average for the three months of August, September and October, 1921.
(*b*) No data.

ESTIMATED TOTAL COMMERCIAL STOCKS OF BITUMINOUS COAL IN THE UNITED STATES OCT. 1 1916, TO NOV. 1, 1921 (*a*)

(In Net Tons)

Oct. 1, 1916	25,000,000 to 29,000,000	probably	27,000,000
Oct. 1, 1917	26,000,000 to 30,000,000	probably	28,100,000
July 15, 1918	38,000,000 to 42,000,000	probably	39,700,000
Oct. 1, 1918	58,000,000 to 60,000,000	probably	59,000,000
Day of the armistice	62,000,000 to 64,000,000	probably	63,000,000
Jan. 1, 1919	57,000,000 to 59,000,000	probably	57,900,000
April 1, 1919	38,000,000 to 42,000,000	probably	40,400,000
March 1, 1920	22,000,000 to 27,000,000	probably *a*	24,000,000
June 1, 1920	18,000,000 to 23,000,000	probably *a*	20,000,000
Jan. 1, 1921	42,000,000 to 48,000,000	probably *b*	45,800,000
April 1, 1921	36,000,000 to 42,000,000	probably *b*	39,500,000
Aug. 1, 1921	38,000,000 to 44,000,000	probably *b*	41,100,000
Nov. 1, 1921	44,000,000 to 50,000,000	probably *b*	47,400,000

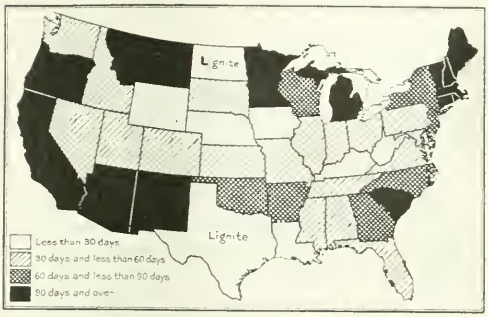
(*a*) Coal in transit not included. (*b*) Subject to revision.

DAYS' SUPPLY OF ANTHRACITE AND BITUMINOUS COAL IN HANDS OF VARIOUS CLASSES OF CONSUMERS IN THE UNITED STATES JULY 15, 1918, TO NOV. 1, 1921

(Figures represent number of days supply would last at current rate of consumption at time of stock-taking)

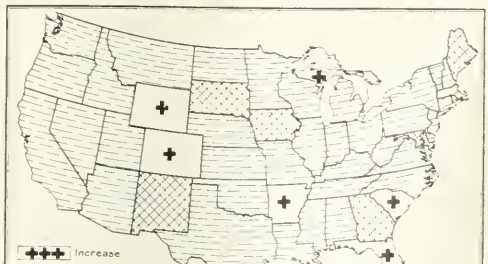
Bituminous										
Byproduct coke plants	28	35	32	23	*a*15	*a*8	29	28	31	38
Steel plants	27	45	42	35	*a*9	*a*11	42	38	46	46
Other industrials	48	71	65	47	27	24	64	47	56	67
Artificial gas plants	72	85	81	58	31	22	55	66	79	87
Electric utilities	39	49	49	48	21	22	44	48	44	54
Coal dealers, bituminous	15	37	39	25	13	10	30	26	42	46
Railroads	25	31	32	No data	*a*11	*a*10	24	24	No data	*a*29
Total bituminous	31	45	42	31	18	15	*a*39	*a*36	*a*39	*a*43
Anthracite										
Coal dealers	No data	No data	36	31	21	15	24	36	50	47

(*a*) Estimated from incomplete data. Subject to important revision.



DAYS' SUPPLY OF SOFT COAL ON HAND AT INDUSTRIAL PLANTS ON NOV. 1, 1921

Reports from 2,330 industrial consumers other than steel and byproduct coke plants showed an average supply sufficient to last 67 days at the rate of consumption prevailing from Aug. 1 to Nov. 1, 1921. How the supply varied from state to state is shown in the diagram. The darker the shading, the heavier are the stocks. If business should revive and consumption increase, the stocks expressed in days' supply would be smaller.



HOW PRESENT STOCKS AT INDUSTRIAL PLANTS COMPARE WITH THOSE ON JAN. 1, 1921

Changes in tonnage on hand at 2,061 identical industrial plants other than steel and byproduct coke plants are shown. The quantity held by industrials decreased in most states although, because of the reduced rate of consumption, the present stocks would last as long as those on Jan. 1. Increase in coal on Lake docks.

the country's reserve was increased from Aug. 1 to Nov. 1 this year. Electrical utilities increased their supply from 44 to 54 days and at the same time increased their rate of consumption over the summer months. This buying by the utilities for their reserves was not confined to any one section of the country but was general, few states reporting a falling off in the size of their stock piles.

Industries other than steel and coke increased their reserve from 56 to 67 days. New England industries now average four and a half months' supply and 17 concerns in the northern peninsula of Michigan have 414 days; Minnesota shows 164 days, and Wisconsin, 78 days. Figures for the Northwest are exclusive of coal on the docks. It is evident, therefore, that both New England and the Northwest have an abundance of bituminous coal.

Production of bituminous coal in August was 34,538,000 net tons; September, 35,127,000, and October, 43,733,000, a total of 113,398,000, of which approximately 6,300,000 went into storage. These figures indicate that the impetus given to production in October by the threatened railroad and coal miners' strikes account for the gain in reserves.

Supreme Court Upholds Barring of Pickets

IN A sweeping decision dissented from by only one member the U. S. Supreme Court ruled Dec. 5 that so-called peaceful picketing by labor unions is unlawful and subject to court injunction notwithstanding the supposed immunity given labor unions by the Clayton Act.

The court holds that strikers should be limited to one representative for each point of egress and ingress in the plant or place of business and that all others be enjoined from congregating or loitering at the plant or in the neighboring streets and that such representatives shall not be abusive, libelous or threatening and shall not approach individuals together, but singly, and shall not in their efforts at communication or persuasion "obstruct an unwilling listener by importunate following or dogging his steps."

Southeastern Kentucky Mines Cut Wages 27-30 Per Cent; Miners Accede

ADVICES just received from eastern Kentucky state that operators in southeastern Kentucky districts, including the Harlan, Straight Creek and Jellico fields, have cut wages 27 to 30 per cent, and that miners are so willing to work that they readily accepted the cuts. Large numbers of mines were closed down as a result of reductions in the Hazard and Elkhorn as well as West Virginia fields, which left the situation such that southeastern Kentucky was unable to meet competition.

While the union scale was being paid in many of the southeastern Kentucky mines the union was never officially recognized, and the operators were not paying the least attention to the check-off matter.

$60,000,000 Merger in Panhandle

REPORTS were current in Pittsburgh Dec. 2 of the consolidation of thirty independent coal companies in the Panhandle field and the sale of 4,000 acres of operating coal and coke properties in the Greensburg district of the Connellsville region, both deals reported handled by the financial powers behind the newly merged independent steel concerns. It was said that between $50,000,000 and $60,000,000 worth of coal properties would enter into the merger, which would make the new corporation the second largest coal operating and distributing agency in the world.

Bankers were also informed that negotiations for the sale of vast coal acreage and coking plants by the Jamison Coal & Coke Co. to the Keystone Coal & Coke Co. were nearing completion. The property involved in the deal is five operations in the Greensburg basin with an annual production of 2,000,000 tons of coal and 700,000 tons of coke.

Federal Survey Shows Better Business

CONTINUED improvement in industrial and commercial conditions is shown by figures just published by the Department of Commerce in its monthly "Survey of Current Business." Greater output of iron and steel and of textile products is shown, while a widespread increase in building, stimulated to a large extent by the President's recent conference on unemployment, has made itself felt in lumber; cement, brick and related industries.

The department notes further declines in prices during October, but on a much smaller scale than earlier in the year. This relative stability of prices and the improved banking situation, as evidenced by increased reserves, smaller loans and lower interest rates, are considered favorable to further business improvement. The most serious drawback is stated to be the low price of agricultural products and the consequent decreased buying power of the farmers.

Retail prices on Nov. 1 showed no change, and wholesale prices declined slightly. Wholesale prices in Canada, the United Kingdom and France also declined during October, but continued inflation increased the price level in Germany and Italy.

Governor Sproul Appoints Commissioners To Administer Fowler Law

UNDER the act of May 27, 1921, Governor Sproul of Pennsylvania on Nov. 23 appointed James B. Smith, of Scranton; Philip Bevan, of Wilkes-Barre, and Thomas H. B. Lyon, of Mahanoy City, commissioners, under the Fowler Law for the administration of the fund to be formed by contributions of 2 per cent on the value of all coal mined by the anthracite companies operating subject to the provisions of that law.

James B. Smith will be chairman. The men named come, as will be noted, each from one of the three counties that have the largest output of anthracite. They will be paid $8,000 a year and are empowered to name engineers, assistants and a clerical force.

Some Kansas Mine Workers Return to Mines

ACCORDING to the the report of George L. Peck, Alexander Howat's successor as president of the United Mine Workers in the Kansas fields, more than half the mine workers have returned to work. This report was made Nov. 28 to the executive board of the union at Indianapolis. Mr. Peck stated that between 4,500 and 5,000 mine workers have returned to the mines, that 1,500 have left the state disgusted with the continued striking and factional strife and that 2,500 have been expelled for failing to go to work Nov. 25, as ordered.

Nearly All Anthracite Companies Officially Repudiate Fowler Act Within Time Set

NON-ACCEPTANCES of the Fowler Act, where not filed with the commission under that act before Sunday, Nov. 27, six months after the passage of the legislation, cannot thereafter be legally accepted. All those who did not file within the specified period are to be regarded as coming under the provisions of the act. Most, if not all, of the companies have filed these non-acceptances, but the commission operating under the Fowler Act is not yet in a position to declare what companies by negligence or intention have put themselves under its provisions, provided, of course, the law is found constitutional.

Five Colorado Coal Cos. Ask Wage Cut

FIVE LARGE coal companies in Huerfano County, Colorado, filed with the Colorado Industrial Commission Friday, Dec. 2, notices of a proposed 32½ per cent reduction in the wages of their employees. The reductions are proposed to become effective Jan. 1. Recent reduction by the Colorado Fuel & Iron Co. in the price of coal following wage reductions approximating 30 per cent "forced" the companies to take similar action, it was announced.

Commerce Commission Expected to Make Early Decision On Freight Rates; Hearing Begins Dec. 14

By Paul Wooton
Washington Correspondent

DUE to the far-reaching economic effect of the uncertainty as to freight rates, it is expected that the Interstate Commerce Commission will reach its conclusions in much less than the average time given the consideration of an important case. Some traffic specialists are sanguine enough to predict that the opinion will be forthcoming by March 1. The length of time consumed in hearings will depend on the latitude allowed to representatives of industry. For instance, if the National Coal Association should present the entire case of the bituminous industry, only a few hours would be required, but if the representatives of the producers in each group are to be heard several days would be required for the story of coal alone. It is believed, however, that the hearings are likely to extend until February 15.

The commission established a record for quick action in handing down its opinion in the grain case six weeks after it was opened. This was the first time that an opinion in a case of moment had been reached in anything like so short a time. It indicates, however, that the commission is willing to be governed by the exigencies of the situatio and to remove uncertainty at the earliest possible moment. Since the need for expedition is obviously greater than it was in the grain case, a decision by March 1 is a possibility. This case is much more intricate but it is believed that many of the points involved already have been determined.

That the announcement of the opening of a general hearing on rates has led to widespread belief that freight rates are to be reduced within the next few days is amply attested by the telegrams reaching Washington. Many consumers have telegraphed within the last few days to ascertain the approximate date of the reduction. The telegrams indicate that there has been some publication in the Middle West of information leading to the conclusion that a 12 per cent reduction is imminent. It is believed that this erroneous opinion is contributing to the steep sag in the demand for coal, although all agree that the principal cause was the artificial stimulation that came with the threatened strikes, resulting in an oversold market. If it had not been for this artificial stimulation of buying, it is believed that the bituminous production curve would have continued its gradual upward trend, but now to the business depression must be added the temporary depression caused by recent stocking up.

As this is written no decision has been reached by the operators as to the procedure in presenting their case at the rate hearing. The railroad relations committee of the National Coal Association is expected to assemble in Washington on Dec. 12, so as to have two full days for an exchange of views. It is certain that there will be a full presentation of the coal producers' view.

In announcing the hearing for Dec. 14, the Interstate Commerce Commission says that the purpose is to elicit facts and that at the close of the hearing opportunity will be afforded for argument, at which time questions of law as applied to the facts of record may be discussed. During the period Dec. 14 to 21, inclusive, it is expected that the railroads will put in their case, cross examination to be deferred until Jan. 9. Before the close of the hearing on Dec. 21 a schedule arranged according to commodities for the hearing on and after Jan. 9, 1922, will be announced. It is emphasized that "relationships between particular points under existing rates are not in issue," which means that differentials will not be discussed.

It is purposed to ascertain whether the present rates are reasonable in the aggregate either in the country as a whole or in the several territorial rate groups defined in Ex Parte 74, and whether the rates on specified commodities or descriptions of traffic are reasonable.

In the investigation of operating expenses the railroads will be asked to specify how fuel contracts and costs now current compare with those in effect on Aug. 31, 1920; when such contracts expire, and to what extent contract prices are conditioned on wage scales.

The commission suggests that "what readjustments, if any, following *Increased Rates, 1920*, have not been but should be effected?" is a matter that should be gone into thoroughly, and adds: "If rates are found to be unreasonable in the aggregate in the country as a whole, or in one or more territorial rate groups (a) should a general reduction in all rates be required, or (b) should readjustment be required in the rates on specified commodities or descriptions of traffic?

"If rates are found to be reasonable in the aggregate, but unreasonable on specified commodities or descriptions of traffic, what readjustment should be required?" The way is open for a consideration of lower coal rates, but there is nothing in the statement by the commission to indicate that it will order one unless the roads are financially able to sustain the loss of revenue.

Coal Consumed by Railroads in September

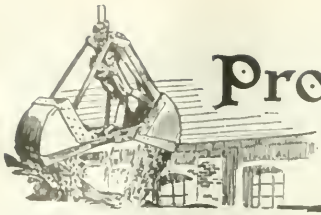
COAL consumed by Class 1 railroads in road service in September, as reported by the Bureau of Statistics of the Interstate Commerce Commission, was 8,110,448 net tons, compared with 10,088,752 in September, 1920. These figures include an equivalent coal tonnage for fuel oil consumed.

In the nine months ended with September these 164 roads consumed 83,814,005 tons of coal in 1921, compared with 90,728,143 tons in 1920, a decrease of nearly 7,000,000 tons, or 7.6 per cent. In the same periods the net revenue and non-revenue freight ton miles decreased from 334,457 million to 252,882 million, a drop of 24 per cent, and passenger business, expressed in passenger-train car miles, declined 6 per cent.

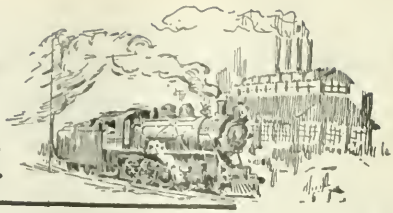
May Informally Adjust Issue of Coal Report

DEVELOPMENTS of the week indicate that a conclusion is likely to be reached that the matter of the weekly coal report hardly requires the attention of the President or of Cabinet officers. It is not improbable that the whole matter will be adjusted informally by Director Smith, of the Geological Survey; Director Steuart, of the Census, and Messrs. F. G. Tryon and F. R. Wadleigh, coal specialists of the Geological Survey and the Department of Commerce respectively.

THE COMMITTEE OF THE NATIONAL COAL ASSOCIATION which will co-operate with the Department of Commerce in efforts to stimulate foreign trade in coal is made up as follows: J. G. Bradley, president Elk River Coal & Lumber Co., Dundon, W. Va., chairman; A. M. Ogle, president Vandalia Coal Co., Terre Haute, Ind.; C. B. Bockus, president Clinchfield Coal Corporation, New York; E. C. Mahan, president Southern Coal & Coke Co., Knoxville, Tenn.; A. J. Maloney, vice-president Chicago, Wilmington & Franklin Coal Co., Chicago; H. N. Taylor, vice-president Central Coal & Coke Co., Kansas City, Mo.; T. H. Watkins, president Pennsylvania Coal & Coke Corporation, New York; T. W. Guthrie, president Hillman Coal & Coke Co., Pittsburgh; J. D. A. Morrow, vice-president National Coal Association, Washington. W. H. Cunningham, vice-president Courtright, Dimmick & Cunningham, Inc., New York, was named as secretary of the committee.



Production and the Market



Weekly Review

WRITING a review of the week's developments in the coal industry is like preparing an obituary notice of an erstwhile prominent citizen. Spot demand is practically non-existent, and what the future holds is uncertain and unknown.

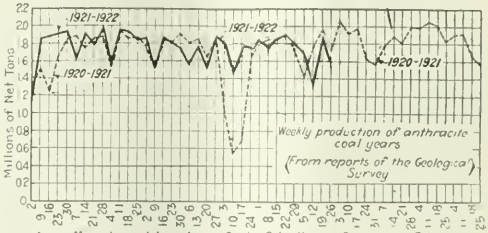
The proximity of the holiday period is held partly responsible for the sluggish market and this natural seasonal recession in the trade is accentuated by the unsatisfactory condition of business in general. The weather continues to flirt with the domestic branch of the coal business and general underselling is necessary to move industrial fuels. This combination has proved too strong for the current market and production continues to drop.

Union Mines Shut Down or Cut Prices

Field after field reports a preponderance of closed mines as prices recede. *Coal Age* Index of spot prices at the mines took another drop last week, from 86 to 84, a decline in four weeks of seven points, or about 8 per cent. The really significant feature in spot prices this week is that of eight declines; all but one were of union coal. This simply means that to meet non-union competition union operators are forced to lower prices or close their mines. Reduction in spot prices and in production result, as chronicled by the statistics for the week.

So much storage coal—it is estimated at 6,300,000 tons—was taken during October that there is no demand left. Contract coal is moved with difficulty and spot sales are scarce. Retail stocks are topheavy, which has naturally reduced domestic production. As a result, screenings and steam grades have risen from their distress position because of the relative scarcity, and quotations are at least stable. In the Midwest especially the position is now reversed, and the "no-bills" are of domestic coal, while the limited steam tonnage moves readily.

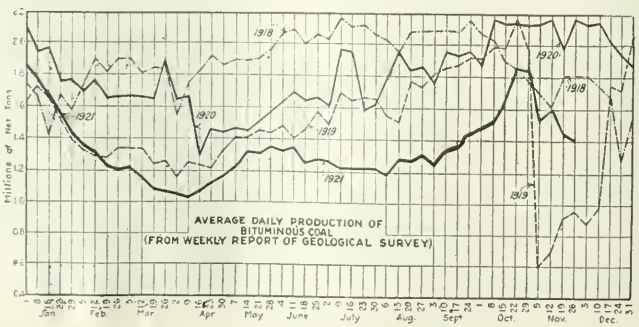
Coastwise markets are stagnant. Exporters received an unwelcome surprise last week when steamers laden with British coal for California and Honolulu put in at Hampton Roads for bunkers. Return freights to the British Isles made possible the transportation of English coal on practically a ballast basis, but nevertheless the continuance of this procedure is an unwelcome possibility in the minds of the American trade. Another discomforting report is that Cuban houses are preparing to replace their stocks of American coal with British product, because of cheaper delivered prices.


1921-1922
1920-1921
Millions of Net Tons
Weekly production of anthracite coal years
(From reports of the Geological Survey)
Apr. May June July Aug. Sept Oct Nov. Dec. Jan. Feb Mar.

Anthracite retail distribution has been retarded by the warm weather. As in bituminous, stocks are heavy and household purchasing is confined to small lots. With the approach to overproduction, some mine closings are reported and independent premiums are on the decline. Steam sizes have weakened further, and while the "companies" are holding to schedule or running to storage, independent quotations are nominal and there is considerable distress coal on the market.

BITUMINOUS

Production dropped to 7,083,000 net tons during the week ended Nov. 26, according to the Geological Survey. The decrease of 1,811,000 tons from the output of the previous week was mainly caused by Thanksgiving Day idleness, which affected the balance of the week. That the decline in

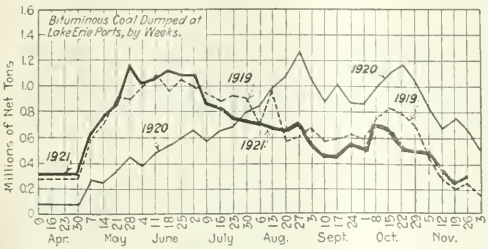

1918
1920
1921
1919
Millions of Net Tons
AVERAGE DAILY PRODUCTION OF BITUMINOUS COAL
(FROM WEEKLY REPORT OF GEOLOGICAL SURVEY)
Jan. Feb. Mar. Apr. May June July Aug. Sept Oct. Nov. Dec.

Estimates of Production
(Net Tons)

Week Ended:	1921	1920
BITUMINOUS COAL		
Nov. 12 (*b*)	8,592,000	12,132,000
Nov. 19 (*b*)	8,894,000	11,693,000
Nov. 26 (*a*)	7,083,000	11,488,000
Daily average	1,400,000	2,188,000
Calendar year	372,106,000	495,530,000
Daily average calendar year	1,339,000	1,773,000
ANTHRACITE		
Nov. 12	1,373,000	1,770,000
Nov. 19	1,910,000	1,993,000
Nov. 26 (*a*)	1,677,000	1,708,000
Calendar year	80,790,000	79,824,000
COKE		
Nov. 19	111,000	364,000
Nov. 26 (*a*)	108,000	367,000
Calendar year	4,934,000	19,193,000

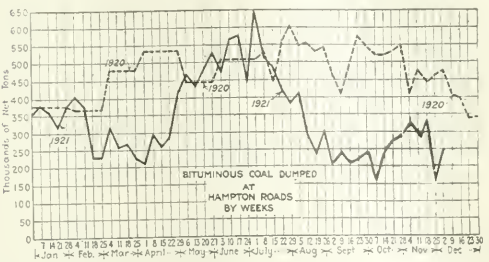
(*a*) Subject to revision. (*b*) Revised from last report

output was continued during the next week—Nov. 26-Dec. 3—is indicated by reports of loadings in the first two days, the total of which was smaller than on the corresponding days of any week since last July.



Calendar year production is 372,106,000 tons, which is behind any of the last five years, being 144,000,000 tons under the average of all years. That the low production does not presage a shortage is indicated by figures of coal stocks on hand, published elsewhere in this issue. These stocks on Nov. 1 were the heaviest since the Armistice and with the prevailing low rate of consumption represent an even larger number of days' requirements than existed at that time.

Lake shipments are ended except for a few cargoes of special fuels which are now being loaded. Dumpings for the week ended Nov. 27 were 346,705 net tons—335,949 tons cargo and 10,756 vessel fuel—as compared with 273,569 in the week previous. The season's dumpings to date are 22,972,280 tons, as compared with 23,152,263 tons last year.


Thousands of Net Tons
BITUMINOUS COAL DUMPED AT HAMPTON ROADS BY WEEKS
1921
1919
1920
Jan. Feb. Mar. April May June July Aug. Sept. Oct. Nov. Dec.

Continued agitation of the freight rate question is holding buying to a hand-to-mouth basis. While lowered rates do not appear possible for a matter of months, the hope for relief from this source is acting against any fuel purchase except for imperative needs. The January in-

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

	Market Quoted	Nov. 7 1921	Nov. 21 1921	Nov. 28 1921	Dec. 5, 1921†
Low-Volatile, Eastern					
Pocahontas lump	Columbus	$4.85	$4.35	$4.35	*$3.50@$4.00*
Pocahontas mine run	Columbus	2.55	2.35	2.35	*2.15@2.35*
Pocahontas screenings	Columbus	1.75	1.70	1.60	*1.45@1.70*
Pocahontas lump	Chicago	4.75	4.35	4.00	*3.75@4.00*
Pocahontas mine run	Chicago	3.15	2.65	2.35	*2.00@2.50*
Pocahontas lump	Cincinnati	.....	.....	.....	$3.00@3.15
*Smokeless mine run	Boston	4.80	4.80	4.80	4.75@4.90
Clearfield mine run	Boston	1.95	1.80	1.80	1.60@2.00
Cambria mine run	Boston	2.45	2.35	2.35	2.10@2.60
Somerset mine run	Boston	1.90	1.75	1.85	1.65@2.00
Pool 1 (Navy Standard)	New York	3.20	3.05	3.00	2.75@3.25
Pool 1 (Navy Standard)	Philadelphia	3.15	3.15	3.15	*2.80@3.25*
Pool 1 (Navy Standard)	Baltimore	2.65	2.70	2.60	*2.35@2.50*
Pool 9 (Super. Low Vol.)	New York	2.50	2.35	2.35	*2.15@2.50*
Pool 9 (Super. Low Vol.)	Philadelphia	2.45	2.45	2.35	2.25@2.50
Pool 9 (Super. Low Vol.)	Baltimore	2.35	2.40	2.40	*2.00@2.15*
Pool 10 (H. Gr. Low Vol.)	New York	2.15	2.05	2.05	2.00@2.15
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2.15	2.15	2.10	*2.00@2.10*
Pool 10 (H. Gr. Low Vol.)	Baltimore	2.10	2.10	2.10	*1.85*
Pool 11 (Low Vol.)	New York	1.85	1.85	1.85	*1.60@1.85*
Pool 11 (Low Vol.)	Philadelphia	1.85	1.85	1.85	1.75@1.95
Pool 11 (Low Vol.)	Baltimore	1.85	2.00	2.05	*1.75*
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.65	1.70	1.75	*1.50@1.65*
Pool 54-64 (Gas and St.)	Philadelphia	1.70	1.70	1.70	1.60@1.80
Pool 54-64 (Gas and St.)	Baltimore	1.65	1.65	1.70	*1.50@1.70*
Pittsburgh sc'd gas	Pittsburgh	2.65	2.65	2.65	2.60@2.70
Pittsburgh mine run (St.)	Pittsburgh	2.15	2.15	2.15	2.10@2.20
Pittsburgh slack (Gas)	Pittsburgh	1.65	1.40	1.40	*1.25@1.50*
Kanawha lump	Columbus	3.25	3.20	3.10	*2.75@3.25*
Kanawha mine run	Columbus	2.05	1.85	1.85	**1.80@2.00**
Kanawha screenings	Columbus	1.10	1.00	1.00	.90@1.10
Kanawha lump	Cincinnati	.....	.....	.....	2.75
Kanawha mine run	Cincinnati	.....	.....	.....	1.50@1.75
Kanawha screenings	Cincinnati	.....	.....	.....	.85@1.00
Hocking lump	Columbus	3.25	3.15	3.20	*3.00@3.25*
Hocking mine run	Columbus	2.10	2.00	2.00	*1.90@2.00*
Hocking screenings	Columbus	1.10	0.95	0.95	**1.10@1.25**
Pitts. No. 8 lump	Cleveland	$3.25	$3.10	$3.25	*$3.25@3.25*
Pitts. No. 8 mine run	Cleveland	2.15	2.00	2.05	*2.00*
Pitts. No. 8 screenings	Cleveland	1.60	1.30	1.35	**1.40@1.60**
Midwest					
Franklin, Ill. lump	Chicago	3.65	3.75	3.65	**3.50@4.05**
Franklin, Ill. mine run	Chicago	2.90	2.85	2.75	2.50@3.00
Franklin, Ill. screenings	Chicago	1.60	1.60	1.85	*1.50@2.00*
Central, Ill. lump	Chicago	3.50	3.35	3.35	3.00@3.75
Central, Ill. mine run	Chicago	2.50	2.50	2.35	*2.00@2.50*
Central, Ill. screenings	Chicago	1.85	1.35	1.25	**1.60@1.75**
Ind. 4th Vein lump	Chicago	3.55	3.50	3.35	3.00@3.75
Ind. 4th Vein mine run	Chicago	2.90	2.75	2.75	2.60@2.90
Ind. 4th Vein screenings	Chicago	1.75	1.75	1.70	**1.75@2.00**
Ind. 5th Vein lump	Chicago	2.70	2.80	2.80	2.60@3.00
Ind. 5th Vein mine run	Chicago	2.45	2.45	2.45	2.25@2.60
Ind. 5th Vein screenings	Chicago	1.75	1.50	1.35	**1.40@1.60**
Standard lump	St. Louis	3.35	3.10	2.85	2.75@3.00
Standard mine run	St. Louis	1.95	1.95	1.95	1.85@2.00
Standard screenings	St. Louis	.75	.95	.95	**1.00@1.25**
West Ky. lump	Louisville	3.25	3.00	2.75	*2.25@3.00*
West Ky. mine run	Louisville	2.20	1.90	1.90	*1.50@2.00*
West Ky. screenings	Louisville	.85	1.00	1.00	*.45@1.50*
South and Southwest					
Big Seam lump	Birmingham	3.75	3.75	3.65	3.00@4.25
Big Seam mine run	Birmingham	2.15	2.00	2.00	1.50@2.50
Big Seam (washed)	Birmingham	2.30	2.30	2.30	2.15@2.40
S. E. Ky. lump	Louisville	3.75	3.60	3.10	*3.00*
S. E. Ky. mine run	Louisville	2.30	2.20	2.10	*2.00@2.10*
S. E. Ky. screenings	Louisville	1.30	1.15	1.10	*.85@1.10*
S. E. Ky. lump	Cincinnati	.....	.....	.....	3.00@3.25
S. E. Ky. mine run	Cincinnati	.....	.....	.....	1.50@2.00
S. E. Ky. screening	Cincinnati	.....	.....	.....	.85
Kansas lump	Kansas City	5.50	5.00	5.00	5.00
Kansas mine run	Kansas City	4.25	4.25	4.25	*4.00@4.25*
Kansas screenings	Kansas City	2.50	2.50	2.50	2.50

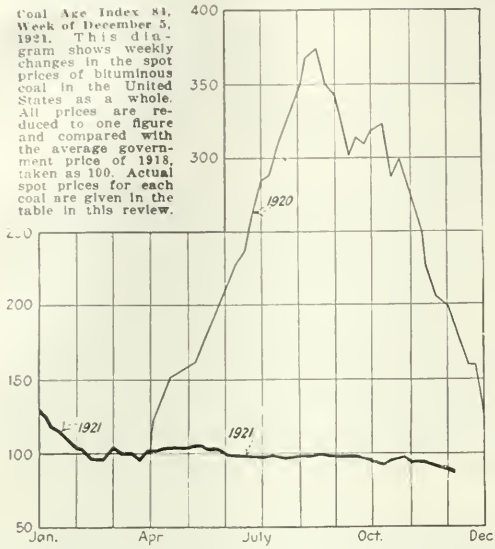
*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in heavy type, declines in *italics*

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	Nov. 21, 1921 — Independent	Nov. 21, 1921 — Company	Nov. 28, 1921† — Independent	Nov. 28, 1921† — Company	Dec. 5, 1921† — Independent	Dec. 5, 1921† — Company
Broken	New York	$2.61	.....	$7.60@$7.75	.....	$7.60@$7.75	.....	$7.60@$7.75
Broken	Philadelphia	2.66	$7.60@$8.20	7.75@7.85	$7.60@$8.20	7.75@7.85	*$7.60@$8.00*	7.75@7.85
Egg	New York	2.61	8.00@8.25	7.60@7.75	7.75@8.00	7.60@7.75	*7.50@8.00*	7.60@7.75
Egg	Philadelphia	2.66	8.10@8.35	7.75@7.85	8.00@8.35	7.75@7.85	*7.75@8.00*	7.75@7.85
Egg	Chicago	5.63	8.00*	7.15*	8.00*	7.15*	8.00*	7.15*
Stove	New York	2.61	8.75@9.25	7.90@8.10	8.50@9.00	7.90@8.10	*8.25@8.75*	7.90@8.10
Stove	Philadelphia	2.66	8.75@9.00	8.00@8.35	8.75@9.00	8.00@8.35	*8.50@9.00*	8.00@8.35
Stova	Chicago	5.63	8.50*	7.40*	8.50*	7.40*	8.50*	7.40*
Chestnut	New York	2.61	8.75@9.25	7.90@8.10	8.50@9.00	7.90@8.10	*8.25@8.75*	7.90@8.10
Chestnut	Philadelphia	2.66	8.50@9.00	8.05@8.25	8.50@9.00	8.05@8.25	*8.50@9.00*	8.05@8.25
Chestnut	Chicago	5.63	8.25*	7.40*	8.25*	7.40*	8.25*	7.40*
Pea	New York	2.47	5.50@5.75	6.05@6.45	5.25@5.50	6.05@6.45	*4.75@5.00*	6.05@6.45
Pea	Philadelphia	2.38	5.00@5.50	6.15@6.25	5.00@5.50	6.15@6.25	*4.75@5.00*	6.15@6.25
Pea	Chicago	5.63	6.60*	5.80*	6.10*	5.80*	6.10*	5.80
Buckwheat No. 1	New York	2.47	2.50@3.00	3.50	2.50@3.00	3.50	*2.50@2.75*	3.50
Buckwheat No. 1	Philadelphia	2.38	2.75@3.25	3.50	2.50@3.00	3.50	2.50@3.00	3.50
Rice	New York	2.47	1.75@2.40	2.50	1.95@2.25	2.50	*1.50@2.00*	2.50
Rice	Philadelphia	2.38	1.75@2.25	2.50	1.75@2.00	2.50	1.75@2.00	2.50
Barley	New York	2.47	1.00@1.25	1.50	1.00@1.25	1.50	1.00@1.25	1.50
Barley	Philadelphia	2.38	1.00@1.50	1.50	1.00@1.25	1.50	**1.25@1.50**	1.50
Birdseye	New York	2.47	.....	2.50	.....	2.50	.....	2.50

†Advances over previous week shown in heavy type, declines in *italics*.
*Net tons, f. o. b. mines.

ventory period and the elemination of the war tax on shipments, effective at that time, also are factors in delaying trading.



Coal Age Index 81, Week of December 5, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.

It is probable that the check-off controversy will now drag on until spring. Any decision adversely affecting the union would be productive of an appeal to the Supreme Court, and the question would thus be carried over until the time when the new wage scale is taken under advisement.

Tonnage is again accumulating at Hampton Roads. Dumpings for the week ended Dec. 1 were 223,888 gross tons. High-volatiles show the greatest depression.

New England business shows a falling off in water-borne coals. Coastwise agencies are about ready to throw up the sponge until demand again appears. The all-rail movement continued to decline during the week ended Nov. 26, when 2,928 cars were forwarded, as compared with 3,022 during the week previous.

ANTHRACITE

Production of hard coal dropped to 1,677,000 net tons during the week ended Nov. 26, as compared with 1,910,000 tons the week before. Observance of Thanksgiving Day was mainly responsible for the drop, although demand has slipped to such an extent that some mines are closing.

The domestic market is weaker following the warm weather, and independent quotations have softened 50c. to 75c. and in some cases even lower. Steam sizes are heavier than ever and there is an increasing volume of distress tonnage on track.

Lake movement is in a seasonal windup. Dumpings for the week ended Nov. 30 were 53,500 net tons, as compared with 85,600 the week previous. There was a slight improvement in New England all-rail shipments during the week ended Nov. 26, when 3,184 cars were forwarded.

COKE

Beehive coke production during Thanksgiving week declined 3,000 tons to 108,000. The continued absence of demand has caused an even softer market and prices are only nominal; spot furnace, $3@$3.15, and foundry, $4@$4.50. There is every reason to believe that the December consumption of coke will be less than that of November and coke markets are anticipating this recession.

Foreign Market And Export News

Coal Paragraphs from Foreign Lands

GERMANY — An increase in coal prices, of 132 marks a ton, was recently announced. A ton of coal, the pre-war price of which was 15@18 marks now costs, inclusive of the coal duties, 500 @600 marks. The Coal Tax Committee of the provisional Imperial Economic Council, after discussing the draft of a bill relating to changes in the coal tax law, decided to recommend that the tax be raised from 20 to 30 per cent; not to 40 per cent as had been proposed. The committee agreed with the policy of differentiation in the application of the tax according to the mines and the quality of the coal produced.

The production of coal in the Ruhr region during the week ended Nov. 21 was 1,574,000 metric tons, as compared with 1,835,000 during the week previous, according to a cable to *Coal Age*.

BELGIUM—The most notable feature of the market is the predilection which is being shown by consumers for classified coals, unscreened varieties being completely neglected, according to the *Colliery Guardian*. This may prove to be the prelude of a revival in demand, and it may also lead to increased prices for graded coals.

There is still great activity in the household section and uneasiness in the industrial department. An average concession of 20 fr. is made in industrial grades.

SWEDEN — Imports of coal at Stockholm during October were 39,600 tons while coke totaled 8,400 tons. Arrivals during the week ended Nov. 12 were 12,800 tons, of which 10,950 tons of coal and 1,450 tons of coke came from the United Kingdom. The total imports were about 3,000 tons less than in the preceding week.

AUSTRALIA—Exports of coal from Newcastle, during October, 1921, were 285,000 tons.

ITALY — Prices for coal supplied by the Italian State Railways to private industries range from 2,100 lire per ton for Westphalian gas and bunker to 2,400 lire for Silesian gas and bunker coal and 2,600 lire for furnace coal from both fields.

The coal prices, which since June last had again been slowly reduced, are now firm and show even a slight increase.

Cardiff steam firsts are quoted 39s. 3d. on the Genoa market, according to a cable to *Coal Age*.

CHINA—Annual coal production and consumption for all purposes is approximately 23,000,000 net tons, according to *Commerce Reports*. Exports of 1,500,000 tons are practically equaled by imports, North China exporting and South China importing coal. Industrial coal is practically all produced from a limited number of modern mines, domestic needs being supplied from mines worked by native methods.

Amount and Value of British Coal Exports, October and First Ten Months of 1913, 1920 and 1921

	October					
	Quantity (Tons)			Value		
	1913	1920	1921	1913	1920	1921
Anthracite	281,443	151,948	233,405	£233,702	£582,897	£569,399
Steam	4,952,643	1,058,047	2,540,761	3,468,633	4,705,545	3,381,101
Gas	1,026,497	164,119	472,082	653,604	645,631	708,125
Household	159,373	3,878	44,790	106,186	11,099	64,873
Other sorts	319,517	39,506	114,934	203,120	163,325	127,954
Total	6,739,473	1,417,498	3,405,972	£4,665,245	£6,108,497	£4,851,452
	Ten Months Ended October					
	Quantity			Value		
	1913	1920	1921	1913	1920	1921
Anthracite	2,470,934	1,402,172	1,008,633	£1,977,034	£4,442,561	£2,655,148
Steam	44,708,116	17,273,583	12,426,178	31,574,293	70,256,611	23,537,189
Gas	9,610,209	1,751,241	2,611,065	5,913,125	6,961,489	5,309,648
Household	1,495,206	55,918	134,622	980,119	152,415	248,307
Other sorts	2,972,796	786,139	577,028	1,852,830	2,787,897	957,319
Total	61,257,261	21,269,053	16,757,526	£42,297,401	£84,600,973	£32,707,611

British Invade West Coast Coal Markets; Havana Business Also Slipping

Hampton Roads factors were subjected to two distinct shocks last week, the first being when the British steamer Ethelstan put into port for bunkers, en route to San Diego, Cal., from Cardiff, with a part cargo of 4,000 tons of coal, and the other following a few days later when the British steamer Baron Jedburgh stopped for bunkers en route to Honolulu. She brought 6,000 tons of Welsh coal for the Hawaiian Islands.

The Ethelstan's coal is being carried to the West Coast as an experiment. The freight on that cargo was $1 per ton, which is, of course, far below cost, but the steamer has a return cargo of lumber awaiting her on the Pacific Coast.

The Baron Jedburgh gets $4 per ton freight on her coal, but she has a cargo for return in Hawaii, which offsets any loss incurred in the coal freight.

If these cargoes prove successful, they will be the forerunners of a continuous shipment of British coal to the Pacific, the captains of the pioneer British coal carriers said. Coal is being sold in Great Britain at figures considerably under the American prices, and with the additional $1 per ton freight the coal to California can still be sold at a profit considerably under the American market as it exists today.

Hampton Roads coal shippers have been somewhat disturbed by these developments. They do not believe they can compete in such a market as long as freight rates, and other costs incident to the movement of coal from the mines, are at their present high level.

American exporters received another jolt last week. It was learned that orders have been sent to Havana to clean up all American coal on the docks and to fill up with Cardiff coal, which, the reports assert, can be delivered at Havana about $2 a ton cheaper than American coal.

The office of Mr. Rios, export manager for Berwind-White, advised *Coal Age* on Tuesday of this week that this company has not and will not replace American coal with the British product at its Havana depot.

French Mine Costs Are Prohibitive

High costs of production at French mines has permitted British coal to be sold in the Pas de Calais, the heart of French coal mining. French coal owners are not in a position to lower their prices and have decided to postpone the question of reducing wages until January. This being so, a cut in prices can only come from lower Inland tariffs or from the average price of German and French fuel combined being lower, as a result of recent negotiations with Germany.

Although promises have been made, it is unlikely that salvation will come from transport. Therefore if the British mines can continue to offer such good conditions their progress in the heart of France is for a time assured. The French owners, however, hope that before long the Government's subsidy will cease. Then the home product will once more become the cheaper.

British Output Increases Slowly

British production is slowly increasing, according to figures cabled to *Coal Age*. During the week ended Nov. 19 the output was 4,646,000 gross tons as compared with 4,373,000 Nov. 12 and 4,182,000 Nov. 5.

The export trade is gaining ground. Newcastle business reported covers December delivery of steam coal at 25s.; first quarter, 26s. 6d.; for the year, 17s. 6d. South America has placed an order for 20,000 tons best Monmouthshire at 23s. 6d. A fair amount of business is passing with Italy and the Mediterranean.

Mine congestion still continues, however, and export facilities have apparently reached the limit under the present two-shift system.

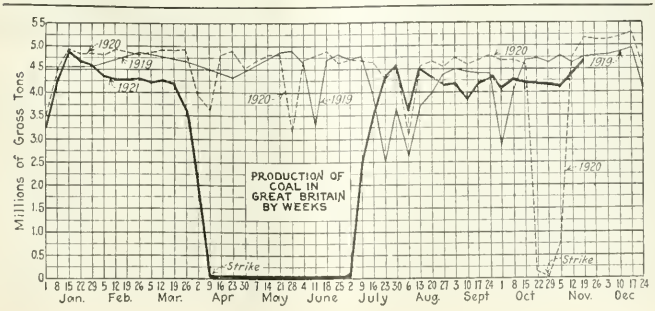
Hampton Roads Depression Increases

Business was exceedingly dull last week, with accumulations at Tidewater increasing.

The movement to foreign countries showed another marked decline. Coastwise business was also little in evidence, with bunkers holding their own on contract.

Pool 1, was being offered freely at $4.80, and in some isolated cases somewhat under this figure. Cut rates, however, did not appear to stimulate buying to any great extent. High-volatile coals show the biggest loss in movement, and the supply of these is being reduced to a minimum.

Dumpings for November were 985,000 gross tons, the only time, except September, in which they have fallen below the 1,000,000-mark since last winter. The C. & O. Piers showed the biggest loss, dumping only 160,000 tons last month as against 550,000 tons in November, 1920. The Virginian Piers lost only 100,000 tons by comparison, while the Norfolk & Western dumpings showed a decline of some 225,000 tons from the corresponding month of last year.


Millions of Gross Tons
PRODUCTION OF COAL IN GREAT BRITAIN BY WEEKS
1920
1919
1921
Strike
Jan. Feb. Mar. Apr May June July Aug. Sept Oct Nov. Dec

Export Clearances, Week Ended Dec. 1, 1921

FROM HAMPTON ROADS

	Tonnage
For Africa:	
Br. SS. Hartfield, for Dakar	6,504
For Argentine:	
Br. SS. Avonmede	5,821
For Canada:	
Amer. Schr. Lincoln, for St. Johns, N. B.	545
For Cuba:	
Amer. Schr. Kingsway, for Cayo Frances	1,892
Br. SS. Finchley, for Havana	4,547
For Mexico:	
Amer. Schr. James E. Coburn, for Vera Cruz	1,077
FROM PHILADELPHIA	
For Atlantic Islands:	
SS. Ozama, for San Juan	
For Brazil:	
SS. Orinoco, for Rio de Janeiro	3,059

Hampton Roads Pier Situation

	Week Ended Nov. 24	Week Ended Dec. 1
N. & W. Piers, Lamberts Point:		
Cars on hand	1,905	1,399
Tons on hand	97,820	72,363
Tons dumped	75,829	102,958
Tonnage waiting	2,200	9,000
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	1,511	1,503
Tons on hand	75,550	75,150
Tons dumped	45,512	84,614
Tonnage waiting	11,500	9,046
C. & O. Piers, Newport News:		
Cars on hand	1,466	1,571
Tons on hand	73,300	78,000
Tons dumped	39,537	36,316
Tonnage waiting	1,450	925

Pier and Bunker Prices, Gross Tons

(Foreign Bunker Quotations by Cable to Coal Age)

	Nov. 26	Dec. 3†
PIERS		
Pool 9, New York	$5.60@$5.75	*$5.40@$5.60*
Pool 10, New York	5.40@ 5.60	*5.25@ 5.35*
Pool 9, Philadelphia	5.50@ 5.80	*5.50@ 5.75*
Pool 10, Philadelphia	5.50@ 5.65	*5.25@ 5.60*
Pool 71, Philadelphia	6.00	*5.90@ 6.00*
Pool 1, Hamp. Rds.	4.75@ 4.95	*4.80*
Pools 5-6-7 Hamp. Rds	4.25	**4.25@ 4.50**
Pool 2, Hamp. Rds.	4.65	4.65
BUNKERS		
Pool 9, New York	$5.95@$6.10	*5.70@ 5.90*
Pool 10, New York	5.80@ 5.90	*5.55@ 5.65*
Pool 9, Philadelphia	6.00	6.00
Pool 10, Philadelphia	5.75@ 5.90	*5.75@ 5.85*
Pool 1, Hamp. Rds.	5.00@ 5.10	*4.95*
Pool 2, Hamp. Rds.	4.75	**4.80**
Welsh, Gibraltar	45s. f.o.b.	45s. f.o.b.
Welsh, Rio de Janeiro	65s. f.o.b.	65s. f.o.b.
Welsh, Lisbon	52s. f.o.b.	52s. f.o.b.
Welsh, La Plata	60s. f.o.b.	60s. f.o.b.
Welsh, Marseilles	125 fr. f.o.b.	125fr. f.o.b.
Welsh, Genoa	45s. t.i.b.	45s. t.i.b.
Welsh, Madeira	45s. f.a.s.	45s. f.a.s.
Welsh, Teneriffe	45s. f.a.s.	45s. f.a.s.
Welsh, Malta	47s.6d. f.o.b.	47s.6d. f.o.b
Welsh, St. Michaels	60s. t.i.b.	60s. t.i.b.
Welsh, Las Palmas	45s. f.a.s.	45s. f.a.s.
Belgian, Antwerp	40s. f.o.b.	40s. f.o.b.
Alexandria	49s. f.o.b.	49s. f.o.b.
Bombay	35 rupees	35 rupees
Capetown	42s. 9d.	42s. 6d.

C.I.F. Prices, American Coal

(In Gross Tons)

	Nov. 26 Low Vol.	Nov. 26 High Vol.	Dec. 3† Low Vol.	Dec. 3† High Vol.
French Atlantic	$8.65	$8.85	*$8.60*	$8.85
West Italy	8.65	8.85	*8.60*	8.85
The Plate	9.00	8.80½	*8.75*	**9.00**
Havana	6.95	6.70	*6.70*	**6.90**

These quotations are purely nominal and as far as can be learned, no business is being done in these markets.

Current Quotations British Coal f.o.b. Port, Gross Tons

	Nov. 26	Dec. 3†
Cardiff		
Admiralty, Large	25s. 9d.	25s.6d.@26s.
Steam, Smalls	19s.	*18s.@18s.6d.*
Newcastle:		
Best Steams	23s. 6d.	**25s.**
Best Gas	23s.	*22s.@22s.6d.*
Best Bunkers	21s. 9d.	21s.6d.@22s.

† Advance over previous week shown in **heavy type**, declines in *italics*.

Reports From the Market Centers

New England

BOSTON

Receipts Steadily Diminish—Accumulations at Hampton Roads—Retail Price Again Reduced—Anthracite Slows Up.

Bituminous—Current impressions of the market here are amply confirmed by figures showing the steadily diminishing receipts of steam coal. All-rail tonnages have varied little from week to week since Sept. 1, but by water, especially from Hampton Roads, there has lately been a marked falling off that can easily be attributed to a lack of buying power throughout the territory. The business of 1921 is practically completed, and were there even a semblance of possible demand in January all hands would gladly forget the year just closing and square away for a new start.

One has but to visit the different plants in most lines of industry to get a vivid impression of general dullness, and there is small reason for wonder that the steam trade is ragged in the extreme.

Certain low prices have been rumored, but they are hard to verify. More than likely the quotations made were on Pocahontas slack which has been offering in cargo lots on the basis of about $1 flat at the mines per net ton. So dull is the market, however, that consumers seem quite indifferent whether it is slack or mine run that is quoted; they say they would not be interested in either.

Some of the coastwise agencies normally doing a considerable business in this market have about thrown up the sponge for the present and have suggested to their operators that the mines suspend until the surplus coal can be worked off. If this be the situation with operations that have been producing for several months with a fair degree of regularity at prices around $2 per gross ton at the tipple, what can be the straits of Pennsylvania operators whose costs under existing wage scales, mount well toward $3 when they are not higher?

Effective Dec. 1 Boston retail dealers reduced the local delivered price per net ton on sidewalks to $8.75, the last previous figure having been $9.25. This was to be expected when certain smokeless interests at various dates since Oct. 1 have modified materially the contract bases established early in the season.

The railroads who purchased much of their requirements early are being required by operators to take their quotas, and were it not for this tonnage the all-rail movement would be about the lightest ever for this time of year.

Anthracite — The continued mild weather is having its effect upon the domestic sizes. Egg is a drug on the market. Independents having been offering this size at a figure close to $7, or nearly a dollar less than the company basis. Most of the regular shippers have orders in hand for what stove and chestnut can be produced in the near future, but unless the weather shows a reversal soon the balance of the winter may show only light trading.

The last cargoes are going forward to the Penobscot and Kennebec rivers, the aggregate shipments being somewhat larger than in 1920, although that year a considerable tonnage went to Tidewater points all-rail. The state of supply has been relatively much easier this season and the all-rail tariff is too high to admit rail deliveries except in some real emergency.

Tidewater—East

NEW YORK

Anthracite Domestic Market Slipping—Independent Quotations Decline—Steam Coals Weak — Bituminous Demand Quiet—Quotations Easier.

Anthracite—The market appears to be slipping. Demand for stove and chestnut, which has been strong, shows signs of easing and the premiums for the independent product are not as high as they were a few weeks back. Egg is becoming longer and is being stocked by some producers.

Operators are having a hard time to move their product and unless weather conditions become more stable it is possible there will be a curtailment in mining. More coal is being produced than the market can readily absorb. Demand from the North and West has, however, been such as to take considerable tonnage of the various domestic coals but those markets are becoming fairly well supplied and it is expected that other means of disposal will have to be found shortly.

Retail yards are filled to overflowing and dealers must find an outlet before being able to take in heavy tonnages. Many are restricting their buying to actual needs until after the New Year begins, as they will then be able to save the three per cent war tax.

Steam coals are weak. There is considerable distress coals in the harbor which is being moved at extremely low figures. Quotations on fresh mined coals are low.

Bituminous—Conditions are such that comparatively little spot coal is being moved. Few houses are doing their normal business and operators are not forcing tonnage on consumers. In some offices quotations are not being given unless a prospective customer appears to be in need of fuel, and in many instances it is said that the consumer did the quoting.

There was a report last week of a sale of upward of 1,000 tons of Lancashire high-volatile coal brought here as ballast. This together with the receipt of considerable Southern coal has had a strong tendency to restrict the movement of the ordinary fuels in this market. Much of the Southern tonnage received is being placed here at a figure close to $6, which means a price of $5 at the loading ports. A large portion of these coals shipped to this harbor is said to be consigned to a New Jersey corporation while local public utility corporations are using large quantities.

Industrial consumers seem to have stocks sufficient to carry them over the beginning of the New Year and are not willing to add to them any more than necessary because of the showing it will make in their inventory. The elimination of the war tax is also being taken into consideration by buyers.

There are plenty of light bottoms here and owners are beginning to complain of the scarcity of offers.

Odd lots of Pool 9 were quoted around $2 at the mines and Pool 10 at around $1.60, although the general trend was somewhat higher. Pool 14 was quoted $5 and Pool 15, which is shipped to Amboy, was quoted at a similar figure.

PHILADELPHIA

Anthracite Displays More Weakness—Yards Have Capacity Stocks—Retail Prices Shaded—Bituminous Without Change—Railroads Curtail Buying.

Anthracite—With retail demand almost at a standstill, the trade is experiencing one of the most unusual letdowns ever known for this time of the year. The average dealer is not putting out as much coal as he did in some of the summer months, and with mild weather continuing there is no telling what the outcome will be. Some of the independent operators have already been compelled to curtail working time, and with the amount of coal now backed up at the mines the immediate outlook is not at all promising.

Independent shippers are having difficulty, as the demand has centered on nut and even many dealers have all they want of this, and have shut off orders with all shippers on every size. It is quite common to hear of shippers having egg and pea standing on demurrage at the mines. Naturally some cutting of prices has been heard of. However, there has been no general price shading as it was quickly seen that the dealers would not take coal in at any price as they were well filled.

Retail prices are still very weak, and only the larger retailers make any semblance of insisting upon $14.50 for stove and nut and $11.25 for pea. The average price is $14 for the former, while pea has been sold as low as $10.25, with most sales around $10.75.

Steam sizes are heavier than ever and extraordinary methods have been made to move buckwheat. Practically all independent companies would be glad to take $3 for buckwheat, and $2.50 is reported as common.

Bituminous—Coal does not move in increased volume, and the immediate future points toward no particular improvement. There are reports of better industrial conditions, particularly in building trade lines, yet this improvement is by no means reflected in the bituminous trade.

Recently there seems to be an inclination on the part of the railroads to call for less fuel and this comes particularly hard to some operations, for with a fair railroad order, together with a light commercial tonnage, they have been able to make some kind of showing. Producers feel that if a bad spell of weather should ensue, industry would suffer by the confiscation of shipments en route, as is always the case in times of sudden stress.

We report prices about on the same level as for the preceding week, but there is no denying there is a general

softness noticeable. It is only the more reliable houses that are able to bolster up the situation by absolutely holding out for nothing lower than current market quotations, feeling that should the market break to a lower point it would spell disaster to many weaker interests.

BUFFALO

Market Grows Duller—Conditions Are Demoralizing — Anthracite Trade Affected by Unseasonable Weather.

Bituminous—The local trade has not been so dull since the flurry of August and September last year. It is not believed that the consumer will begin to buy at all actively again until about the middle of January, when he begins to fortify himself against the April suspension and not even then unless his present supplies run down considerably before that time.

The weather is conspiring to make all coal move slowly. There is still coal on track at various terminal points that was mined to meet a strike of some weeks ago that never occurred.

The state of the bituminous industry is bad in more than the mere matter of lack of demand. Miners' wages vary a matter of nearly a dollar a ton and conditions are doing what they can to demoralize the whole trade. Not much can be done about this until the new scale is adopted in April. Everybody dreads this time, even when it is so much needed to straighten the situation out.

Anthracite — Beginning December with the mercury at 55 deg. is not promising much in this trade. The consumer is not obliged to worry much about his supplies. Not in many years has the demand been so light.

The natural gas supply is light or a good many families would depend on it entirely and the stoves and grates are made to answer for furnace heating in many houses that would ordinarily have to use a furnace regularly.

Lake—Shipments have about stopped, before there is any sign of freezing-up weather and while steamers are eager for cargoes. They are still getting a good lot of wheat to bring down and do not like to go up light at this time of the year. For the week ended Nov. 30, the clearances were 53,500 tons, of which 37,500 cleared for Milwaukee, 10,000 for Fort William and 6,000 for Duluth.

Coke—The trade does not improve, although some of the furnace companies are preparing to increase their activity considerably. As a rule the local byproduct ovens are prepared to take care of any added demand. Quotations continue at $4.15 for 72-hr. Connellsville foundry, $3.15 for 48-hr. furnace and $2.75 for stock.

BALTIMORE

Soft Coal Market Undoubtedly Hits Bottom—Industrial Demand Low—Anthracite Consumption Continues Below Normal—State's Case Against Dealers in Partial Collapse.

Bituminous—So far as both demand and prices are concerned trading has reached rock-bottom. With the best grades of both steam and gas now on the market with a high range of around $2.25, and excellent coals securable at $2@$2.15, it cannot be figured that any further cut can come in view of actual production costs.

For the most part, coal men are convinced that the business of the country is being held in check by the uncertainty of the freight rate situation and the high rates in most cases. There are quite a few letters in this territory, for instance, from cement manufacturers of eastern Pennsylvania who state that they are waiting for a re-adjustment of freight rates. In that section the freight rate is far in excess of the original cost at mines. In this section also the demand from all classes of manufacturing is far below normal and the habit of sacrificing coal by both mine and jobbing interests continues to grow.

The effect of extremely keen competition is shown in the prices at which bunker coals have been sold during the past week. With several very active bidders, the Shipping Board was able to land coal for its vessels as low as $4.55 a gross ton, at piers before trimming. A local steamship company contracted for December delivery at $4.70. While some of the sales are still up around $5 the majority are lower.

Anthracite—The situation continues most unsatisfactory. There is little buying despite the fact that many persons have insufficient coal in their cellars to carry them over even a mild winter. The general tightness of money and lack of credit is playing a decided part in this situation.

A partial collapse of the state's sweeping charges against coal men took place in the Criminal Court of Baltimore last week when Judge Duffy ruled on demurrers to the indictment. Several of the main contentions of the state, relating to alleged price fixing, were upset by the ruling and while the trial is likely to continue on the ground that the dealers engaged in a combination to create a monopoly, it is admitted by the state's attorney that "the action of the court puts the state's attorney in a position where it will be more difficult to meet the requirements as to proof." The whole situation, as a matter of fact, seems to point to a final collapse of the case of the state on the charge of illegal price fixing.

Northwest

MINNEAPOLIS

Indifferent Demand—Buying Only for Immediate Use — Market Steadier — Winter Temperatures Needed.

The weather continues to flirt with the coal business. There will be a few days which suggest the need of stocking with fuel, only to be followed by melting days and a lapse of orders. Those enthusiastic prophets who foresaw naught but an old-fashioned cold winter and proclaimed the need of ample supplies to guard against freezing, have so far little to support their predictions.

The attitude of all buyers continues unchanged. Buying is done when the need for fuel is imperative, but not much sooner. Consumers, either domestic or steam, will not take hold until supplies are close to the vanishing point. Retail dealers are similarly inclined, as far as they dare be, and are not stocking beyond current needs.

Despite all the argument which has been used during the past six months to urge early buying, their position is well supported. It is the same in all lines of merchandise. Merchants are buying small lots and often, hoping ever for better prices, and are at least confining their money invested in merchandise to lesser totals.

The logic is equally good in the coal business. It is true that it would be much easier for the producers and for the transportation companies if the coal tonnage could be handled in large orders with easy distribution loads at regular intervals. But some of them do not seem to have mastered the rudimentary fact that much of the time the markets do not exist solely for the ease and comfort of those two important factors. It is the buyer's will and pleasure which usually dominates. There are times when the seller has the commanding say, and the buyer is still railing at the results therefrom.

So far as all indications point, there will be little likelihood of anything more than moderate buying during the coming few weeks, unless below-zero weather stimulates the market. Anything like moderate weather will simply mean moderate buying, with probably more coal moving than seems to be the case.

The local market has steadied under the influence of cold weather and snow, but is only moderately stable at best. There is keen rivalry for business, and price cutting continues to be indulged in as a means of landing business, despite a little more support to the market.

MILWAUKEE

Mild Weather Prolongs Depression—Docks Heavily Loaded — Prices Held Steadily.

In the absence of fuel consuming weather, the market continues dull and depressed. Deliveries in the city are at a low ebb, and the outward movement by rail is about as slow.

The recent flurry of cold and snow was followed by mild, spring-like days, which make coal men fear a repetition of last year's iceless winter. Prices are fully maintained, however. Receiving yards are loaded up with coal, and surplus stock will be held afloat in steamers which are still arriving.

Receipts for the season thus far aggregate 950,972 tons of anthracite, and 2,579,502 tons of soft coal, against 805,186 tons of the former, and 2,765,372 tons of the latter during the same period last year.

DULUTH

Demand Quiets with Warm Spell — Prices Are Cut—Cargo Receipts End —Docks Heavily Stocked.

Again last week the weather man was the controlling factor in the coal market, and a few days of unusually mild weather, following a cold snap, influenced not only the general public but the dealers as well, to buy sparingly. The coal trade seems to be as much in the doldrums as it was last summer, with outgoing shipments few and far between.

Together with the slump has come a drop in price. Youghiogheny and Hocking lump are down to $6.25 from a list price of $7, and run of pile has dropped 50c. from a list of $6.25. Screenings are holding firm at $4, with only damaged lots being quoted at off-prices. The excess of screenings has now been absorbed.

Small-lot buying, which seems to

prevail among country dealers, is not only brought on by the warm weather and consequent lessening of retail demand, but also by the possibility of lower freight rates. Dealers hope to take advantage of any possible slump in rail prices.

All docks are carrying heavy loads, and it is freely predicted that further cuts will materialize if the warm weather keeps up. To just what extent these will be made is uncertain, but it is felt that it is imperative to start coal moving now, to prevent a jam later on when the freeze comes.

Shipments from lower ports have dropped off, twelve cargoes being received last week. Only three cargoes are reported on the way. Two boats scheduled to come here have been diverted to other ports where the dock situation is not so acute. Insurance rates doubled on Dec. 1 and it is safe to say that shipments are practically over for the year.

The anthracite condition is unchanged, with prices holding firm, in spite of the lack of demand. This firmness is accounted for by the fact that supplies on docks are not so burdensome.

Complaints have been received of the quality of anthracite being delivered to dealers. Stove and egg are reported as satisfactory, but it is claimed that nut and pea sizes are not being prepared carefully. Dock men have been forced to make price readjustments to cover the discrepancies.

Inland West

CHICAGO

Domestic Market Dead—Steam Grades Scarce—Increasing Tonnage of Eastern Coals—Anthracite Quiet.

The screenings market is holding firm around $1.65@$2 a ton, according to the district the coal comes from. Prices are expected to strengthen not because of an increased demand, but on account of curtailed production of domestic sizes. Retailers are not buying coal, and a great many mines which up to now have been running three or four days a week, are closing and a great many more are only operating from one to two days a week. The tonnage figures for Illinois and Indiana mines serving the Chicago market will drop very materially this week.

Many attractive bargains are being offered on Eastern coal and what little domestic purchases are being made are going to Eastern operators. High-grade smokeless 2-in. lump was sold last week at $2.50 a ton, while it is a very easy thing to do to buy all the egg and 4-in. lump one wishes at a price around $3. Splints from West Virginia in the 4-in. block size are offered freely around $2.40, while egg from the same districts can be had at $2 and sometimes less.

Eastern Kentucky is holding a little firmer, with 4-in. block at $3@$3.25, while egg is selling at $2.25@$2.75. Some eastern Kentucky and West Virginia steam coal moved into Chicago last week, as the low price on this tends to absorb the differential in the freight over Illinois or Indiana coals.

Even anthracite will soon be face to face with a soft market unless cold weather comes at an early date.

COLUMBUS

Dullness Prevails in All Markets — Warm Weather Stops Domestic Distribution—Steam Stocks Heavy—Distress Tonnage Increases.

The coal trade is probably at its lowest ebb of the year. Production is being reduced to a minimum. This state of affairs is caused by the high temperatures which prevail and the continued industrial depression.

Retailers have large stocks as a rule and are out of the market. They stocked up in anticipation of a rail strike and have been unable to move any great quantity since that time. Prices have weakened to a certain degree and some dealers are offering coal at low figures. The ruling price on Hocking lump is $6@$6.50; West Virginia lump, $7@$7.50; Pocahontas lump, $8.50@$9, delivered. Anthracite is strong around $15 while coke is quoted around $11. There is a good deal of distress coal on the market and dealers are able to buy at low prices as a result.

Lake trade is practically closed. The H. V. Docks during the week ended Nov. 26, loaded 50,219 tons, making a total of 4,504,391 tons for the season. During the same week the T. & O. C. Docks loaded 8,632 tons as compared with 15,278 tons the previous week, making 1,086,896 tons for the season.

Steam demand is practically dead. Manufacturers and large steam users have accumulated good stocks and are content to consume these before entering the market. Railroads are not buying to any extent and there is little hope in the immediate future for improvement. Because of the reduction in the output of lump, screenings are showing a little more strength.

The Hocking Valley field is producing less than 25 per cent of normal and the same figures are reported from Cambridge, Crooksville and Pomeroy.

DETROIT

Bituminous Consumers Display Little Inclination to Stock up—Receipts are Not Large—Anthracite Also Sluggish.

Bituminous—While a small amount of bituminous coal is being sold, consumers are continuing the waiting policy which has been a prominent characteristic of the market for several weeks. Jobbers find that even high grade stock from West Virginia mines attracts little interest among their customers.

Though the proximity of the holiday period and the time when many of the industrial plants take their annual inventory is in part held responsible for the limited buying, the natural seasonal recession in trade is exaggerated by the unsatisfactory condition in industrial and business lines.

Another influence deterring action is the expectation that the railroads will put in effect a lower scale of freight rates in the near future and that buyers who are able to hold off on purchases will derive substantial benefit from a reduction in transportation costs.

Lump from Ohio mines is quoted $3 @$3.25, egg $2.40, mine run $1.90, nut and slack $1@$1.25. West Virginia lump is $3.10@$3.25, egg $2.50, mine run $2, nut and slack, $1.15@$1.25. Pittsburgh No. 8 inch and a quarter size is $2.40, three-quarter lump $2.35, mine run $2@$2.15, nut and slack $1.50@$1.65. Smokeless lump and egg is $4.50, mine run $2.50, nut and slack $1.60.

Anthracite—Distribution is proceeding very slowly, orders usually are limited to one or two tons, this buying system being attributable to high retail prices and the extensive unemployment.

ST. LOUIS

Unusual Weather Holds Up Retail Business — Steam and Domestic Demand Light—General Conditions Unsatisfactory — Real Winter Weather Needed.

Warm weather continues. A few cold days some time ago helped the situation temporarily, but it is a hand-to-mouth proposition with the consumer this year and when he does order it is usually the cheapest coal and the smallest quantity.

Dealers have their yards piled up with coal and are beginning to fear that this tonnage will not move until after the first of the year. Carterville is almost at a standstill and Mt. Olive is a close second, while the Standard movement is hardly noticeable.

There is no demand at all for hard coal or smokeless and coke deliveries are practically nil. Even the domestic movement of coal through this gateway has almost stopped. The steam condition is not much better. Prices are unchanged.

CLEVELAND

Market Still Dull—Lake Season Ended —Cleveland Seeks Local Freight Rate Cut—Receipts Dwindle.

The coal market continues extremely soft, with distress stocks gradually being worked off. Added to the considerations of stock accumulations before the recent rail and coal strike threats and slackness of industry, is the nearness of the inventory period. Consumers are unusually anxious to keep their stocks at a minimum at this time of the year.

With the close of November, the largest Lake season since 1918 was ended. The total movement for the season is placed at 22 400,000 net tons of cargo coal compared with 28,153,000 tons in 1918. The movement in November was 1,500,000 tons compared with 2,200,000 in October.

The retail market is rivaling the industrial coal market in dullness. There has been little cold weather as yet. This has had the effect of dampening a feebly reviving household demand. The advent of cold weather is expected to cause a spurt in buying, because consumers have been holding off purchasing in the hope of lower prices and freight rate reductions. One factor which bids fair to help coal sales is the drastic increase in the gas rates. The first month's bills for furnace gas under increased rates in Cleveland and suburbs have caused many users to disconnect gas from their furnaces, and to revert to coal consumption.

An appeal for the reduction of freight rates from the Ohio, Pennsylvania and West Virginia fields to Cleveland is to be made to the Interstate Commerce Commission by Frank Baer, traffic commissioner of the Cleveland Chamber of Commerce. The move comes as the result of the recent reduction of ore rates by 28 per cent. An effort will be made to have the roads bear the whole of a 35c. terminal handling charge assessed by the Erie for coal from other roads handled upon

their lines in Cleveland. The Cleveland chamber believes that coal should be reduced along with ore rates. It is pointed out that in 1918 ore was shipped from Cleveland to Pittsburgh for 91c. against 92c. at present, while coal from Pittsburgh to Cleveland cost $1.55 in 1918 and $2.66 a ton now.

Receipts of bituminous coal during the week ended Nov. 26th, were the lowest in several months. A total of 741 cars were received, divided: 451 cars for industries and 290 cars for retail dealers, a decrease under the preceding week of 393 cars. This is quite a contrast with the week ended Nov. 19, when 2,087 cars arrived in Cleveland.

CINCINNATI

Distress Coals Depress Prices — Demand Very Sluggish — Retail Markets Sag.

The process of "getting out from under" was working full force last week and an attempt to quote actual stable prices on the market was merely an attempt to approximate. "Write your own card" is the way that some put it, for in cases of distressed coal it was much more "what will you give" than "what will I get." Field after field is reporting a preponderance of closed mines—some of which announce that there will be no resumption until after Jan. 1. Still the accumulation at the scales continues.

Under pressure of about 1,500 loads backed up at Portsmouth, smokeless prices started to slide, and with reports of sales at $2.75@$3 at Chicago and Detroit the market on lump declined to $3@$3.50 here.

Bituminous prices were varied, with general underselling necessary to move coal. Sales and quotations on Logan slack were 85c.@$1; mine run $1.50@$1.75; egg, $2.25; splint lump, $2.75; gas, $2.25. Kanawha had a range of about the same figures. Big Sandy slack was 95c.; mine run, $1.50@$1.75; egg, $2@$2.35; lump, $2.75@$3. Southeastern Kentucky slack was 85c.; mine run, $1.50; 4-in., $1.35; egg, $2.25, and lump, $3.

There was practically no change in retail prices, although values were sagging in this way, that concessions were being made against the usual charge of 25c. for hilltop delivery, where this is usually exacted as a premium. High water in the river was interfering with shipments from that source.

South

BIRMINGHAM

Buying at a Standstill—Industries are Carrying Heavy Stocks—R.R. Fuel Declines—Weather Slows Domestic Business.

The coal market is about as dead as it could be. The sources of consumption for commercial coal are apparently carrying sufficient stocks to take them into the new year, and cannot be induced to place further orders at this time. There is no demand for bunker coal, as there are fewer ships than usual putting into and leaving Southern ports, and the consumption from this source is reduced below normal tonnage.

Contract consumers are taking as little coal as possible, as their stock piles were built up to some extent in anticipation of the rail strike and they are not now taking near their average tonnage. The railroads particularly are holding off on deliveries against their fuel contracts.

The domestic situation is also critical so far as the producer and retailer are concerned. The continued warm and unseasonable weather is proving their undoing and the output of the mines is disposed of with difficulty and delay.

There is so little inquiry that prices really cannot be called "quotations," but figures at which steam and domestic coals are moving are practically without change from those given a week ago.

LOUISVILLE

Business Poor, General Outlook Gloomy —Many Mines Down—Wage Cut in Southeastern Kentucky.

Jobbers and producers are all having their troubles just now as a result of continued mild weather and lack of demand. The trade has not recovered from overproduction and stocking in October, and contract customers are not even taking their requirements, much less accepting their December or January supplies ahead of time and enabling the mines to keep going.

More mines are closing down in eastern Kentucky. The southeastern field has just made a wage cut of 27 to 30 per cent in trying to compete with the non-union West Virginia fields.

It is believed that a heavy buying movement will set in in advance of the ending of the present wage agreement with the miners in March, as it is thought there will be a wide-flung miners' strike at that time.

Little business is anticipated during December. Retailers are buying just a little steam coal to fill their local plant contracts, but have fair to heavy stocks of prepared sizes on hand, and are not showing any interest in such.

Southwest

KANSAS CITY

Summer Weather Curtails Domestic Trading—Steam Sizes Short—Business Conditions Poor.

Summer weather prevails throughout the Southwest. Retail dealers are doing practically nothing. A great many residences are using no fuel and lack of domestic demand has created a shortage of steam grades. In some instances screened nut has been used for steam purposes.

About 25 per cent of the miners in Kansas have resumed work. Business generally in the Southwest shows very little improvement. There is a great lack of employment and market for goods produced. The Southwest being the agriculture and stock territory, is greatly affected by the low prices for grain and live stock and the high freight rates necesary to get it to market.

Prices are as follows: Kansas lump, $5, mine run, $4@4.25, nut, $4.50, mill, $2.75, slack, $2.50; north Missouri lump, $4.75, mine run $3.50, washed slack, $3.25, raw slack, $2.50; Arkansas lump, $7@$7.50, mine run, $3.75@$4.25, slack, $2.50@$2.75; Oklahoma lump, $8.50, nut, $7, slack, $2.50@$2.75. Springfield district, Illinois lump is $3@$3.75, egg, $3@$3.25, slack, $2@$2.10; Franklin County, Ill. lump is $4.25 and egg $4.05.

West

DENVER

Price Reduction Follows Wage Cut — Strike Losses Are Insignificant—Situation Well in Hand.

With the 30 per cent cut in wages to miners in thirteen Colorado Fuel and Iron Co. mines recognized by practically a normal force of workers, other operators are thinking of making a similar reduction at their mines. A reduction of $1 a ton on lump and nut at the mines was announced by the Colorado Fuel and Iron Co., effective Dec. 1 and is in line with the recent reduction of wages.

The strike has not been called off, and the Las Animas and Walsenburg bituminous districts are still under material law. No serious outbreaks have occurred. The union leaders have not indicated what, if any, move they will make. The state-wide sympathetic strike did not work out as planned, although six mines in Fremont County district are still shut down.

Production for the week ended Nov. 19 was 66 per cent of capacity, an output of 189,991 tons. Lack of orders was equivalent to 28 per cent. Strike losses reported by the Colorado Coal Operators' Association equalled only 1,000 tons.

SALT LAKE CITY

Retail Business Fluctuates—Industrial Conditions Poor, but Outlook Is Improving—Production Low.

Retailers report a fair business, but the volume is much less than it should be considering that only a few people have ordered their winter coal so far. The idea of storing coal seems to have lost favor with the majority of consumers; they prefer to buy from hand-to-mouth.

There is very little, almost nothing, doing in an industrial way. Business men in all lines, however, are optimistic. The copper mines will, without a doubt, be reopened by early summer, while there is a reasonable prospect of a $25,000,000 steel plant being set up. It is expected that production this year will scarcely exceed 4,000,000 tons, or 30 per cent less than last year's output.

Canada

TORONTO

Mild Weather Keeps Trade Quiet— Market Well Stocked—Bituminous Selling Slowly at Softer Prices.

The trade continues quiet, owing to the mildness of the weather. Most domestic consumers are merely buying from hand to mouth and a continuous cold snap would find many householders unprepared for it. Dealers have ample stocks of all grades of anthracite on hand, with the exception of stove, which is hard to obtain.

The situation as regards bituminous shows no change, except that wholesale prices are slightly easier on ¾-in. lump, being quoted $7@$7.75. Other quotations are unchanged. Demand is very light and the market is overstocked.

News From the Coal Fields

Northern Appalachian

CONNELLSVILLE

Market Still Softer—Demand Almost Absent—Little Interest in Contracts.

The coke market has grown still softer, on account of the continued absence of demand. Production by the merchant ovens has decreased about 30 per cent in the past five or six weeks and still seems to be somewhat in excess of requirements while there is an accumulation on track waiting to be moved. There has been practically no buying by furnaces for several weeks, and the miscellaneous demand, never large, has been particularly light, demand from smelters having almost disappeared.

A price of $3, a fortnight ago the minimum of the market, is now merely a nominal asking price, with prospects that it could be shaded on inquiry for a round lot. It is reported that a sale, December to March inclusive, has been made at $3.40, but this is not absolutely confirmed. A sale for December alone has been made at about $3.15. Furnaces now in operation are showing no interest in renewing contracts for any part of the new year.

Foundry coke continues in light demand. Some special brands are held at up to $4.50, but meet with extremely limited sale. There is occasional inquiry for prices for first quarter, but operators do not regard such inquiry seriously.

The market is quotable generally at $3 for spot furnace, $3.15@$3.40 for contract furnace and $4@$4.50 for spot foundry.

The *Courier* reports production in the week ended Nov. 26 at 42,860 tons by the furnace ovens, an increase of 7,520 tons and 31,760 tons by the merchant ovens, a decrease of 1,580 tons, making a total of 74,620 tons, an increase of 5,940 tons.

PITTSBURGH

Production Very Light—Unable to Meet Competition of Non-Union Fields—Proposed Combination of Panhandle Mines.

Coal continues at a very low rate, and scarcely any of it is against current sales. There are some contracts in force, largely for gas coal, and the Panhandle district is selling some domestic. As for many months past, the position is that the average buyer fills his wants in non-union fields, particularly Westmoreland and Connellsville, where prices are much lower on account of labor costs having been liquidated. The Panhandle operators show a lower cost than other portions of the Pittsburgh district for various reasons, the chief of which is that their exhaustion charges are less.

Even Panhandle coal, however, seems to be selling at a loss since there are cases of 1¼-in. domestic going at $2.75 when the slack may go at as low as $1.25, making an average of $2.25 for the run of the mine. Westmoreland and Connellsville coals are bringing $1.50@$1.90 for mine run, prices with which union mines cannot compete.

A movement is on foot for the merger of about twenty mines in the Panhandle district, the object being to reduce expenses and secure a better representation for the district in wage adjustments.

Slack is being sacrificed, as it is produced in excess of demand in making shipments of screened gas and domestic lump. We continue to quote mine run $2.10@$2.20 and ¾-in. $2.60@$2.70, covering steam and ordinary grades of gas. High grade gas is held at $3 or higher, but meets no sale. Panhandle 1¼-in. domestic is easier, selling $2.75@$3.

EASTERN OHIO

Production Declines—Industrial and Domestic Stocks Preclude Buying—Outlook Fails to Improve—Lakes Closed.

Production during the week ended Nov. 26 was 285,000 tons, or 56.6 per cent of potential capacity for the five-day week. Notwithstanding the observation of the Thanksgiving holiday and the natural expectation that the daily average would probably be increased thereby, mines averaged but 57,000 tons per day, and the output was 98,000 tons less than in the preceding week.

Association mines worked 43 per cent of possible worktime during the period as compared with a little better than 50 per cent the preceding week. No market conditions at the present time may conservatively be placed at between 50 and 55 per cent. Mines on the Pennsylvania showed the greatest decrease in the time worked, those on the B. & O. and Wheeling & Lake Erie not being so precipitous in their declining operations.

With continued mild weather and no apreciable increase of traffic, and the further fact that most roads stocked up heavily several weeks back, the quantity of railroad fuel going to the carriers has diminished considerably.

Cumulative figures for the calendar year show an aggregate output of 16,331,000 tons as against a potential capacity of 29,192,000 tons.

The present lack of demand is not an unexpected outcome of the stocking up which took place during the close of October and early November. With industrial consumption as well as the railroads continuing sub-normal and retail yards remaining well filled, it is generally felt that market stagnation may not break for several weeks. The outlet afforded by the Lake shipping is just about closed; in fact, the next ten days will probably see the final cleanup of the season.

The various rumors and predictions that there is an impending reduction in freight rates is another factor contributing to the uncertainty in the trade. Some buyers are holding off and not ordering more than current requirements on this account. It is not improbable that additional mines will be closed down unless there is an improvement in the situation.

Owing to the smaller volume of prepared sizes now being moved, spot prices on slack have stiffened somewhat because of the consequent scarcity of this grade. As contrasted with this situation in slack coal, other prices have softened.

CENTRAL PENNSYLVANIA

Overproduction Responsible for Present Market Slump—Non-Union Mines Continue Better Run—Current Buying Only.

The industry is again at a low ebb. Overproduction is one of the chief causes of the present slump. The threatened disturbances in the latter part of October caused buyers to stock up for the first time in many months and it will be some time yet before these stocks are used up.

Buyers, as a rule, are holding off on account of a possible reduction in freight rates and are ordering only what coal is needed for immediate use. Whether the reduction comes or not, coal will be in demand by the first of the year and operators predict a considerable pick-up. Union mines in many places remain idle while the non-union operations are maintaining a 60 per cent production.

Spot prices on all grades are below the cost of production. It has been found that the mines in Maryland and West Virginia are selling coal to the Inland towns at a lower rate than that for which coal from this field can be mined. In those fields, the cost of production is 80c. to 90c. as against $1.20@$1.30, and $4 for labor as against $7.50 in the union field of central Pennsylvania.

UNIONTOWN

Production Low—Coal and Coke Markets Continue Weak—Frick Ovens Increase.

Coal and coke production in the Connellsville bituminous region fails to show much reaction from the slump which appeared a short time ago. Frick coke ovens have been increased in operation but this is the only feature along that line.

The market continues soft, with no demand and prices at low level. Furnace coke is quotable around $3 and upwards; foundry at $3.75 and coal at $1.15 up. The principal reason given for the extreme dullness seems to be necessity of reduced freight rates and a persistent rumor in the region that decreased tariffs may be expected soon.

FAIRMONT AND PANHANDLE

Holiday Idleness and Poor Markets Cut Production—Cancellations Heavy—Spot Buying at Minimum.

Fairmont

Only a small portion of northern Western Virginia mines were at work during the week ended Nov. 26. The Thanksgiving holiday cut down production but there was so little business available that there was no need for heavier operations. Lower prices on the spot market were responsible for many cancellations and rejections, and prepared grades along with others, suffered as a result.

Northern Panhandle

With industrial demand only about 50 per cent of normal and with railroads taking little fuel, production was materially reduced. Thanksgiving

Day caused most of the mines to close for the balance of the week. Spot buying was virtually at a standstill and the Lake season was at an end, the railroads taking the bulk of the output.

UPPER POTOMAC

Mine Idleness Continues—Non-Union Competition too Stiff—Prices Only Nominal.

Not more than a dozen of the fifty mines in the Upper Potomac region were able to operate at all during Thanksgiving week. Mine owners cannot compete with the non-union fields, and where the wage scale was adhered to there was no operation because of the depressed market and high production cost. Similar conditions prevailed in the George's Creek region, where none but a few Big Vein mines were running. Nominal quotations ranged $1.50@$1.75.

ANTHRACITE

Operations Close—Demand Slipping—Warm Weather Curtails Market.

Last week was almost strikeless in the field, the only trouble being at the Marvine Colliery of the Hudson Coal Co., caused by the introduction of the check-out system. However, this was of short duration. The case has been put up to the Anthracite Board of Conciliation.

Warm weather has adversely affected the market, and it is very difficult to move pea and chestnut. The demand for boiler sizes is a little better. Some of the large retail dealers state they have stocks sufficient to last them until April.

One of the large companies in the Schuylkill region has closed down for three days. Another company has closed down one colliery for the same period.

Middle Western

SOUTHERN ILLINOIS

Warm Weather Halts Domestic Movement—No Steam Activity—Railroad Tonnage Light—Many Mines Suspend.

In the Carterville field conditions have reached a critical stage in the way of movement of the larger sizes. Many mines have not worked for a week or ten days and others have been getting one or two days a week. Two large mines in Franklin County are making desperate efforts to work every day, but other mines of the same companies are suffering as a result.

The domestic movement has practically stopped. Tonnage to the Southwest through the Thebes gateway has ceased altogether. Warm weather is principally the cause of the tieup, but information from retail sources indicates that thousands of customers who have heretofore used the best Illinois coals are financially able this year to buy only the cheaper grades and in small quantities.

The steam market has strengthened some on screenings and also on nut, but egg and lump are heavy and there are trainloads on every sidetrack through the southern Illinois field. A report a few days ago showed something like 2,000 cars on hand without disposition and the situation has not improved since then.

Railroad tonnage has eased up. Association prices still prevail at $4.05 for lump and egg and about $3.50 on nut, with screenings $1.50@$2. Independent prices are somewhat under these, with nut as low as $3 and lump and egg $3.25. Independent screenings, however, are up with the association prices.

Somewhat similar conditions prevail in the Duquoin district except that operations are on an even lower scale. In the Mt. Olive field the situation is giving great concern to the operators. Domestic tonnage has practically fallen off to one day a week and the tracks are loaded with lump, while just enough of the steam size is being produced to take care of contracts.

The Standard situation is a deplorable one. Many mines have been idle for two weeks, with no early chance of resuming. Some mines have had lump on track for twelve days and demand is so poor that there is no chance of moving it until extremely cold weather comes.

Steam sizes, such as screenings, are moving fairly well and small nut is in good demand. Railroad tonnage is fairly good, everything considered. There is some unrest at many mining towns on account of the poor working time.

MIDWEST REVIEW

Domestic Markets Inactive and "No-Bills" Increase—Steam Coals Short—Eastern Fuels in Keen Competition.

Warm weather, combined with continued agitation for a reduction in freight rates on coal, has resulted in a complete stagnation of the market.

Practically no domestic is being purchased. Retailers have as much coal on hand as their bins can hold and are not forcing their own trade to take any tonnage, claiming that rural credits are such that practically all business has to be done on a cash basis. While retail dealers have no very general idea of the freight rate situation, they all believe that rates will have to be reduced quickly. They are, therefore, not in a buying mood. However, they are holding back principally because they cannot move what they already have on hand, and the prospects will be poor until the Middle West gets some seasonable weather.

Prices on steam coals are strengthening to some slight extent, not on account of an increased demand, but because of a decrease in production of domestic sizes. Operators in the more favored fields of southern Illinois are now holding their screenings $1.50@$2, with an average in the vicinity of $1.85. There are plenty of reports of "no-bills" at the mines, but investigations show that most of this coal is domestic rather than steam, as when the market is extra poor on screenings, the larger southern Illinois operators send it into storage rather than to attempt to sell on the open market. Production is decreasing rapidly and mines are now working less than three days a week.

Judge Anderson's injunction against the check-off has ceased to be a factor in the market. It is impossible at this writing to give any reliable information as to when a judgment will be handed down on the appeal. In the event, however, that a judgment upholding Judge Anderson's injunction is handed down within the next few days, it will have little effect on the coal industry, because it is anticipated that the United Mine Workers will again appeal their case to the Supreme Court, where the case will probably remain until after the present expiration of the contract with the U. M. W. These circumstances being taken into consideration, operators doubt very much if a strike will materialize before the expiration of the working agreement with the miners in March.

Competition from Eastern coals is seriously affecting the Middle West market. West Virginia slack at 65c. @75c. has moved and in some cases displaced good Indiana and Illinois coal. Considering the higher quality of the Eastern coal, the differential in the freight rates between Eastern and Western coal is practically eliminated.

Franklin County screenings can be bought at $1.85 a ton, f.o.b. mines. The freight rate to Chicago is $2.16, making a total of $4.01. Eastern screenings with a freight rate of $3.43, can be bought f.o.b. Chicago at $4.08. Considering the natural qualities of the two coals, it can be easily understood why industries who are buying at all, are taking Eastern coal.

Most of this cheap coal comes from non-union fields, who can compete on account of the reductions that they are able to make from time to time on labor. We heard of one case last week, although it is not authenticated, where operators in a certain field in West Virginia meet every week and decide on what scale they can afford to pay their miners in order to meet existing competitive conditions. Illinois and Indiana operators, who are unable to change their wage scale, are thus at a great disadvantage.

WESTERN KENTUCKY

Shipments Steadily Slumping—More Mines Close — All Demands Are Weaker.

Movement of coal has been slowing down materially, while more mines are closing down for lack of business. Prices are not so much of a factor, in view of the fact that the Illinois, Indiana and western Kentucky mines are working along under the union wage scale, while western Kentucky has the advantage of eastern Kentucky in the matter of freight rates to Louisville.

Demand simply does not exist, retailers having fair yard stocks on hand. Industrial consumers do not want to carry over reserves on their inventories, as it is going to be hard enough for a lot of them to make a good showing this year without the added burden of heavy coal stocks.

If industrial conditions improve, or cold weather cleans up retail stocks, prospects point to a better movement shortly after the first of the year.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Market Is Lifeless—Majority of Mines Close—Prices Drop Further.

With a lifeless market and most prices under production cost, a large number of mines in Harlan and Bell counties have closed down. On Dec. 1 there were probably no more than 15 or 20 per cent in operation in the entire section.

This has materially reduced the output, but so far, no increase in demand

or price has been noticed. In fact, prices are now lower than for some weeks, best block selling as low as $3 and slack 85c.@$1.

Middle Appalachian

LOW-VOLATILE FIELDS

New River Operations Hard Hit — Market Oversupplied—Lake Outlet Removed—Prices Weaker.

New River and the Gulf

Heavy coal supplies on New River markets precluded much production during the week ended Nov. 26, and the output continued at a low level, not being over 11,000 tons daily. Only a few mines in the entire field were operated. Demand was almost completely dormant for all grades and prices were largely nominal. Neither at Tidewater, where so large a tonnage of New River is usually shipped, nor in the West, where the majority of domestic sizes move, was there any demand worth mentioning.

Winding Gulf production continued to drop as there was a large accumulation of unsold coal in Western markets and at Tidewater. Only a small proportion of the mines were in operation and all activity was suspended on Thanksgiving Day, much idleness also extending through the remainder of the week.

Pocahontas and Tug River

With the removal of Lake business, Pocahontas production was materially curtailed. The tonnage dropped to about 270,000 with no market losses about 140,000 tons. Very little coal was moving to coastwise markets and Western shipments continued to be the heaviest.

More coal was produced proportionately in the Tug River section than in others, although the ending of the Lake season had its effect. The holiday cessation of work was also a factor in cutting production, and car shortage continued to be felt. The best market was in the West and the bulk of the output moved in that direction. The only spot demand was for prepared sizes and prices were lower all around.

HIGH-VOLATILE FIELDS

Idleness Most Pronounced — Warm Weather and Poor Industrial Conditions Affect All Grades—Distress Tonnage Heavier.

Kanawha

Thanksgiving week was marked by the most extreme dullness of the year, and production was cut to the very quick. Holiday idleness made no material difference as production during the early part of the week was more than sufficient to fill all orders in hand. Cancellations and rejections also made heavy inroads on current production.

Logan and Thacker

Logan production slumped materially during the week. With the sluggish commercial market and the cessation of Lake shipments, only contract orders were in evidence. Prices, which were only nominal, were on an even lower basis than before.

No market losses amounted to nearly 50 per cent, or more than 100,000 tons in the Williamson field. There was also a 3 per cent loss from car shortage. The market was inactive but between general contract shipments and railroad fuel, operations in many instances ranged up to three days. The greater part of the commercial output went to Western markets.

Northeastern Kentucky

Mild weather made it impossible to produce much prepared coal, and industrial conditions were against any improvement in steam movement, so that the output was very low. Thanksgiving Day also cut down the tonnage, which was not over 30 per cent for the week. There was less buying in the Southern and Western markets and sales were limited largely to distress coal, much of which could be easily obtained.

Virginia

Production still averaged about 60 per cent, although the output was not as large as usual, owing to the Thanksgiving Day idleness, which extended in part to the beginning of the following week.

Spot buying was largely absent, although sales were not being encouraged by producers because of the low price levels prevailing. Much of the production was moved on a contract basis and the best call was, of course, for prepared sizes.

News Items From Field and Trade

ALABAMA

Charles Butts of the Geological Survey has gone to Birmingham to do work in the Montevallo Basin of the Cahaba coal field for the State Survey.

The Henry Ellen Coal Co. has been incorporated in Jefferson County and will operate a mine in the Cahaba River field. Incorporators are A. C. Payne, president; J. M. Donaldson, vice president and general manager, and Tom Stobert, secretary-treasurer. The capital stock named is $25,000. Offices are located in Birmingham.

ILLINOIS

The Eagle Valley Coal Co. has been organized at Harrisburg, with a capital stock of $1,000,000.

W. H. Parker, who has been associated with the Consumers Co. for seven years has entered independent business for himself and with **William Mitchell** will engage in the coal and ice business in Elgin.

Thomas L. Harris, coal operator of St. Louis has purchased the controlling interest in the mine of the **Madison County Mining Co.**, at Edwardsville and has taken charge of the property.

The property of the **Grillin Coal Co.**, near Aledo, consisting of a shaft, tipple, machinery, etc., has been sold at sheriff's sale to satisfy a judgment held by a bank amounting to $2,282. The property was bid in by Henry White, representing the bank, for $1,022.

INDIANA

The Anderson City Board of Works is ready to receive bids for furnishing 35,000 tons of coal. That will constitute a year's supply for the municipal light and water plant. Last year the city paid $2.95 a ton, but the board expects to shade that figure this year.

The Miami Coal Co. has purchased the Black-Hawk Mine, twelve miles southeast of Terre Haute, which was owned by Robert Smith, Andrew Spears, Charles Kidd and some minor stockholders of Terre Haute and Brazil. H. V. Sherburne, general manager, James Connery and John Connery are the chief owners of the Miami Co., which operates Mines Nos. 5, 7, 8, 9 and 10 in the Clinton field.

The grand jury of Spencer County has returned thirty-one indictments against coal miners in Pike, Dubois and Gibson counties, charging conspiracy to riot and rioting. The indictments grew out of the march of 200 or more miners from Pike County to Lincoln City, Oct. 18, when the non-union men employed in the Fox Hill and Oak Knobb mines were forced out.

The Vandalia Coal Mine No. 23, in the Linton field, resumed operations recently following a four months' shutdown due to the burning of a tipple. A large steel tipple has been erected and the mine remodeled.

The City of Logansport has filed suit in one of the Marion County Superior Courts, at Indianapolis, against the **Ogle Coal Co.**, for damages amounting to $30,000 for alleged breaking of contract. This is the amount of extra money the city alleges it was forced to pay for coal on the open market through failure of the coal company to keep its contract with the city last year to furnish coal at the rate of $1.95 per ton.

The Ayshire District Collieries Co., which is sinking a shaft east of Princeton, now down in the rock about forty or fifty feet, is sinking another 300 feet south of the first one. The second is down thirty feet. This is a departure in southern Indiana coal mining, the usual practice being to sink a second and smaller air shaft. Sometimes however, the bottom is better at the air shaft than at the main hoisting shaft. In the present case the company is making both shafts the same size so that whichever is found to have the better bottom will be made the hoisting shaft. The double-shaft plan is the idea of William Johnson, Vincennes, president of the company.

The W. B. Howe Coal Co. has increased its capital stock from $10,000 to $25,000.

KENTUCKY

The Peerless Coal Mining Co., after a shut down of more than a year, has resumed operations, and expects to be moving fairly large tonnage by Jan. 1.

As a result of a cut of 17½c. on a mine car of coal, 100 miners employed by the **Storm King Coal Co.**, at Storm King, and **Columbos Mining Co.**, at Christopher, in the Hazard field, have walked out on strike. It became necessary to cut prices in order to secure business and meet strong competition.

The John P. Gorman Coal Co., capital $100,000, has been chartered by John P. Gorman, Tom L. Gorman and Mary E. Gorman, all of Lexington.

Charles F. Richardson, of the **Sturgis Coal Co.**, is building what is said to be the largest towboat on the Ohio River, to handle coal tows from Caseyville, to lower points on the Ohio and Mississippi. The boat will be 208 feet long, have eighteen water-tight compartments of the non-sinkable type.

The Hamblett Mining Co., of Morton's Gap has filed amended articles increasing its capital from $45,000 to $60,000.

The Duvin Coal Co., of Providence, has been incorporated by Douglas J. Ruckman, Francis V. Ruckman and Helen Ruckman.

Amended articles have recently been filed by the **B. & B. Ice & Coal Co.**, Louisville, increasing capital from $60,000 to $90,000.

The Golden Ash Coal Co., Williamsburg, capital $50,000, has been chartered by N. A. Archer, William Archer and A. V. Brown.

The Elkfield Coal Co., Garth, capital $25,000, has been chartered by J. C. Bowman, R. Q. Young and James Moore.

C. F. Lowther, of the Allied Coal Co., and Sun Coal Co., Louisville, has filed suit in the Warren Circuit Court, Bowling Green, to force **R. J. Fricke**, oil operator, to turn over oil properties under agreement by which Lowther was to pay $40,000 for the property. The Illinois Producers Oil Co. is a party to the suit. Lowther demands either the property or $50,000 damages.

MINNESOTA

A letter from **F. R. Wadleigh**, chief of the coal section, fuel division, department of commerce, Washington, to Congressman Clague, of Minnesota, has been published touching the fuel situation in Minnesota, as a sort of response to the report to Governor Preus, of Minnesota, from N. J. Holmberg, state commissioner of agriculture. Wadleigh's letter criticizes Holberg's report as being lacking in constructive suggestion ,and containing irrelevant matter. Wadleigh's letter is exquisitely governmental. It would apportion coal buying to the nearest source of supply, the Illinois mines, would gradually eliminate anthracite from the Northwest; would establish central storage spaces, and would investigate the development of coking plants. Users would have no option but to do as they were told. And yet the Northwest has more storage than all other sections of the country, has done more toward preparing in the summer to store for the winter, and has by compulsion sought to answer all questions affecting coal supply. Just why the Illinois mines should be given a monopoly when the rail haul for lake and rail delivery to the Twin Cities for instance is less than the rail haul from Illinois mines alone? In fact, the whole question is open to debate as to why coal buyers should not seek such coal as they prefer and why coal producers should not seek such markets as they may, instead of attaching consumption to certain fields of production as the Russian serfs used to be attached to the land.

OHIO

Quin Morton, well-known operator in the Kanawha field, was a recent visitor in Cincinnati.

D. H. Pritchard, general manager of the Virginia Fuel Co. and **J. M. Stirnkorb**, sales manager of the Reliance Coal and Coke Co., both of Cincinnati, recently returned from a visit to Chicago.

The Hopewell Coal Co. has been incorporated with a capital stock of $125,000. Incorporators are H. Gross, R. Grant, Sr., Cumberland, Md.; E. G. Kimball, S. N. Moore, J. F. Gross, Keyser.

The nominating committee of the Cincinnati Coal Exchange have selected the following candidates for election to the directorate: **N. L. Maban, W. E. Denham, R. B. Hager, R. S. Magee, William Heitzman** and **Ed. Harper.** Three are to be elected at the elections which will be held at the Chamber of Commerce on Dec. 15.

A case of more than usual interest has been on trial before Judge John Weld Peck of the United States District Court in Cincinnati. It is the trial of the $35,000 breach of contract case of **H. P. Brydon & Bro.**, Piedmont, W. Va., against the **Reliance Coal and Coke Co.**, of Cincinnati. The charge is made that the defendants failed to take coal contracted for delivery to the Baltimore Manufacturing Co., while the defense is that the contract was in force only as long as the Baltimore concern agreed to accept the coal. Because of the wording of the contract it is contended that the decision will have bearing on many others in which identical terms have been written.

OKLAHOMA

Coal mines in Oklahoma produced a total of 3,547,432 tons during the fiscal year ended June 30, 1921, according to the annual report of **State Mine Inspector Ed. Boyle**, just completed. This is 440,420 tons less than was produced during the preceding fiscal year. Pittsburgh County led all others in the production.

PENNSYLVANIA

The Harwick Coal and Coke Co., is the new name of the **Equitable Coke Co.**, Pittsburg.

The purchase of 14,000 acres of coal land in Greene County has been made by the **Jones & Laughlin Steel Co.** The purchase was made from the **Piedmont Coal Co.** and is said to involve several millions of dollars. The property lies along Dunkard Creek, near the town of Point Marion.

James W. Darville, has resigned as general sales manager, Cory Mann George Corporation, New York City, to accept position as sales manager, Wentz Co., Philadelphia.

M. L. Taylor of the Morgantown Coal Co., with headquarters at Morgantown, W. Va., spent a few days in the Philadelphia market recently.

A business trip to Pittsburgh was recently made by **Benjamin Chaplin** of the Chaplin Collieries Co. of Morgantown.

The formation of the **Benjamin Coal Co.** was announced when papers were filed showing a company made up of W. L. Houck, Frank P. Benjamin and George W. Maxey of Scranton, and Joseph E. Fleitz of Wilkes-Barre. This company has taken over a large operation in Jenkins Township, Luzerne County, and will immediately begin the production of coal.

Although the Baltimore Shaft of the Hollenback Colliery, **Lehigh & Wilkes-Barre Coal Co.**, will remain out of commission for a considerable period as the result of a recent fire, employees will have the chance to work. Coal is to be hoisted by way of the slopes, permitting actual mining on nearly the regular scale, while employees who are unable to work at their accustomed jobs will be used in making repairs to the damaged shaft.

The J. S. Wentz Coal Co. has taken over the leases and equipment of the **McTurk Coal Co.**, with operations at Girardville. This mine will be operated in conjunction with the Raven Run, Hazlebrook, Upper Lehigh, Maryd and Mid-Valley mines, now under the supervision of T. E. Snyder, of Hazleton.

Madeira, Hill & Co. has informed the trade that Lester C. Bosler, mechanical engineer and for many years in charge of the power plants at the Nicetown works of the Midvale Steel Co., has become connected with the distributing department, and will give advice in regard to the proper kind of coal to be burned under given conditions.

The Walter J. Crowder Co., which for many years has conducted a retail coal business in Germantown and Oak Lane, has notified the trade it has decided to change its name to the **Suburban Coal Co.** William T. Brandreth, who has been with the house for more than twenty years, continues as president and manager.

UTAH

Frank H. Rolapp and others received judgment for $4,165 and costs in the suit against Margaret Kay and others. The action was brought to recover $80,000 alleged to be due as the result of the taking over of the Lincoln-Kemmer Mine by the defendants after a lease had been secured by plaintiffs.

The Equitable Coal Co., recently organized to operate in Carbon County, is opening up a mine on Willow Creek. Operations will start in the early spring, or sooner if weather permits. Offices are in Salt Lake City.

WASHINGTON, D. C.

W. B. Upton of the Geological Survey has completed field work in the coal fields of the Wasatch Plateau, Utah.

Argument will be heard, beginning Dec. 8, in the District of Columbia Supreme Court in the case of the **Claire Furnace Co.**, involving the right of the Federal Trade Commission to require cost reports in the steel and coal industry.

The Court of Claims denied the suit for $58,036 of the **J. M. McDonald Coal Mining Co.**, for alleged losses due to fuel prices fixed by the Government during the war. The court holds that the Lever Act authorizing fuel control did not make the Government liable for losses on contracts.

Coal operators were absolved from responsibility for high coal prices by **Senator Stanley**, of Kentucky, in a Senate debate. He declared: "During the time that coal was sky high, the great mining concerns attempted to keep down the listing of coal. I know of concerns that sold coal at $1@$5 a ton less than they could have obtained for it in an open market because they believed it was in an unhealthy condition." He said however that while fuel prices had declined the prices of other commodities made from cheaper material and cheaper labor remained high because of combinations in restraint of trade.

The members of the subcommittee on coal of the **Federal Purchasing Board** which will supervise details of purchases of coal by the Government have been appointed. In addition to **F. R. Wadleigh**, the chairman, **Commander E. A. Cobey**, in charge of Navy coal purchases and **Colonel T. B. Hacker**, in charge of Army coal purchases will compose the committee. The committee will study the coal market, seeking to advise as to the most practicable times and places to make purchases.

The General Land Office of the Interior Department has ruled that an application to purchase coal land under Section 2347 R. S. to be entitled to consideration as a valid claim existent at the passage of the leasing act must thereafter be maintained in compliance with the pre-existing law under which it was initiated. Where the application was filed on the day the leasing act was approved, the applicant will not be permitted to prove that it was filed prior to the time of actual approval if the applicant has failed to comply with the conditions of the act under which the claim was initiated and of the regulations thereunder relating to its maintenance.

In the suit of Texas vs. the I. C. C. before the Supreme Court the constitutionality of Paragraphs 18 to 22 of Section 402 of the Transportation Act is involved. The case grows out of the section of the I. C. C. in ordering the abandonment of the line of the Eastern Texas R.R. from Lufkin to Crockett, Tex., which line was promoted by the Texas, Louisiana Lumber Co., a subsidiary of the Central Coal and Coke Co., of Kansas City. The State of Texas resists the power of the commission to abandon the line, contending that the State only has authority.

The President has signed a bill passed by Congress, thereby making it a law, authorizing the **Rolph Navigation and Coal Co.**, to sue the Government for damages caused one of its boats by a naval vessel in San Francisco harbor.

WEST VIRGINIA

Organization of the **Dixon Coal Co.**, with headquarters in Keyser is the forerunner of further development of coal lands in Clay District of Harrison County. Back of the new concern are men well known in the coal circles of Mineral County and Cumberland, Md. This company is capitalized at $175,000, which indicates in a measure the scale upon which operations will be conducted. Leading figures are James E. Cross, S. N. Moore and Edward G. Kimmell of Keyser; Howard Cross and Robert Grant, Sr., of Cumberland, Md.

Beckley business men have launched what is to be known as the **Coal Service Corporation**, the general headquarters of which are to be at Richmond, W. Va. Actively identified with the new company are: F. L. Conway, W. H. McGinniss, Jr., H. A. Conway, T. L. Conway and P. J. Conway, all of Beckley.

In the future the **Arthur D. Cronin Coal Co. of Detroit**, will be known as the **Hinchman Creek Coal Co.**, authority having been granted by the Secretary of State to the company to change its name.

A visitor in the Kanawha region about the middle of November was **S. G. Smith**, general manager of the Kanawha & Ohio Coal Co., with headquarters at Columbus.

The Raleigh Wyoming Coal Co. of which Carl Scholz is vice-president and general manager, is experimenting with a wireless telephone system at its offices in Charleston with a view to installing this for use between the mines in Raleigh and Wyoming counties and the general office.

Geo. P. Daniels, general manager of the Smokeless Fuel Co., with general offices in New York, was a recent visitor at the main office of this company in West Virginia.

William McKell, president of the **McKell** Coal & Coke Co., with headquarters at Glen Jean, has resigned as a director in the American Constitutional Association and has been succeeded by former Governor John J. Cornell.

W. M. Wiley, general manager of the Boone County Coal Corporation, located at Sharples, was the principal speaker at a meeting of the American Constitutional Association recently held at Huntington.

John L. Cochran, who is located at Denver, Col., but who owns a good deal of coal property in southern West Virginia paid Charleston a recent visit.

Extensive improvements are being made at Mine No. 6 of the **Jamison Coal & Coke Co.** at **Farmington**, with a view to increasing the capacity. Electrical equipment is being installed.

The Stone-Scott Coal Co., has been active in the purchase of coal land in northern West Virginia. One purchase was from the **Fairmont-Sewickley Coal Co.**, of Fairmont, this tract being of the West Fork River at White Cedar, the coal being in the Sewickley seam. The company also secured tracts from Thomas S. Neptune and Jacob F. Strickler, a part of Waynesburg coal land.

It is possible that an option given by the County Court of Monongalia County to Samuel Pierce Love of the **Cleveland & Morgantown Coal Co.** for the purchase of $350,000 worth of bonds of the Morgantown & Wheeling Ry. may be exercised, the option expiring on Dec. 6. It is understood that the option for the purchase was at the rate of fifty cents on the dollar for the bonds. The court has control of the bonds owing to the fact that several magisterial districts of Monongalia County bonded themselves to aid in the construction of the railroad which has been in the hands of a receiver for the last few years. The Morgantown & Wheeling road connects with the Monongahela Ry. at Randall.

A. J. Salzer of the Southern Coal Co. of Fairmont was a business visitor in Weston recently.

The Sugar Creek Coal Co. is the name of a new company which will operate in the New River field, having its headquarters at Mt. Hope. Coal property on Sugar Creek will be developed. The capital stock has been fixed at $125,000. Among those interested in the new company are T. A. Doerr, L. W. Sydnor, N. R. Dietz, M. C. Rhodes, all of Charleston, C. W. Dillon of Fayetteville.

ONTARIO

The Semet Solvay Co. plans to build a $3,000,000 gas and coke-oven plant next spring at Hamilton.

In an affidavit filed in reply to the claim of the **Valley Camp Coal Co.**, for $21,754, alleged to be due on two checks, H. A. Harrington, former fuel controller, Toronto, claims $20,000 from the plaintiff as damages for the poor quality of coal supplied the parties for whom he ordered.

BRITISH COLUMBIA

Two of the mines of one of the largest producers, the **Canadian Western Fuel Corporation, Ltd.**, Nanaimo, have been closed temporarily. These are the Wakesiah and Herewood mines.

OUTPUT FOR OCTOBER, 1921

Vancouver Island District.

Canadian Western Fuel Co., Nanaimo	64,445
Canadian Collieries (D) Ltd.	
Comox	35,410
South Wellington	8,600
Extension	18,619
Nanoose Wellington Collieries	6,885
Granby Consolidated MS&P Co., Ltd	24,254
Old Wellington (Kinsol Foster)	513
Total	158,756

Nicola-Princeton District.

Middlesboro Collieries	6,977
Fleming Coal Co., Merritt	3,494
Coalmont Collieries, Coalmont	6,047
Princeton Coal & Land Co.	2,616
Total	19,137

Crow's Nest Pass District.

Crow's Nest Pass Co.	
Coal Creek	36,555
Michel	24,840
Corbin Coal & Coke Co.	5,789
Total	67,284
Total for month	245,177

All properties of the **Pacific Coast Coal Mines, Limited**, consisting of two big mines, one at Morden and one at Suquash, were purchased in a sheriff's sale by **E. B. Ross** of Montreal. The price paid was $316,100.

Traffic News

The commission has denied petitions for rehearing of the cases of the **Spring Valley Coal Co.**, and the **Central Illinois Coal Traffic Bureau.** In these cases the commission decided that rates from various mines in Illinois to the Northwest were prejudicial.

The commission has denied application of the B. & O. for rehearing in the complaint of the **Meyersdale Smokeless Coal Co.** In this case the commission found that the refusal of the B. & O. to furnish cars to the Meyersdale company at Cassleman, Pa., for transportation of coal, while furnishing cars to other shippers, was prejudicial to the Meyersdale company and preferential to its competitors.

The Watertown Chamber of Commerce has been allowed to intervene in the case of the Milwaukee Association of Commerce before the I. C. C. which relates to rates on hard and soft coal from Duluth and Superior, which are alleged to be prejudicial to Milwaukee.

In the **Perry County Coal Corporation** case, the commission has authorized the **Eldnar Coal Co., the Fullerton Coal Co., the Ruby Coal Co., the Madison County Mining Co., the New National Coal Co., the Groom Coal Co., the General Coal Co., the Oak Hill Coal Co., the O'Fallon Coal Co., and the Peoples Coal Co.,** to intervene. The case relates to rates on coal from mines in Illinois to points in St. Louis and East St. Louis districts.

In the complaint of the **St. Louis Chamber of Commerce**, an I. C. C. examiner recommends that the commodity rates on coke for certain west-side movements within the St. Louis-East St. Louis switching district are unreasonable.

The French Battery and Carbon Co., of Madison, Wis., allege unreasonable rating on ground petroleum coke from Kaulmont, Pa., to Madison.

Freight rates on coal shipped to points within the state of Wisconsin will be investigated by the railroad commission at a series of hearings to open at Madison, Dec. 19. Fourteen railroads are involved in the action of the rate body to establish definitely whether excessive charges on coal from Wisconsin docks occur in the intrastate rail hauls.

Obituary

William B. Hawkins, forty nine years of age, president of the Western Coal and Mining Co., died recently after a long illness. Besides his interest in the Western Coal and Mining Co., he was an executive in other coal mining properties in Illinois and Kansas.

News has been received of the death of **Ed. Funk**, which occurred in Youngstown, Ohio, recently. Mr. Funk was well-known in Birmingham, where he was general coke oven foreman of the byproduct division of the Tennessee Coal, Iron & Railroad Co.

Publications Received

Studies on Cooling of Fresh Concrete in Freezing Weather — Engineering Experiment Station, University of Illinois, Urbana, Ill. Bulletin 123. Pp. 63, 6 x 9 in.; charts and tables.

The Thermal Conductivity and Diffusivity of Concrete—Engineering Experiment Station, University of Illinois, Urbana, Ill. Bulletin 122, Pp. 6 x 9 in.; illustrations and tables.

Production of Explosives in the United States—Department of the Interior, Bureau of Mines. Technical Paper 291. Pp. 44, 6 x 9 in.; charts and tables. Giving details of the manufacture of explosives during 1920, and notes on mine accidents due to explosions.

Permeation of Oxygen Breathing Apparatus by Gases and Vapors—Department of the Interior, Bureau of Mines. Technical Paper 272. Pp. 24; 6 x 9 in. Illustrated; charts and tables.

The Analysis of Sulphur Forms in Coal Department of the Interior, Bureau of Mines. Technical Paper 254. Pp. 21; 6 x 9 in. Charts and tables.

Trade Catalogs

Representative Plants—Roberts & Schaefer Co., Chicago, Ill. Bulletin 15. Pp. 63; 8½ x 11 in.; illustrated. Description of representative coal mining plants, tipples and washeries erected by the company.—Advertiser.

Marion Excavating Machinery — The Marion Steam Shovel Co., Marion, Ohio. Catalog 190. Pp. 24; 9 x 11 in.; illustrations and tables. Describing the manufacture and use of steam shovels.

Sullivan Displacement Pneumatic Pumps —Sullivan Machinery Co., Chicago, Ill. Bulletin 71-F. Pp. 5; 6 x 9 in.; illustrated. Description of the Sullivan Displacement Pump for elevating acid by compressed air.—Advertiser.

Tube Welding Machinery and Fabricating Equipment—Davis-Bournonville Co., Jersey City, N. J. Pp. 24; 8 x 11 in.; illustrated. Listing machinery for producing welded tubing from commercial steel sheets or rolled strip stock.

Starters for Small A. C. Motors—The Cutler-Hammer Mfg. Co., Milwaukee, Wis. Publication 2038. Pp. 4; 8½ x 11 in.; illustrations and charts. Describing Bulletin 9804 starter with mercury type overload relays.—Advertiser.

A C-P Production for Every Class of Work—Chicago Pneumatic Tool Co., New York, N. Y. Publication 674, illustrated. Specifications of pneumatic tools.—Advertiser.

Ventilating Fans—Pittsburgh Mining Machinery Co., Pittsburgh, Pa. Publication V-101. Pp. 4; 8½ x 11 in.; illustrated. Description of the company's disc and centrifugal fans.—Advertiser.

Excavating Equipment — Pawling & Harnischfeger Co., Milwaukee, Wis. Bulletin 56X. Pp. 27; 8½ x 11 in.; illustrated Describing combination of machines in P. & H. Excavators, Nos. 205 and 206.

Stop Drilling Shot Holes by Hand—Chicago Pneumatic Tool Co., New York, N. Y. Publication 182. Description of the use of power operated pneumatic and electric tools in mines.—Advertiser.

American Air-Tight Doors — Conveyors Corporation of America, Chicago, Ill. Folder, describing cast iron door, suitable for ash pits, boiler settings, coke ovens, etc.

Sterling Transits and Levels—Warren-Knight Co., Philadelphia, Pa. Pp. 32; 4 x 7 in.; illustrated. Contains description and prices.

Association Activities

Morgantown Wholesale Coal Association

An interesting meeting of the Morgantown Wholesale Coal Association was held at Morgantown in November. Dr. A. C. Callen, of Morgantown, head of the mining engineering department of the West Virginia University, related the results of several tests in coal washing which had been conducted last spring. Dr. Callen explained the result of his tests in detail.

Before the close of the meeting a resolution was adopted by the association advocating an early reduction in freight rates in general.

Coming Meetings

The American Institute of Consulting Engineers, Inc., will hold its annual meeting Jan. 16, 1922, at the Engineers' Club, 32 West 40th St., New York City. Secretary F. A. Molitor, 35 Nassau St., New York City.

New England Wholesale Coal Association will hold its annual meeting Jan. 10, 1922, at Boston, Mass. Secretary, R. S. Townsend, 27 Kilby St., Boston, Mass.

Southern Appalachian Coal Operators' Association will hold its next meeting Jan. 27, 1922, at Knoxville, Tenn. Secretary, J. E. McCoy, Knoxville, Tenn.

Pike County Coal Operators will hold their annual meeting Jan. 6, 1922, at Pikeville, Ky. Secretary, F. E. Miller, Pikeville, Ky.

American Society of Mechanical Engineers will hold its annual meeting Dec. 5-9 at the Engineering Societies' Building, 29 West 39th Street, New York City. Secretary Calvin W. Rice, 29 West 39th Street, New York City.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

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The Tide in Bituminous Affairs

WHAT does the prevailing slump in bituminous-coal production and prices portend? How far down the scale will both descend and when, and what condition will make for an upturn? These and related questions are the chief concern of the soft-coal industry today. In view of the facts disclosed by the government's survey of stocks, the answer is not far removed. Relative to consumption, stocks of bituminous coal on Nov. 1 were nearly as great as when, on Nov. 11, 1918, they totaled the greatest in history—63,000,000 tons. The spurt in buying and production that preceded the threat of a railroad strike in October, last, surfeited the country with steam, domestic and all other kinds of coal.

The holiday season is approaching, when all productive enterprises normally slow down and industrials seek to reduce inventories for the annual stock taking. Were production of coal alone to be held as an index of industrial activity, it might well be inferred that business was fast going to pot, but it is only the coal business that is unduly depressed now. The story told by the stock figures is of an oversold, oversupplied market. Consumption of coal—that is, industry—is progressing slowly but surely upward; satisfactory evidence outside the statistics of coal attests to this, but the coal that is being burned is not all mined currently; for several weeks stockpiles have been attacked as if the winter were over.

For the coal man the prospects for the ensuing weeks of this year and perhaps the early weeks in January are not promising. Even anthracite is moving slowly, current output backing up in producers' storage pending the arrival of wintry blasts. The output of bituminous coal is descending at such a rate as to threaten an approach to the level of two years ago, when union mines were on strike and none but non-union were operating. There is a suggestion in this circumstance that perhaps again it is the non-union districts that are doing the business, with union mines idle because the miners prefer a minimum of work at present wages to a greater share of the total work at lower wages—a strike in fact, it seems, though not in name.

Of course, from the standpoint of national safety and convenience and according to past experiences, the market is really not oversold. The country as a whole has none too much coal on hand for this time of year, even were there no untoward difficulties in the offing. The coal operators and distributors as a whole have not overdone this thing of putting coal on the market, even if some have been and still are overzealous in cutting prices to keep operating. Circumstances over which the coal seller has no control have operated to produce present conditions, and among these the question of freights has figured prominently.

Unwarranted expectations, soon to be if not already dissipated, of early reductions in transportation costs have influenced some to defer buying, and since the approval of the tax bill last month all who are able to do so are waiting until after Jan. 1 to make further purchases in order to avoid the transportation tax.

Meanwhile, with consumption gaining, a demand is being accumulated that will most certainly come forth in January. No flood of business can be expected, but there is certain to be a return to the comparatively better times of August, September and October. The more careful buyers are watching the market and will replenish the stocks they are now using, with coal at cheaper delivered prices in January. Prices will recover as spring approaches. In the meantime there is but one course for the producers to pursue; it is the course that any and all business follows under like circumstances—reduction in output. Price is certainly not moving coal today. Some distributors who have positive instructions to move the output of certain mines report that coal can hardly be given away this month. Fortunately for the good of all, this practice is limited.

Are We Ready for the Temple of Peace?

THERE is no subject of current discussion at once apparently so fruitless and for the moment profitless and yet so general as that relating to the probable outcome of the impending wage negotiations between the United Mine Workers and the coal operators. With few, but nevertheless comparatively influential exceptions, there is no disposition or wish to overthrow the union of the coal miners and to discard the ideal of collective bargaining. In fact the only instances of this are the result of stern necessity and flow from a stubborn adherence to already flaunted contracts by the international officers of the miners' union.

In Washington the union has been overthrown by the concerted action of operators and consuming public because no alternative was found permitting the coal industry there to live. Idle and hungry miners in the New River field and in parts of northern West Virginia and Maryland are reported to be of a disposition to repudiate the union that will not recognize their right collectively to work at lower wages. These are small but at the same time significant incidents.

The full weight of consumer opinion is with the producers in favor of reduction in the price of coal through lower wage rates. The householder has borne the brunt of the high costs, and in no substantial amount, if at all, has he benefited from the sagging of the market; distress coal has gone to the industrials, which is an explanation of why the average man has no idea that the prices of steam coal have dropped so considerably and is not influenced by the fact when he knows it. Therefore the average American householder is going to support any move to cheapen his fuel, and as he learns that wages influence the cost he is going to encourage wage reductions. This of course is an asset to the producer and will be a factor in the settlement.

The practical man—the coal operator who must on the

one hand meet the urgent cry of the consumer for lower prices and on the other face the prospect of negotiating with the union miner for lower wage rates—wants to effect a settlement by the well-tried method of the strike. There is well-grounded belief for the idea that the miners will never willingly agree to accept the reduction the situation demands, and there is ample experience to warrant the conclusion that arbitration would only result in a compromise. To the men who for twenty-five years have fought their way through scale meetings and wage negotiations this is an occasion that calls for close ranks and a determined stand on the part of the operators. To the rank and file as well as the leaders among the coal producers the proper thing is to have a showdown, with "hands off" on the part of the public and the government. The coal industry will ask only that it be left alone to take care of its own troubles next spring, and we believe that if there is no interference from outside the operators can and will put wages down to an economic level.

But will the government stand by without attempting to referee the contest? What had President Harding in mind, last week, in his message to the Congress, when he said, "so we might well have plans of conference, of common counsel, of mediation, and arbitration, and judicial determination in controversies between labor and capital. . . . It should be possible to set up judicial or quasi-judicial tribunals for the consideration of and determination of all disputes which menace the public welfare. In an industrial society such as ours the strike, the lockout and the boycott are as much out of place and as disastrous in their results as in war, or armed revolution in the domain of politics"?

These and the accompanying text are fine words; is there a plan behind them? Will the country stock up for a siege and fight it out in the old way, or is there developing such a sentiment against the strike *per se* that the participants must perforce move into President Harding's "temple of peace in industry, which a rejoicing nation would acclaim"?

Would Forgiving Our Debtors Be Good Business?

AN HONORED contemporary, the *Iron and Coal Trades Review*, of London, discusses editorially in a recent issue Europe's debt to America. Reciting the stupendous totals that Great Britain, France, Belgium, Italy, Poland and others were advanced by our government and our difficulty in collecting even interest so long as we continue to export to Europe more than Europe sells us, the *Review* concludes that "signs may be discovered that American opinion is changing from the relentless 'pay all that thou owest' of a few months ago."

There are not lacking in this country advocates of a policy of forgiving these debts, on the theory that if from no other standpoint it would be good business, because until our debtors are on their feet financially they cannot trade with us on a large scale, and without magnified trade our industries will languish and labor and capital be unemployed.

President Harding in his address to Congress last week urged the grant of Congressional authority for negotiating with our debtors the refunding of principal and interest on their debts and pointed out that no large action would be taken without the approval of the legislative branch, but that "there are minor problems incident to loan transactions and the safeguarding of our interests which cannot even be attempted without this authorization." There is no likelihood that the question is to be settled in all finality at once or soon. It is for the people of this country to decide, and we will be a long time in deciding for other than requiring ultimate settlement.

It is perhaps pertinent to note that the practical effect of the credit we extended abroad has been for the most part to carry at 4 per cent the foreign debt of belligerents. The more than four billion dollars the United States loaned Great Britain, for instance, relieved that country from calling in and perhaps selling at a sacrifice that amount of the "£4,000,000,000 of foreign securities which were the result of two centuries of foreign investments," as noted by the *Review*. With respect to some of the smaller and financially weaker debtors there is argument for generous treatment.

The President should have the legislation he seeks as an aid in bringing understanding into the situation. The country, we believe, has confidence that the Chief Executive is sufficiently well advised in this matter to work out the best possible solution of this large international problem.

BRITISH OBSERVERS NOW QUITE GENERALLY RECOGNIZE that their coal can become no cheaper, the only way to lower the cost to industry being by reducing transportation charges. The average reduction in the price of coal since January has been around 13s. 6d. per ton and the owners contend that it is now below the cost of production. The British railroads argue that they have made sacrifices and have brought their charges to the lowest economic limit, while the mining industry urges that the loss incurred by the railways through lower rates would only be temporary, since the accompanying stimulus to industry would insure an increased volume of freight.

The coal operators say that wages, which now constitute 75 per cent of the cost of coal production, can go no lower, that overhead and other charges are at a minimum and that it only remains for the railroads to make sacrifices if it is to realize its hope of ultimate trade revival. The distress among coal miners in many parts of Wales is acute and the miner's average earnings amount to 1s. 2½d. per hour for a 7-hour day and a 4½ or 5 day week. Rates on coal to London in January, 1920, were 7s. 5d. including wagon hire; these figures have now increased to 12s. 5d.

A slight increase in export demand has followed reduction in coal prices and the Welsh ports are congested with the best steam coal waiting for shipment. In Newcastle the collieries are booked for all they can produce during the first half of December.

All of which has a familiar ring.

AS A MEANS OF INCREASING CAR EFFICIENCY in times of stress and as a factor in reducing the cost of handling coal, recommendations from a railroad source have reached the Department of Commerce which suggest an increase in the number of coal trestles. If this comparatively inexpensive facility were more generally installed it would make an appreciable difference in handling costs and would enable the railroads to confine their coal movement almost entirely to hopper-bottom cars.

Problems of the Coal Industry Nearly Sixty Years Ago Differed Little from Those of To-Day

Coal in Carload Lots Billed at $4.25 Per Ton in 1865—"Best Coal" Quoted at $3 Two Years Later—Broker's Commission, 50c.—Delivery Hampered by Strike and Car Shortage

By Louis C. McCarthy*

SOME interesting facts about conditions in the coal industry during the years 1865-7 as revealed by prices, car supply and labor activities are disclosed in some letters written at that time. The missives were unearthed by J. W. Searles, vice-president of the Pennsylvania Coal & Coke Corporation, among correspondence belonging to his late uncle, J. G. Searles. Some of the letters are reproduced herewith.

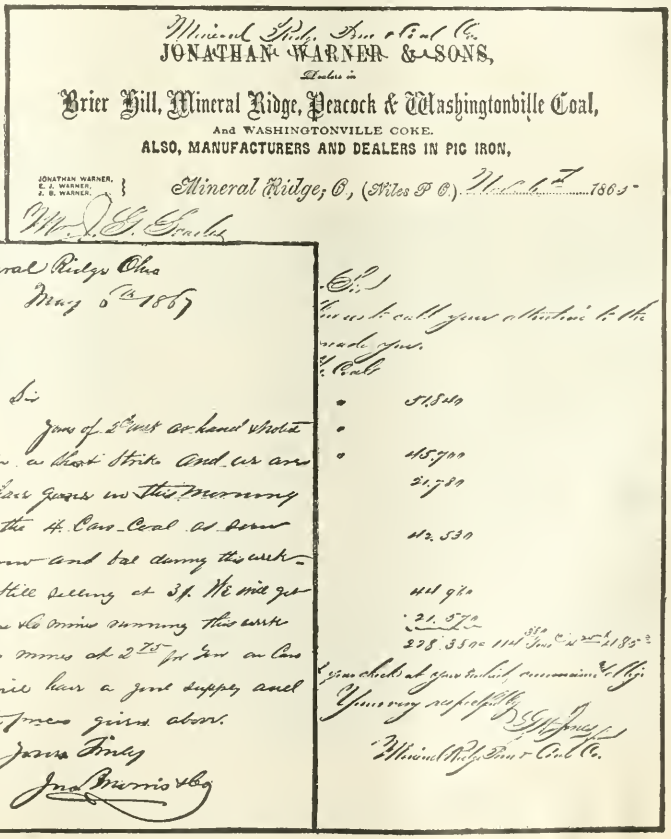
In a statement of carload shipments under date of Nov. 6, 1865, the price given is $4.25 per net ton, the kind of coal shipped not being specified. For those far-off days, when Lincolnian simplicity still held sway, that seems a surprisingly high price, such things as "trusts," "interests" and coal barons being as yet unknown. When it is remembered, however, the reconstruction years constituted a period of hitherto unexampled high prices, the charge does not occasion much astonishment. If $4.25 per ton was the peak price, coal buyers cannot be said to have had a very great burden to bear, comparatively speaking. The conclusion that this was the peak price seems to be borne out by a letter dated May 6, 1867, which quotes "best coal" at $3 per ton, the product of two other mines being listed at $2.75. Slack sold at $2.25 per ton Jan. 10, 1866.

From other correspondence in Mr. Searles' possession it is learned that the broker's commission was 50c. per ton at that time. The apparent magnitude of this charge is explained by the small tonnage handled—the exaction of a smaller commission probably would

*Associate editor, *Coal Age*.

Coal Prices Getting Back to Normalcy

On the statement of Nov. 6, 1865, coal is billed at $4.25 per ton. A year and a half later the price had fallen to $3 per ton for "best coal." A quotation of $2.75 per ton also is given.



Mineral Ridge Iron & Coal Co.
JONATHAN WARNER & SONS,
Dealers in
Brier Hill, Mineral Ridge, Peacock & Washingtonville Coal,
And WASHINGTONVILLE COKE.
ALSO, MANUFACTURERS AND DEALERS IN PIG IRON,

JONATHAN WARNER,
E. J. WARNER,
J. B. WARNER.

Mineral Ridge, O., (Niles P. O.) Nov 6th 1865

W. J. G. Searles

Mineral Ridge Ohio
May 6th 1867

J. G. Searles Esq
Petroleum Center Pa

Dear Sir

Yours of 2nd inst. at hand & note

Our men have been indulging in a short strike and we are out of Coal to day. They have gone in this morning and we will send you the 4 Cars Coal as soon as possible. Some to morrow and bal during the week of our best Coal which we are still selling at 3$. We will get the M & J Mines & the Corl Payne & Co mine running this week and will sell from either of these mines at 2.75 per Ton on Cars at Niles. After this week we will have a good supply and can fill your orders at the prices given above.

James Finley
Jno. Morris & Co

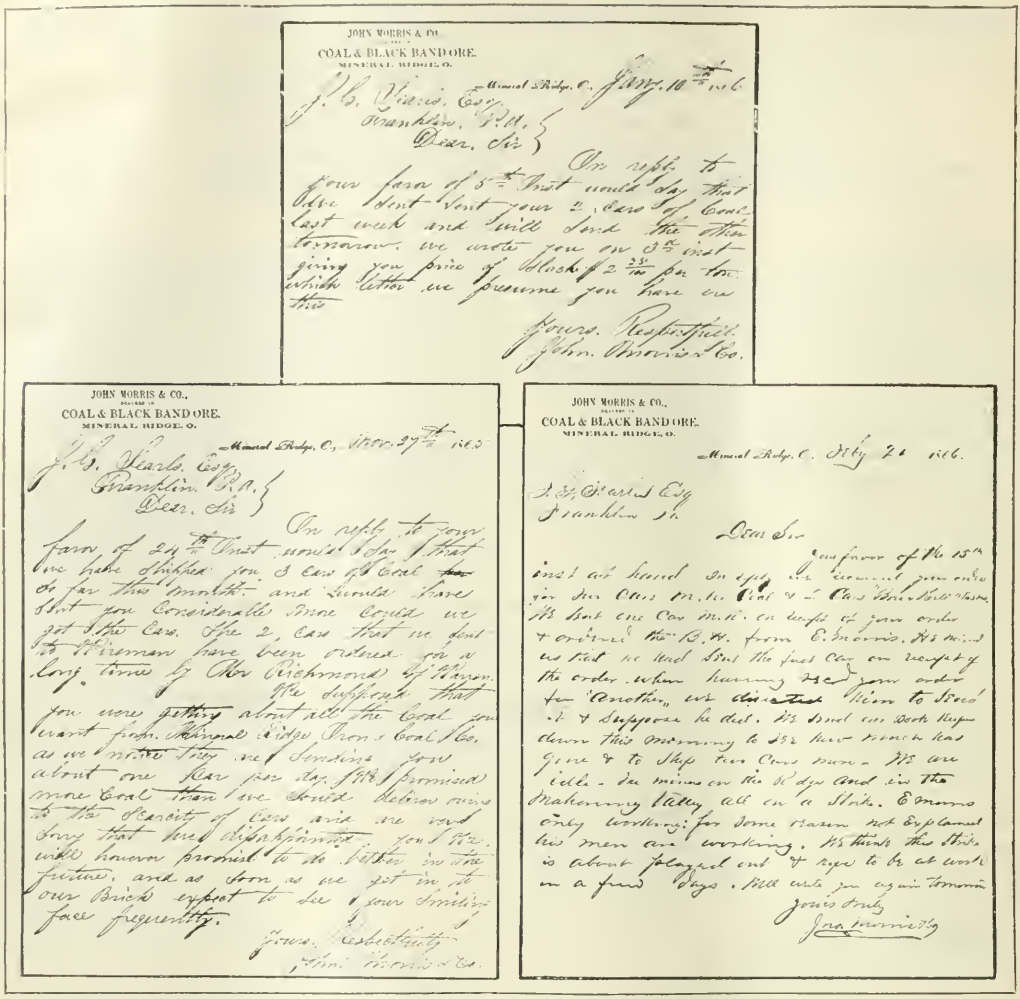
Yours of the 6th inst. at hand & note

We would call your attention to the grade of our

Coal

[illegible]

Yours very respectfully
J. G. Searles
Mineral Ridge Iron & Coal Co.



JOHN MORRIS & CO.
COAL & BLACK BAND ORE.
MINERAL RIDGE, O.

Mineral Ridge, O., Jany. 18th 1866

J. S. Harris, Esq.
Franklin, Pa.
Dear Sir,

On reply to favor of 5th inst would say that we sent your 2 Cars of Coal last week and will send the other tomorrow. we wrote you on 9th inst giving you price of Black at 2 25/100 per ton which letter we presume you have ere this

Yours Respectfully
John Morris & Co.

JOHN MORRIS & CO.
COAL & BLACK BAND ORE.
MINERAL RIDGE, O.

Mineral Ridge, O., Nov. 27th 1865

J. S. Harris, Esq.
Franklin, Pa.
Dear Sir,

On reply to your favor of 24th inst would say that we have shipped you 3 Cars of Coal so far this month and should have sent you Considerable More Coal we got the Cars. The 2 Cars that we sent to Wireman have been ordered for a long time by Abe Richmond of Mayan. We supposed that you were getting about all the Coal you want from Mineral Ridge Iron & Coal Co. as we have not been sending you about one Car per day. We promised more Coal than we could deliver owing to the Scarcity of Cars and are sorry that we disappointed you. We will however promise to do better in the future, and as soon as we get in our own Brick expect to see your Smiling face frequently.

Yours Respectfully
John Morris & Co.

JOHN MORRIS & CO.,
COAL & BLACK BAND ORE.
MINERAL RIDGE, O.

Mineral Ridge, O. Feby 24 1866.

J. S. Harris Esq
Franklin Pa

Dear Sir

Your favor of the 15th inst at hand in reply we would say we ordered you two Cars on the 9th & 2 Cars more Feb 14th We but one Car more on receipt of your order & ordered the B.R. from E. Morris. We mind us that we had Sent the first Car on receipt of the order. when running 3rd your order for "Another" we did not know to Send it & Supposed he did. We Send on both Cars down this Morning to Sta. there never has gone & to Ship two Cars more. We are idle. the miners on the Ridge and in the Mahoning Valley all on a Strike. E Morris only working; for some reason not Explained his men are working. We think the Strike is about played out & hope to be at work in a few Days. Will write you again tomorrow

Yours truly
Jno Morris

STRIKES AND CAR SHORTAGE WERE IN EVIDENCE EVEN IN THE SIXTIES

have rendered it difficult for a broker to make a living.

Latter-day commentators on mining and other industrial affairs are wont to emphasize the complexities attendant upon twentieth century progress as contrasted with the so-called simplicity of the "good old days." To the World War also is attributed the bringing about of conditions hitherto undreamed of. This was strikingly exemplified by the habit of blaming anything otherwise unexplainable on the war—c'est la guerre, as the French said. Coal shortages at that time, for instance, were most frequently attributed to "car shortage"—wholly due to the World War. To imagine, however, that the condition was wholly new in 1918 or that it took a world war to bring it about is wholly erroneous, for John Morris & Co., under date of Nov. 27, 1865, express regret for delay in delivering coal "owing to a scarcity of cars."

That strikes of mine workers were far from being an unknown institution during the seething sixties is shown in another communication from the same company, under date of Feb. 20, 1866, wherein it is stated: "We are idle—the miners on the Ridge and in the Mahoning Valley all on a strike. . . . We think this strike is about played out and hope to be at work in a few days."

As the typewriter had not at that time come into use, business correspondence had that intimate touch so conspicuously lacking in that of today, much of which bears that hallmark of the busy man "dictated but not read," frequently with the accompaniment of hieroglyphics in the corner suggesting a blackboard test in college football signals. The much-abused introductory sentence "Your favor of —— at hand" is utilized more than once, showing that standardization had set in even at that early day. Can it be possible that versions of the American eleventh commandment—to smile—were then conspicuously plastered on the walls of stores, offices and workshops?

Buck Run Coal Co. Methods of Preparing and Storing Coal

Breaker Finished in Four Months—Fifty Per Cent of Output Is Rock, Keeping Eight Pickers Busy—Nineteen Breakermen Prepare 900 Tons of Coal Per Day—Steam Sizes Stored—Reclaimed by Belt Conveyors

By Dever C. Ashmead*
Kingston, Pa.

SHORTLY after this country entered the Great War, or, to be specific, on June, 18, 1917, the breaker of the Buck Run Coal Co., near Minersville, Pa., was totally destroyed by fire. This occurred at a time when the coal market was active. It thus became necessary to rebuild the breaker with all possible speed. To accomplish this result, however, when it was almost impossible to procure steel and when the railroads were jammed with traffic, was a difficult proposition.

Immediately after the fire a new steel breaker was designed and the order for its construction placed with the Bethlehem Fabricators, Inc. This firm furnished and erected the materials, the breaker being ready to handle coal by Oct. 29, 1917, or exactly 133 days after the fire. The first full day's run through this breaker was made on Nov. 4 of the same year, and operation has continued steadily ever since.

At this plant two distinct buildings are employed for the preparation of coal. One, the rock house, is used for the removal of foreign material, and the other, the

BUCK RUN COAL CO. BREAKER NEAR MINERSVILLE, PA.

Showing the permanent dragline conveyor used to load coal from the stock pile into railroad cars when the distance is too great for the belt conveyors to reach them. In the rear of the breaker may be seen the top of the rock house. From this point of view the two buildings appear as one.

breaker, serves for the sizing and preparation of the resulting product. The rock house, a building constructed of steel and concrete, is erected over the mouth of the slope and into its upper story come the monitors bearing coal from the mine. These dump their contents into a large feeding chute or pocket, (2) in the accompanying flow sheet. From this point a boy feeds the coal and rock onto a shaking screen (3), by which the lumps of coal and rock (4) are separated from the fine material (5).

The mixture of lump coal and rock then goes to a picking table (6), where the rock is removed by hand. As the coal beds in this mine pitch steeply and the cars are loaded from chutes, it is practically impossible underground to separate the rock from the coal. As a result some exceedingly large lumps of rock reach the surface and a large force of men must be employed to remove this material. The rock constitutes as much as 50 per cent of the total output hoisted from this mine.

Eight men are employed on the picking table in the rock house, but even with this force the table is sometimes almost blocked by the large number of sizable rocks that must be handled. One of the accompanying illustrations shows the shaker and picking table in the rock house, and from it some idea may be gained of the size and amount of extraneous material accompanying the coal. The illustration shows a condition by no means unusual.

Rock from this picking table is sent to a large rock pocket located in the bottom of the rock house. Coal that has passed over the picking table joins the fine material previously separated from it and passes to a dragline conveyor (10) which transports it a distance of 300 ft., discharging it in the breaker at a point approximately half way between the ground level and the top of the building.

This conveyor (10) discharges to a shaker (11) upon which lump steamboat and finer coals are made. The lump coal (12) goes to a set of No. 1 rolls (15), after

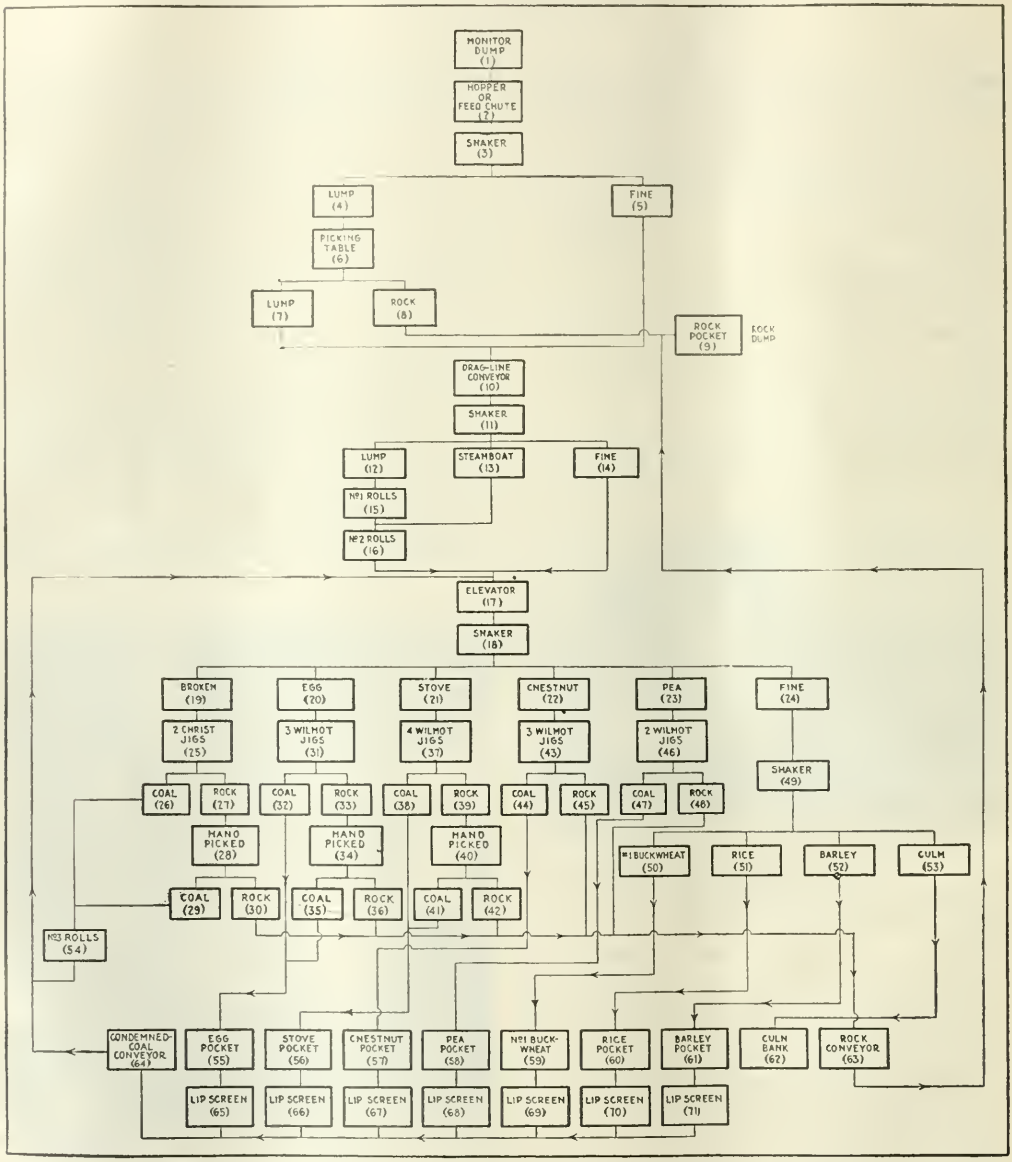
LOOKING DOWN MAIN SLOPE OF COLLIERY

The monitors running on this slope have a capacity of 13,000 lb. and themselves weigh 13,340 lb. The rope was swinging when the photograph was taken from which the illustration is made. This with the foreshortening explains the "Halley's comet" effect between the monitor and the upper foreground.

*Anthracite Editor, *Coal Age*.

passing through which it is joined by the steamboat coal from the shaker, the two going to a set of No. 2 rolls (16). The product of this crusher is then taken by an elevator (17) and transferred to the top of the breaker. Here it is discharged to a shaker (18), by which broken, egg, stove, chestnut, pea and finer are separated.

Broken coal (19) from the shaker (18) above mentioned then passes to two Christ jigs, the rock from which is hand-picked and the coal recovered thrown back into the clean product. This clean coal is then sent to a set of No. 3 rolls (54) and is crushed to smaller size. From these rolls it is taken by elevator to the top of the breaker for re-treatment on shaker (18). The elevator (17) above mentioned is in two parts; the first section takes the condemned coal as well as that



FLOW SHEET OF ROCK HOUSE AND BREAKER OPERATIONS AT BUCK RUN COLLIERY

Dragline conveyor (10), which is 300 ft. long between centers and 9-in. pitch double-strand Wilmot chain with flights 12x54x$\frac{3}{8}$ in., removes the coal from the rock house to the breaker. Everything shown above this conveyor relates to the rock house, all below appertaining to the breaker proper. It will be noted that this rock house is not like that at the Marvine preparator in that the coal is not crushed. The larger lumps of rock are removed from the larger lumps of coal and the rest of the treatment is left to the breaker.

BULL SHAKER IN ROCK HOUSE

Anthracite and rock in about equal proportions come from the monitors to this screen, and the lumps are separated from the fine material, so that eight men may remove the rock from the picking table in the foreground without its being disguised by the presence of finer material. It keeps the men quite busy to handle this large mass of waste material.

from the No. 3 rolls (54) to the floor on which the No. 2 rolls (16) are located. From this point to the top of the building the coal is taken by a second elevator. The two combined really form one continuous conveyor.

Egg coal (20) from the shaker (18) is treated in three Wilmot jigs. This rock, like that of broken size from the Christ jigs, is picked by hand. In this instance, however, the clean coal, being ready for the market, is sent direct to the pocket. Stove coal receives the same treatment as egg except that in this case four Wilmot jigs are required. Only three Wilmot jigs are needed to treat the chestnut coal, and the rock from these is not hand-picked as is that from the larger sizes.

Tests conducted on the tailings from these jigs revealed the fact that no coal whatever was passing over with the rock. These tests were made on 200-lb. samples and were conducted at times when the breaker foreman and jig runners had no idea that the product of the machines was being sampled. This speaks well indeed for the machines themselves and also for the men who are operating them.

The treatment administered to the pea coal (23) is exactly the same as that accorded the chestnut except that only two Wilmot jigs are employed. All the sizes treated in the manner above described are sent to their respective pockets except when, as will be noted later, storage of certain sizes may be advisable.

Fine coal (24) from shaker (18) or that smaller than chestnut is sent to another shaker (49), where the buckwheat, rice, barley and culm are separated. None of these coals receives further treatment but each is sent to its respective pocket for shipment with the exception of the culm, which, of course, does not go to a pocket but passes to the culm bank.

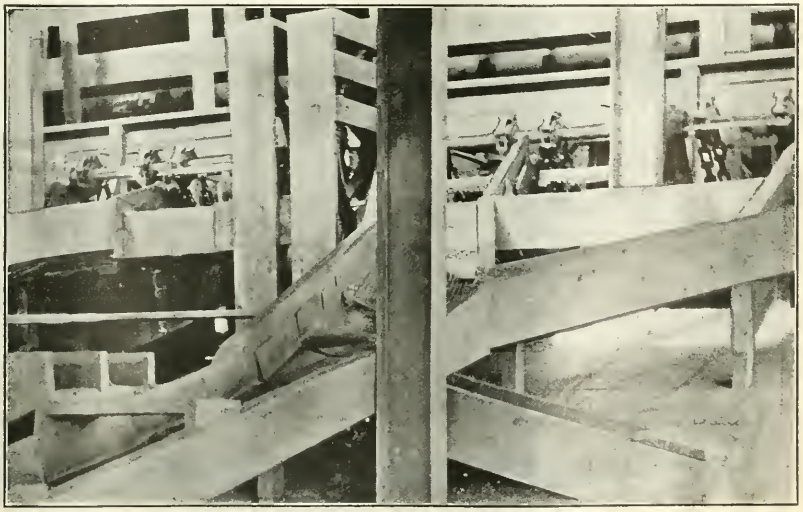
It is interesting to note that the large culm bank at this mine contains approximately 400,000 tons of fine material. At present this coal has no value in the market but it is believed that the time may come when it will be as valuable as the small steam sizes which only a few years ago were considered worthless. As soon as satisfactory methods are developed for burning this material it will be prepared for market on some form of slime table which will remove the high percentage of ash that it now contains.

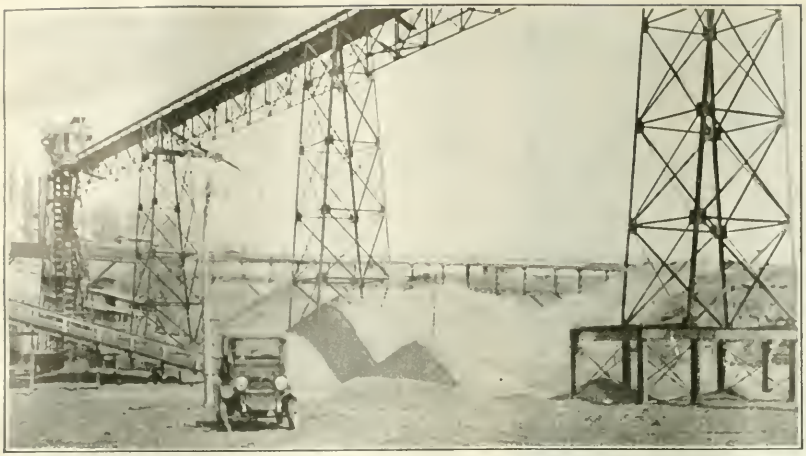
All rock from the jigs is taken to the rock house above the breaker by a scraper line (63). Here it is discharged into the main rock pocket, where it is loaded into a rock car which a hoisting engine hauls to the dump. The capacity of this rock car is 15 tons per load.

Condemned coal as well as that separated by the lip screens below the pockets is taken by the condemned coal conveyor (64) to the elevator (17) previously men-

Jig Floor

All the jigs are placed in a row across the breaker. The two Christ jigs which prepare the broken coal are in the center and the Wilmot jigs on either side. This illustration shows only a few of the Wilmot jigs. The chutes are so arranged that it is possible for the jig runner to watch carefully the product produced and therefore the results obtained are excellent.





Storage Plant

Coal is taken to the top of the 70-ft. steel trestle by an elevator and deposited at any desired point on the piles below through openings in the conveyor trough. The trestle is 320 ft. long between sprocket centers. It has five towers spaced 80 ft from center to center. The chute shown makes it possible to build larger piles than if the coal were allowed to fall vertically. The chutes can be shifted to any desired angle.

tioned, and by it it is lifted to the top of the breaker for retreatment.

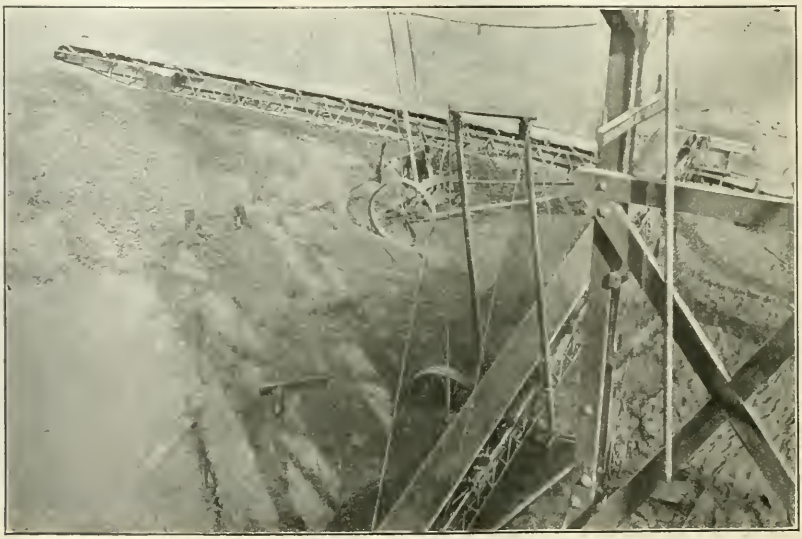
One of the most interesting details of this breaker is the way in which the chutes are arranged so as to prevent as much degradation as possible. The engineers who designed this breaker, both in the original plans and in the changes that have been made from time to time since its erection, have paid particular attention to the lessening of degradation. In passing the coal through the breaker or from one preparation process to another, it becomes necessary to lower it from one floor to the next or through even greater differences of elevation. In consequence the material must often travel long distances and around curves more or less sharp. If these curves are not properly designed, the impact of the coal against the side of the chute is likely to cause breakage, which results in the production of fine material possessing a lessened market value.

In chutes properly designed it is possible to pass the coal around curves without appreciable degradation. Curves of this type have been installed in this breaker and it is a pleasure to watch coal making the turns. Almost without exception the material takes these curves without striking the sides of the chute, gliding easily around the bends. Much care was necessary in adjusting these chutes, as it was found that the various sizes required different types of curves. A bend of improper design meant trouble, for the coal would either pile up in the chute and choke it or would pass around so fast that it would strike the sides with sufficient force to cause breakage or attrition.

Approximately 900 tons of coal are prepared in this breaker daily. Considering the large quantity of rock to be removed in the separator house, only a comparatively small force is necessary to handle this tonnage. In the rock house proper twelve men are employed. This includes the foreman. Were it not for the extremely large quantity of rock, this number could be materially reduced. In the breaker eight men and eleven boys are required, including in this number the

Portable Belt Conveyors

Being used to store coal of pea size. The coal is discharged upon one end of the lower of these conveyors and delivered to the one in the rearground, the latter placing the coal on the stockpile. The same conveyors are used for reclaiming the coal from the stockpile and for loading it on railroad cars. Note the way in which the conveyors are suspended from a light tower erected on the truck by which the conveyor is moved from place to place.



foreman of the building. Four men handle the empty railroad cars and load them with coal from the pockets. Thus only thirty-five employees are engaged in the preparation of the coal.

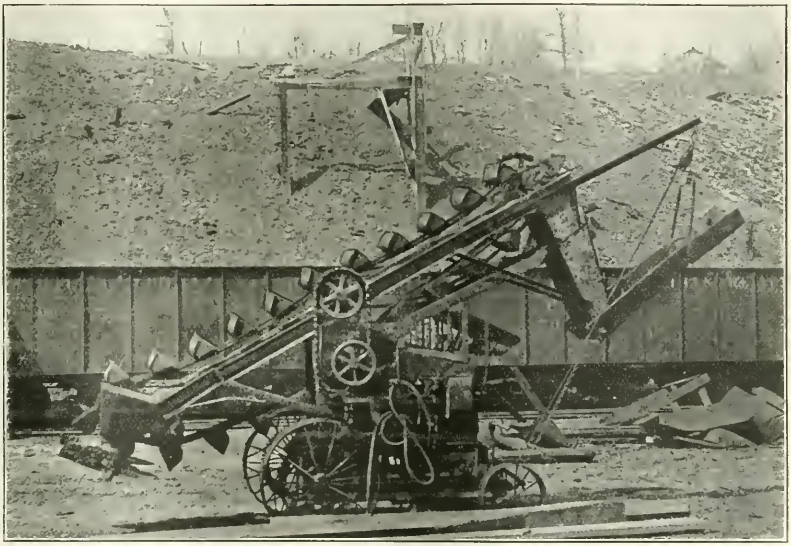
Another interesting detail is the arrangement of the jigs. They are placed all upon one floor and in a straight line extending across the building. The two Christ jigs cleaning the broken coal are placed in the middle and are flanked on either side by the Wilmot jigs. The discharge of these machines is so arranged that the product is visible at all times, permitting the jig runner to see the results produced and therefore that the jigs are operating properly.

At times it is somewhat difficult to dispose of the small sizes of domestic coal as well as the steam sizes. Consequently it becomes necessary to provide some method of stocking these grades until the market is ready to absorb them. It probably is cheaper to store such coal at the mines than it would be to stock it in a storage yard, as is the usual practice, because in this latter case it would be necessary to load the coal onto railroad cars, haul it an appreciable distance to the yard and there unload and stock it. It would then be necessary to reload this material and haul it by rail to the point of consumption. By storing the coal at the mines or at the point of delivery it is loaded into railroad cars only once, and as a result the freight charge is reduced to a minimum.

Chief among the difficulties encountered in storing coal at the mines as compared with those at a storage yard is the fact that the mine usually does not possess such facilities for reloading as are provided at the yard. However, various devices have recently been placed on the market capable of handling and loading stored coal economically. Consequently a mine is now in better position to reclaim its own storage coal than it was formerly.

The Buck Run Coal Co. accordingly has built its own storage yard and installed suitable coal-loading and coal-handling equipment. Four sizes of coal are stored at this mine: No. 1 buckwheat, rice, barley and pea. The aggregate storage capacity for all of these sizes amounts to 18,000 tons.

In the main the storage facilities here installed consist of a long steel trestle spanning the entire yard. This trestle is 70 ft. high and 320 ft. long. At the end nearest the breaker is placed a steel tower containing an electrically-driven elevator, which is employed to raise the coal for storage to the top of the trestle. At this point it is discharged into a horizontal dragline conveyor which operates over the full length of the trestle. At various points doors have been provided in the conveyor trough. These may be opened, allowing the coal to pass through and fall to the storage pile below.



Portable Bucket Conveyor

When railroad cars are to be loaded from stockpiles by belt conveyors, this bucket conveyor is used in place of hand labor to put the coal on the belts. As will be noticed, it is easily moved from place to place wherever its services may be needed.

As only one horizontal conveyor is installed on the trestle, only one size of coal may be handled at a time. Consequently as this grade of coal leaves the shaker screen in the breaker, it passes to a pocket, from which it is fed to the foot of the elevator serving the storage trestle. Thus, for example, when it is desired to store rice and No. 1 buckwheat coal, the two sizes are run to their respective pockets. First the buckwheat, we will say, will be run from its pocket to the foot of the elevator until the pocket is empty. When this size has been disposed of, the door in the bottom of the buckwheat pocket is closed and that in the rice pocket is opened. A corresponding change, of course, is made in the opening at the bottom of the horizontal conveyor trough. This permits of the ready storage of both sizes by the one conveyor.

Pea coal is not stocked from this trestle, but is passed from the pea jig to a chute which delivers it outside of the breaker. This size is then fed to a portable belt conveyor built by the Barber-Greene Co., of Aurora, Ill. This machine carries a rubber belt 24 in. wide and 51 ft. long over all and is electrically driven.

This portable conveyor discharges onto another of the same type, the end of which may be raised. Thus a pile of coal may be built up from the discharge of the second conveyor. When the pile becomes too high and

cumbers the discharge, the second machine is moved slightly and another pile formed. The storage thus available is limited only by the fact that the two belt conveyors cannot reach a distance exceeding about 100 ft. from the point where the coal is first received.

Barley size is stocked in a somewhat different manner from either of the other three. In this case the coal is brought from the breaker by a horizontal dragline over a bridge extending across the railroad tracks, and is discharged at points along the line of the conveyor.

Reclaiming stored coal and loading it into railroad cars is comparatively simple. The same outfit employed to stock the coal is utilized in reloading the various sizes. The only difference is that a loader that digs into the stockpile is employed. This machine delivers the coal to one of the portable belt conveyors and this in turn raises it to a sufficient height so that it can be discharged into railroad cars. In case the distance from the stockpile to the car is too great for one belt conveyor, the second is wheeled into place. The loader then discharges to the first conveyor, and this in turn delivers the material to the second conveyor, which dumps it into the railroad car.

Again if the distance is too great to load the car with the two belt conveyors, then these machines are so arranged as to discharge into a stationary dragline conveyor which delivers to the car. This dragline is permanently in place and is centrally located, but it can be reached from any point of the storage yard by means of the two portable belts.

The loading machine above referred to moves by its own power and practically digs its way into the coal bank. As the conveyors are easily moved from place to place, they may be readily so adjusted as to keep up with the loader, its discharge falling into the hopper placed on the portable conveyor. This system is exceedingly simple and easy to handle. It permits a small mine to stock coal economically and consequently keep in operation during times when orders for certain sizes are not sufficient to take the entire output.

Grass Forty Feet from Entry Is Ignited by Mt. Mulligan Explosion, Queensland

By James Ashworth*
Livingston, Alta.

OPTIMISTS have often expressed the opinion that the day of great disasters from explosions in collieries has passed, yet we are at times startled to read, and only too frequently, that this day has not yet dawned. The last mail from Australia brought details of a most disastrous explosion at the Mount Mulligan colliery, in Queensland, and a few comments thereon may be of value.

The Mount Mulligan coal mine is the property of the Chillagoe Co., and the coal was used at the company's smelters. The Queensland Government is understood to have been giving assistance in the development of the concern and was therefore financially interested. The coal is found under Mount Mulligan, which forms part of the divide between the Hodgkinson and Little Watson rivers, two affluents of the Mitchell, which drains a large portion of the Cape York Peninsula, that northwardly pointing promontory that is so prominent in the northeast corner of Australia.

The entrance to the mines is through a tunnel driven in from the face of a cliff about 1,200 ft. high. Two coal seams were being operated, the top one a 5-ft. seam mined by the room-and-pillar method, and the other 3 ft. thick, operated by longwall.

Neither of these seams produced any methane or other explosive gas, and the miners used open acetylene lamps. The accounts to hand do not say what sort of safety lamps, if any, were used by the officials.

The mine has been at work for about five and a half years, and last year the output was 23,632 tons. It was ventilated by a fan placed on the top of a shaft and a current of about 80,000 cu.ft. of air was in circulation for the use of the seventy-seven men who were working in the mine at the time of the explosion. The natural temperature was very high, the average in the mine being about 90 deg. The mine was, therefore, both dry and dusty. It is not stated that any means were used to make this dust safe, but as the coal was bituminous and coke ovens were about to be established, it is probable that it was an extremely explosive dust. The strata dipped about one in five. Electricity was the motive power for the fan and other machinery.

The explosion occurred on Sept. 19 about 9:30 a.m., and at the time the manager of the mine was standing near its entrance and was badly injured. The flame of the explosion came out of the tunnel and set fire to grass 40 ft. away. The fan and fan house were destroyed, and the concrete walls of the storehouse were torn to pieces and scattered. All the bodies of the killed were recovered by 11 p.m., Sept. 22. Some of them were so much burned and injured as to be unrecognizable.

Daily Examination Required; Not Carried Out

As is universally the custom, many more volunteers than could work were present to assist in rescuing, if possible, some live miner from the mine. In regard to this it may be added that two or three men who were in the hospital at the time came out to assist in finding their friends or relatives, and, as one of the Cabinet Ministers telegraphed, "All were heroes." Someone improvised a rescue mask with an absorbent saturated with eucalyptus oil.

There were rules and regulations of an Act of Parliament requiring a daily examination of the mine for firedamp, but none had been discovered. The mine inspector for the province has declared that it was a non-gaseous mine. A fall of roof, causing a sudden emission of explosive gas, has been suggested, but, though possible, it does not seem to fit the conditions as found, for the explorations appear to have been conducted mainly by open acetylene lamps. The information so far to hand makes it clear that the dust was explosive, that detonators and explosives were used in the mine, and also open lamps. Nothing more than an over-powdered or blown-out shot was required to cause such a disaster, and the simple fact that the flame of the explosion extended to the mouth of the adit tunnel and to a point 40 ft. beyond is convincing evidence that coal dust was the explosive agent. To my mind an open acetylene lamp is a distinct danger in a dusty mine with a temperature of 90 deg. The explosive in use in the mine is not stated.

One ameliorative feature is that the relatives of the men killed will receive from £300 to £600 (about $1,500 to $3,000) compensation for the loss of those who perished. A special commission has already been appointed by the Queensland Government thoroughly to investigate and find out the cause of this disaster.

*Consulting mining engineer.

Mine at Wolf Run, Ohio, Has Two Double-Decked Cages And Two Separate Steam-Driven Fans for Alternate Use

Loaded Cars Carried on Upper Deck and Empties on Lower—Separate Circuits for Cutting Machines and Locomotives—Garages for Men Coming from Distance—Miners Establish Summer Chautauqua

THE Elizabeth mine at Wolf Run, Jefferson County, Ohio, is one of twenty-three developments owned and operated by the Warner Collieries Co. of Cleveland. Both mining property and the adjacent town are reached by a spur from the Alliance Division of the New York Central lines.

The mine is a shaft opening 280 ft. deep, tapping the Lower Freeport bed. This operation is developed on the triple- and double-entry system. The middle face entries on the north and south sides are used for main-haulage roads and intake air courses. Doors have been dispensed with as far as practicable and overcasts are used wherever possible.

Ventilation is furnished by either of two fans. Fan No. 1 is a 4 x 10-ft. Capell machine direct-connected to a 14 x 14-in. Chuse steam engine making 140 r.p.m. and developing about 100,000 cu.ft. of air per minute. Fan No. 2 is a 4 x 6-ft. Jeffrey ventilator, also producing 100,000 cu.ft. of air at a speed of 235 r.p.m. It is belt-driven by a 15 x 15-in. Erie engine making 132 r.p.m. The two units are under one roof, and if the one should happen not to be in perfect mechanical condition, the other will insure uninterrupted ventilation.

The stoppings in the mine are built of brick and concrete. A journeyman mason and his helper are regularly employed to build such stoppings and to make repairs. Careful attention to ventilation in this mine has reduced the gas hazard to a minimum, and the results obtained have proved more than commensurate with the cost involved.

About 175 of the loaders and 85 daymen are employed. A temporary shortage of territory has reduced the average daily output from 1,500 to 1,100 tons. Painted in large letters in the general office of the mine is the legend: "Record Tonnage, Jan. 26, 1920—1611 Tons."

Two main electric haulage locomotives and eight gathering motors are employed to move the pit cars to the shaft bottom. No animals are used either in gathering or haulage. The cars are caged by two mechanical car hauls delivering to two double-decked cages. The loaded car is caged on the upper deck, is hoisted, runs off the cage, dumps and then returns empty to the bottom deck. These operations both within the mine and on the tipple are entirely automatic and take place by gravity.

Coal is hoisted by a 300-hp. 250-volt direct-current motor, the operator being stationed in the tipple. Geared to the motor are two conical steel drums tapering from 6 to 5 ft. in diameter. A powerful brake gives the operator absolute control of the hoisting operation at all times. Power for this unit is supplied by a 150-kw. 250-volt direct-current generator driven by a 17 x 22-in. Ridgway engine.

A cage equipped in the ordinary way occupies one compartment of the airshaft and is used for lowering and raising men, handling supplies and the like. It is operated by a pair of 12 x 16-in. second-motion Vulcan hoisting engines. A regular hoist driver is constantly in attendance during working hours and the main hoisting operations are thus not interrupted for the movement of men or material.

Steam is generated at a pressure of 125-lb. gage by five 150-hp. hand-fired boilers, nut and slack being used for fuel. The feed water is heated to about 210 deg. F. by an 800-hp. Cochrane open heater. It is fed to the boilers either by a 12 x 6 x 18-in. Yough simplex pump or by a 10 x 6 x 12-in. Fairbanks, Morse & Co. duplex pump. A 5 x 3½ x 8-in. simplex pump supplies the main water tanks. These pumps are so connected that any one of them can be used either for boiler feeding, tank supply or fire service, as expediency or emergency may require.

The boilers are connected by return bends to a 12-in. header line. Each is provided with an outside screw

Elizabeth Mine

In the left foreground is the bathhouse and to the right in the background are the power house and tipple. The mine plant is surrounded by high hills. The railroad is a spur from the Alliance Division of the New York Central lines.

and yoke type of valve and an automatic non-return stop valve. All steam lines are well insulated and are of proper size for the purpose intended. Steam separators and traps are installed wherever needed. An exhaust steam heating system is employed in all buildings.

Electrical energy for the mine is supplied by three 18 x 18-in. Ridgway engines direct connected to three 150-kw. direct-current generators operating in parallel. Voltage is boosted in the distant parts of the mine by two 27-kw. 300-volt direct-current generators driven by an 80 hp. motor. Separate circuits are provided for the electric locomotives and the cutting machines. The entire distribution of current in and about the mine is controlled from a seven-panel slate switchboard.

The blacksmith, carpenter, car-repair, machine and electrical shops as well as the stock rooms, are all housed under one roof. Labor-saving machinery has been installed as far as possible, and emergency repair work of almost all kinds is handled with ease and dispatch. An oxyacetylene outfit is used for many kinds of welding and cutting, and in the electrical shop an oven for the baking of armatures and similar operations has been installed.

In the stock room supplies of every description are stored and an attendant gives his entire time to their keeping and issuance. An accurate record is kept of all tools taken out by workmen as well as another covering the supplies requisitioned and the purpose for which they are used.

The Ohio "washhouse law" took effect April 30, 1920, but this statute was not directly responsible for the building of a modern 30 x 80-ft. fireproof washroom adjacent to the man shaft at this mine. Erection of this building was in direct keeping with the policy of the company. The washroom contains the usual showers, basins, hot and cold water and the like. The dressing room is equipped with the customary galvanized-iron type of hangers, so spaced that the clothes of one man do not come in contact with those of another. The hangers are hung on galvanized chains that can be locked individually to retaining hooks. Accommodations are provided for 300 men.

WASHHOUSE FOR THREE HUNDRED MEN

Building measures 30 x 80 ft. and is wholly fireproof. It is fitted with showers, basins, hot and cold water. Hangers with galvanized chains capable of being locked are used for the suspension of clothes from the roof. Showers are to right of the door.

Air is made to circulate past the clothes by means of ventilators placed in the tile roof. This method has proven entirely satisfactory. The walls of the building are of brick and the floors of concrete with a gentle slope from all directions toward a drain in the center of the room. A water hose is used daily, and the building is kept in a thoroughly sanitary condition. Nine out of ten men employed at this mine make use of this accommodation.

Five triple garages have been built for the use of those men who drive their automobiles to and from work. They have proved themselves an attractive addition to the property. Plans are under way to provide them with steam heat in the near future. A small rental is charged for the use of these buildings.

Too often a mining town is troubled by dirt roads and mud, which make it well-nigh inaccessible, especially in rainy weather or during the winter months. To avoid this condition well-kept cinder roads have been built in and around the property. The streets of the mining town itself also are constructed of this material.

Formerly automobiles and heavy teams could not in bad weather use the public road leading from the town to the main piked highway two miles distant

Man Hoist

A somewhat simple and unusual form of headframe is set up over one compartment of the airshaft. The cage is handled by a pair of 12 x 16-in. second-motion Vulcan hoisting engines and is used for hoisting and lowering both men and materials. By the use of this hoist the raising of coal and lowering of empties is not delayed by the passage of men and machinery.

Playground and Picnic Grounds

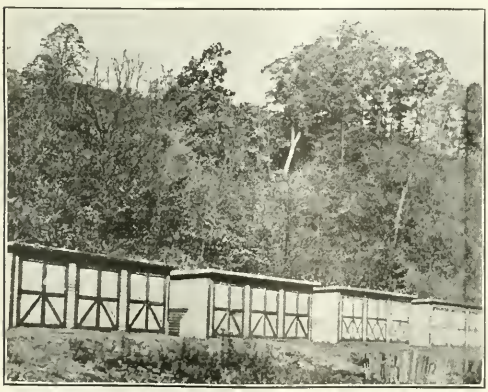
Every modern mining town has its well-equipped playground. This one was built by the company, but it is extensively used by the children of the public school that has been built adjacent to the playground.

without much trouble. The company agreed to furnish the teams, rock and cinders necessary to improve this road if the miners and farmers would man the sledges and shovels. The road can now be used the year round by both trucks and pedestrians, and the company employs a teamster whose chief work consists in hauling cinders from the boiler house to keep the roads and streets in repair.

At the end of the town a plot of ground containing several acres has been set aside on which is located a baseball diamond, football field and the like. All of these fields are kept in excellent condition. A large frame building of excellent design is equipped for basketball and other indoor athletics. The floor can be used for dancing, and portable seats permit of this building being utilized as an auditorium. A well-equipped stage is placed at one end so that this hall can be used as a theatre. Another building where refreshments may be served is conveniently located.

The company was instrumental in organizing the Wolf Run Amusement Association, which is strictly an organization of the miners. When the tickets were alloted for the summer Chautauqua, Andrew Bobby, mine foreman, sold 211 of them in two days. Through the voluntary co-operation of the company with the men, varied amusements have proved highly satisfactory from a financial standpoint, and the recreation thus provided for both men and their families has afforded much pleasure.

The company furnishes, free of cost, all uniforms and equipment for baseball, basketball and football. A playground for the children has been equipped with the latest type of amusement apparatus such as teeters, swings, slides and the like. This same playground is also used by the children of a township school which has been built adjoining the property.



THREE-STALL GARAGES FOR MINERS AND OTHERS

A nearer view of the garages that are to be seen also in the rear of the illustration of the man hoist. Many men drive in to their work in automobiles and need this accommodation. The garages will ultimately be furnished with steam heat.

Block Signals Control Trips at Indianola: Flickering Lamp Shows When Fan Runs

By Alphonse F. Brosky*
Pittsburgh, Pa.

Although at the Indianola mine only two large locomotives are used on the main haulageways, it has been found advantageous to install an electric light block-signal system similar to that used on street railroads. This simple scheme does away with many delays that might otherwise occur. Where many haulage motors are used this device would be a still greater help.

Two colored lights are used in this system, a red, or stop, signal, and a green, or right-of-way, lamp. Suppose locomotive *A* is in the northeast workings and is about to start for the main bottom, where locomotive *B*, already attached to a trip of empties, is advancing toward *A*'s position. In such a case whichever of the two machines reaches the block first will have the right of way. As neither of the two is in the block, the signal lamps show green at both of its ends, namely at the knuckle and the north extremity of the main haulageway. Should locomotive *A* reach the block first, the motorman throws an overhead switch, changing the lights from green to red, indicating that his machine is in the block. Thus locomotive *B*, on reaching the knuckle, is stopped by the red lamp. Locomotive *A*, on passing the knuckle, throws the overhead switch, and the block is open to locomotive *B* on the appearance of the green light. The same signals apply also to important turnouts.

Ordinarily only the east track of the two on the load side in the main bottom is used for storage. Should it so happen that one locomotive enters the block immediately after the other has left it, both advancing toward the main bottom with loads, the second machine, on coming to the knuckle, stops as soon as the motorman

*Bituminous Editor, *Coal Age*.

ROAD FROM LITTLE TO BIG BOTTOM, INDIANOLA MINE
The 60-lb. rail crossover is a good example of the heavy-rail construction underground which makes it possible to operate with minimum derailments. Note the lighting in the roadway.

observes that the first locomotive has just pulled onto the east storage track. When a trip arrives on this track, the cager throws on a yellow light, which is the signal for the second locomotive to pull in on the west track of the main bottom. The trip schedule is so arranged that this expedient is not frequently necessary.

Another safety device is provided for the purpose of insuring a continuous ventilating current. In the fan house a make-and-break circuit operated by means of an attachment to the shaft of the electrically-driven fan causes electric lamps to go on and off as long as the fan is running. The fan house, check room and power house are each provided with one of these indicator lamps, all being on the same circuit. Should the fan stop, the contact will be in either a make or break position, and the light will remain on or off. For this reason the fan house may be left locked and the attendant may proceed to any point where his services may be needed. As there always is someone in the check room, and usually in the power house, the fact that the light has ceased flickering is sure to be noticed and warning thus be given that the fan has stopped.

UNDERGROUND LOCOMOTIVE-REPAIR SHOP
Large, well lighted and ventilated and equipped with a heavy traveling crane, any repairs needed by the locomotives can be promptly made.

If the vacuum reading is lowered a predetermined amount, a special float attachment—a Bacharach recording water gage—closes an electric circuit in which is a siren whistle. Such a rise of the water column would actuate the float attachment, thus closing the electric circuit and causing the siren to sound an alarm. Within the fan house is an auxiliary steam-driven fan, which is started upon failure of the one electrically actuated. The electric machine is driven by a 125-hp. Westinghouse induction motor, the speed of which may be regulated within limits. The flickering indicator lamps may be used as revolution counters in the regulation of the speed of the fan, which normally is kept running at 128 r.p.m.

Tanks, if of Durable Wood, Last Long with Low Cost for Upkeep: How Erected

WOOD tanks when made from good material will outlast tanks of steel. Some of the tanks, made from heavy wrought iron years ago, lasted many years, but the steel tanks of the present day are not to be confused with these. There are many authentic records which show that tanks made from woods suited to the purpose will last thirty, forty and even fifty years or more.

Red gulf cypress, declares the Hauser-Stander Tank Co., of Cincinnati, is less subject to decay than other woods, which quality probably is due to the presence of an essential oil termed "cypressene," found only in genuine red gulf cypress. Tanks made of this wood are giving satisfactory service after over thirty years of use. Some "all heart" cypress tanks erected in 1790 at Newburyport, Mass., were still being used in 1917, after being in continuous service for the intervening period. The closing of the plant prevented a longer test, though in November, 1920, they were apparently as good as ever.

Wood Tanks Need Never Be Out of Service

This was because wood tanks are not corrodable, whereas, where the water abounds in chemicals that induce corrosion, steel tanks readily corrode. To defer this action steel tanks must be painted both inside and out at least once a year, which means that they must be out of service long enough to be dried out and painted and until the paint spread over them has had time to dry. Wood tanks are painted only occasionally, and then on the outside only and principally for appearance. As the inside never is painted the tank need never be out of service.

A wood tank, if attention is necessary, can be repaired by any carpenter or mechanic, whereas if a leak occurs in a steel tank, an expert boiler maker is needed to make the repair. A wood tank, furnished with a flat and a conical cover, unlike a steel tank, is not a ready conductor of heat and makes its own effective frost-proofing. The steel tank acts as a huge radiator and requires three or four times as much heat as a wood tank in order to keep the water from freezing. Wood protects from heat as well as from the cold and, where used for drinking-water tanks, the water is much cooler in summer than that stored in steel. The painting, repairs and heat required for steel tanks are large items in maintenance cost as compared with wood.

If, after years of service a wood tank should begin to

fail, it can easily be replaced by a new tank without disturbing the steel structure on which it rests. A steel tank, on the other hand, is an integral part of the steel tower, and when the tank fails, the entire structure as a rule must be replaced. Wood tanks and the structures by which they are supported, being separate, can readily be taken down and re-erected at a new location without harm and with little trouble. In outward appearance as in durability wood tanks, when properly erected and maintained, are equal, if not superior, to steel tanks. When made from the best materials and with good workmanship they are less expensive than steel tanks and offer more advantages.

They should be erected on a level foundation sufficiently strong to carry the load without deflection between supports, which should not be more than 18 in. apart. The staves must not carry any of the load and to assure that this is so there should be a clear space of at least one inch under the staves and preferably more. When on the ground, the foundation must extend below the frost line.

The head, or chime, joists should be 3 or 4 in. above the floor and 2 or 3 in. shorter in length than the inside diameter of the tank. The bottom pieces are laid crosswise on the joists. Dowel pins are put in and the bottom pieces driven closely together, a block being used to prevent bruising or splintering the timber.

Allow for Tightening When Hoop Is Adjusted

By tacking a board across the upper side of the bottom the position of the planks can be maintained till all the staves are set up and the bottom hoop placed. Drive the first stave so as to cover the joint between two bottom planks. Then drive the staves in place, keeping them perpendicular and square at the bottom. Drive them so that, while tight on the inside, an outside opening $\frac{1}{16}$ in. to $\frac{1}{8}$ in. wide will be left at the very bottom to allow for tightening when the hoop is adjusted.

When the staves are numbered they should be set as numbered. When their order is not so specified, stagger the stave joints with the bottom joints at least one inch. An extra stave always is supplied to take care of any differences in driving. No vertical stave joint should be allowed to come where two bottom planks are joined. When ready for the last stave take the exact measurement and plane the stave to size before setting. A light rope round the outside of the staves near the top fastened to the staves by common fence staples will facilitate erection.

When the staves are all placed, commence from the bottom, using the largest hoop and placing it so that its center will be directly opposite the top edge of the bottom when in position, Strike on the hoop with a heavy hammer every few inches, working toward the lugs. In this way the tension around the tank will be equalized.

On tanks 10 ft. high and 10 ft. in diameter and upward place the next hoop about 6 in. higher and gradually increase the space between the hoops toward the top, placing the top hoop about 2 or 3 in. from the top of the stave. Never place the lugs one above the other in a vertical line but distribute them around the tank to prevent divergence from the circular shape. Never slip the hoops over the top of the tank till the bottom hoops are tightened.

The material out of which the tanks are made should never be exposed to the weather before being used. The tank should be filled as soon as erected. Should a leak manifest itself when filling do not fill the tank above the leak; any water admitted above that point will increase the pressure and prevent the natural expansion required to close the opening. When the completed tank has been exposed for some time before erection, fill gradually and the tank will expand in such a way that it will avoid flooding the foundation. The tank should not be left over night without a goodly number of hoops in place. With that end in view start stave driving early in the morning. Avoid an extremely windy day for tank erection and commence setting the staves on the windward side, so that a convex, and not a concave, surface will face the wind, thus lessening resistance. Never wedge or calk the staves; otherwise you will spring the joints at some other place or open wider the one that has been calked.

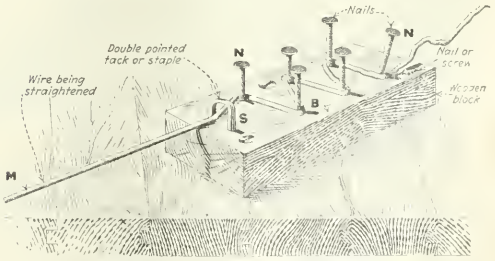
Multiplying the mean diameter in inches by itself and this by 34 and this again by the depth, in inches, a number will be given which by striking off four figures to the right will give the contents in gallons. Tanks are made to hold from 5,000 to 100,000 gallons. They weigh from 5,570 to 40,409 lb.

Simple Way of Straightening Small Wire*

By H. A. Trumbull
St. Louis, Mo.

SMALL wire may be easily straightened by employing the means and methods here described. This arrangement is not effective, however, for wire of large diameter. The apparatus consists merely of a wooden block (B) in which are driven six or eight nails (N) staggered as shown. A double-pointed tack or staple (S) at one end of the block near its median line completes the arrangement.

After the wire (M) has been threaded between the nails and sides of the staple it is drawn out. The



STRAIGHTENING BLOCK FOR SMALL WIRE

Merely pulling the crooked wire back and forth between the pegs, or in this case nails, is sufficient to remove all kinks. If the wire is insulated the diameter of the pegs should be relatively much larger than shown.

function of the staple is to prevent the wire from slipping up along the nails. The number of nails or pegs to be employed will depend upon the size and condition of the wire. If it contains a large number of small kinks more nails and a longer block than is here shown will be necessary.

Well, we guess every possible means of lightening the tax burden has received the careful consideration of our statesmen now except not spending so much money.—*Ohio State Journal.*

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Problems of Operating Men

Edited by James T. Beard

Concentration in American vs. British Mining

Maintaining a Continuous Working Face Essential to Concentration of Work—American System, Room-and-Pillar vs. British Longwall Working—Relative Cost of Production

WRITING on the subject, "Concentration Essential to Better Mining," *Coal Age*, Oct. 13, p. 585, I. C. Parfitt rightly claims that the development of the highest productive efficiency, in coal mining, simply means "the operation of a continuous working face, as far as that is practicable."

In continuing, however, the writer compares the room-and-pillar system, commonly used in the mining of coal in the United States, with the longwall method so universally employed in England and on the Continent. He appears to claim that the English system lends itself so naturally to the most effective concentration of work as to reduce the cost of operation to a minimum.

In refutation of the conclusion reached in the last statement, I would like to quote from the *World's Work*, September issue, page 513, which reads as follows:

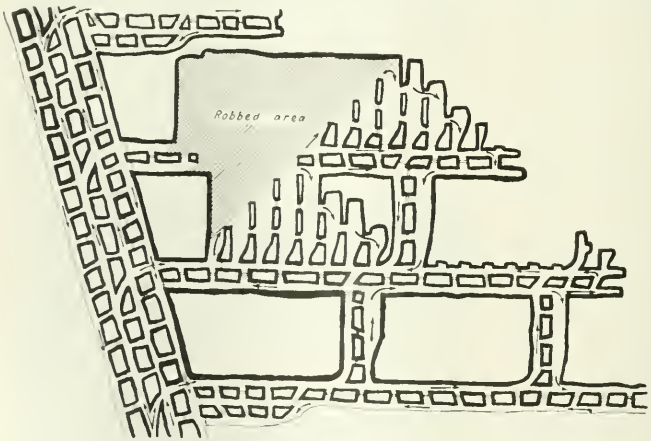
> Recently, in one month, in Wales, where mining is done mostly by hand, the average output, per miner, for the entire month, was but fifteen tons or slightly more than one-half ton for each working day. In an average American mine equipped with modern machinery, it is not unusual for a single miner to turn out fifteen tons, in a single working day. As the situation stands, today, American coal can be mined in West Virginia, transported two hundred miles to the seaboard and landed in England, for less than it cost to mine a ton of coal in a British colliery, under present conditions. The statement becomes more startling when I add that this can be done under an American wage considerably in excess of England's present wage scale.

Another point to which I wish to call attention is the statement Mr. Parfitt makes regarding the relative advantages of the advancing and retreating systems of working coal. Speaking of the retreating method, he ascribes the reason for its affording greater concentration to the fact that "any desired number of rooms can be turned at once."

While it is true that there is an advantage in working rooms and pillars on the retreating system, the gain does not come from being able to turn a large number of rooms at once. In my opinion, it will generally be found a better plan to start one room at a time and regulate the work so that the rob line will reach that room about the time the place is driven up. This will make it possible to use the same track when drawing back the room pillars as when driving the rooms.

Allow me here to present the plan shown in the accompanying figure, which may be recognized as a more advanced stage of the workings described in my previous letter that appeared in the issue, Aug. 18, p. 260. The plan is one where the coal is taken out on the advance system of working and in which a marked degree of concentration is made possible by extending the rob line clear across the rooms and headings, as mentioned in my letter at that time.

By this arrangement, the old trouble of leaving a line of entry stumps, with a long haul and a small output, is eliminated. The point I want to make clear is that, by a proper arrangement of the advancing system of mining, there is the same advantage of concentration of work as in the retreating system.



EVEN WITH THE ADVANCING SYSTEM, CONCENTRATION MAY BE EFFECTED BY EXTENDING THE ROB LINE ACROSS ROOMS AND HEADINGS

English System Probably Best Suited to Conditions There

It is not my intention, however, to convey the idea that the statements to which I have referred are wrong. I freely admit that the system employed in England, where the mines are deep and the seams thin, is the best that could be installed under those conditions.

On the other hand, in this country where quick returns and large outputs are in demand and where we have comparatively thick seams with thin covers, it is not wise to hold too closely to one method of mining. In many cases, the quick advance of the coal face may spell success in a mine that could not otherwise be operated.

Harlan, Ky. FRED ROSS,
Mining Engineer.

Inspector Forbids Solid Shooting

Coal shoots hard—Miner uses dynamite and shoots coal off the solid—Inspector of mines forbids this practice—Mine manager (foreman) sides with inspector against miner.

MY interest in the question of solid shooting is not as great as that of many. Still I have read what has been said on this subject and believe that there are conditions that favor the practice and make it safe if reasonable care is used to prevent accident due to a blownout shot or the excessive use of powder.

In my time I have driven narrow places and watched others doing the same where the coal was very hard to mine. Under these conditions, we have always decided that the best results could be obtained, in entry driving, by locating three shots in favorable positions in the face of the heading and

charging the holes with powder or dynamite, as the case might require.

Where there was no danger of causing an explosion of gas or dust we considered that this practice was safe and it required far less labor to break down the coal. The work of undercutting coal that is very hard is, as I well know, the most difficult work a miner must do. I have dug ditches and performed other kinds of work, but think that hammering all day at a hard mining is hardest of all and progress is slow.

In this connection, I thought the following conversation overneard between a mine inspector and a fellow working an adjoining place to mine would be of interest. In that case, the coal was hard and we were following the practice I have just described, shooting the coal off the solid and not infrequently charging a hole with dynamite.

Mine Inspector Investigates

One morning our work was interrupted by a rather sudden and unexpected visit of the mine inspector, who coming along the gangway, hallooed to my friend. The conversation that ensued ran about as follows:

Inspector. Hello there.

Miner. Hello yourself down there.

Inspector. How is the air in your place?

Miner. You have it down there, examine it for yourself.

Inspector. It is not so bad here.

Miner. I would not call it good. Who are you any way; are you a boss or a miner?

Inspector. I am neither.

Miner. Come up here until I see who you are.

Inspector (slowly and laboriously climbing the pitch). I am the mine inspector.

Miner. Oh! I did not know to whom I was speaking.

Inspector. Do you shoot your coal off the solid, here?

Miner. Yes, we do.

Inspector. What explosives are you using?

Miner. Sometimes dynamite, but mostly stumping powder. Today, I have stumping powder.

Inspector. Who looks after this section?

Miner. The manager (mine foreman).

Inspector. Who is the manager; what is his name?

Miner. Jack Smith.

Inspector. Get him up here.

The manager arrived.

Manager. Good morning, Inspector. Did you want to see me?

Inspector. Come here, Jack. Why is there not better air in this place? No air could get through that hole yonder; it is not large enough.

Manager. The place where the air did get through was blocked a day or two since, and we have not been able to open it again.

Inspector. Have that hole made larger and get about it as quick as you can.

Manager. All right, sir; I will.

Inspector. Jack, another thing; do you not think this coal could be dug without shooting it off the solid?

Manager. Why, yes. I have a long stretch of places where the coal is being mined before shooting.

Miner. This section cannot be mined without the coal is shot off the solid.

Inspector. I worked in coal that, for a time, we shot off the solid. Then, we stopped the solid shooting and mined it with a pick.

Miner. Times are different now from what they were then. Unless a man takes every advantage in the use of dynamite for hard coal; or the place is mined with machines; or the coal is soft so that he can mine it with a pick, a fellow cannot make a living wage.

Inspector. I will see that you use no more dynamite in this place and mine the coal properly before shooting.

Miner. You cannot stop us shooting the coal off the solid, or using an occasional stick of dynamite. There are thousands of tons of coal shot off the solid, today, both in this country and in the States.

Inspector. Oh! You are not in the States, here. What they do there is nothing to us.

Miner. That's all right, Mr. Inspector; but the Coal Mines Regulation Act of Canada that I have makes no mention of the word dynamite; nor is there anything about shooting the coal off the solid, except where a place contains sufficient gas to be found in a safety lamp.

Manager. I am going to stop the solid shooting, here, anyway. It has been on my mind to do it, for some time back.

Inspector (to the miner). I will see that you use no more dynamite in shooting coal.

Miner. All right, sir; act on your own judgment in that matter.

Inspector. Good-bye.

Miner. Good day, sir.

I have given this conversation to the best of my recollection; because it reveals a phase of mining, common in certain localities, where the task of the miner is a difficult one. The conditions set forth should receive the most careful consideration, but always with due regard to safety and efficiency.

———, Canada. MAC.

Should Miners Cut Their Own Posts?

Loss of time to the miner and waste of timber urged as arguments against miners cutting their own timber—Posts cut to length when timber is felled the better plan.

THERE are a number of good reasons why miners should not be compelled to cut their own posts the desired length, after these have been delivered in their places. I claim this in spite of all that has been said by writers, in *Coal Age*, in reference to miners keeping sharp axes and saws in their places ready for such use. Sharp tools were also strongly urged, in the letter signed "Safety First," in the issue of Nov. 17, p. 806.

In the first place, let me say that posts should be cut to the required length, 4, 4½, 5, 5½ or 6 ft., as required, when the timber is felled in the forest. If this plan is adopted there will be a great saving in material, to say nothing of the saving of time required to cut the posts to the proper length after they have been received at the mine.

If the purchasing agent, superintendent or mine foreman, as the case may be, is a practical man, he will give the timber cutters orders to cut the posts at such lengths as he desires. As these posts are delivered, they should be stacked according to size, so that the miners' orders for posts of a given length can be quickly and promptly filled.

This plan has been thoroughly tried out, in this coal field, and found to work successfully. For example, a quantity of 4-ft. timbers are cut and stacked, in place, in the timber yard. Next to these comes a stack of 4½-ft. timbers and, next to them are 5-ft. timbers. Each stack is marked to indicate the length of the posts.

Now, if Jack Jones comes out hunting for a 4½-ft. post, or sends his order to have posts of that length delivered at his place, there is no difficulty in finding what is wanted, without delay. This is quite different from a case where the miner must cut off 6, 7 or 8 in. from the end of a stick, before it can be set in place.

Waste of Timber Due to Inaccuracy

The loss of time when a miner is compelled to cut his own timber is considerable and means much to him. That is not all; it will generally be found to mean much to the company also, by reason of the waste of timber that is sure to follow. Few miners are able to make exact measurements, and many posts are either too long or too short when the cutting is left to them.

To illustrate, I will cite an instance which I observed happen a short time since. The roof, in a miner's place, was bad and he looked around for a post. The only stick he could find was about 6 or 8 in. too long, as he thought. He first cut off some four or five inches, fearing to get the post too short. Finding it still much too long, he again cut off about the same amount.

Naturally, the post was now too short and the miner, in disgust, threw it aside into the gob and went in search of another stick, with what result I do not know. The chances are that the post thrown into the gob was lost, as the miner would be anxious to hide his own mistake in cutting the timber too short.

Occurrences of this kind are not uncommon in the mine. At the best, a coal miner's task is not an easy one, as I know from an experience of many years at the face. The difficulties he has to encounter are manifold and his work should be lightened as far as it is practicable to do this.

In reference to cap-pieces, before closing, let me suggest one thing that

should be of interest to all miners. When setting a post the cap should be driven toward the coal face. It will then hold the post more firmly and prevent its being discharged when a blast is fired in the coal.

———, Tenn. MINE FOREMAN.

Safe Rule in Timbering

Trust no roof though apparently sound — Taking a gambler's chance is never safe practice in timbering— Systematic posting the only safe rule—Low accident rate insured.

WRITING on the subject, "Cut Mine Timbers to Measure," *Coal Age*, Sept. 22, p. 460, J. H. Taylor has incidentally introduced a most interesting and important feature in respect to the safe mining of coal.

What he has said in reference to timbers being cut to right length before being sent into the mine, as a means of reducing the accident list is true and I propose, now, to deal with another phase of the subject that, to my mind, is of equal importance in the prevention of accidents at the working face.

It is generally agreed that accidents at the coal face are due to the failure of the miner to set any posts in his place; or the number he sets is insufficient for the support of the roof; or he has used poor judgment in standing the timber, with the result that the fall rides over the posts, which have not been set plumb, or were not cut square at the end.

MINER SHOULD TRUST NO ROOF, EVEN IF IT APPEAR SOUND

When a miner makes up his mind to trust no roof, however sound it may appear, he is playing safe. An analysis of the large number of accidents occurring in mines daily would serve to show that the "apparently sound" roof is the roof that generally falls with fatal results. The reason is that had the miner thought it would fall, he would not have trusted himself to work under it, except for the purpose of making it secure.

Although the fact is generally recognized that the only safe rule, in mining, is to keep a certain number of posts standing in a place that is being worked, there are many mining men who believe themselves capable of saying whether the setting of these posts is necessary, or whether the work can be postponed for a time, while they are loading out this coal and cleaning up.

It is this class of men that are continually taking the gambler's chance, instead of following the safe and sound way and making themselves secure against accidents. They are prone to think that any uniform or systematic kind of timbering is an unnecessary expense. However, I am glad to say that this manner of thinking is slowly but surely passing and men are becoming converted to the right way, which is always the safe way.

The actual experience of a leading coal operator, in respect to timbering the working places in a mine, is worthy of our thoughtful consideration. Without mentioning the name of the mine or its location, I may say the roof condition in that mine varied from good to medium. The management, however, had learned a lesson several years ago and established the rule that no man, however experienced he might be, could say "This roof is safe and needs no timber."

In that company, there was one fixed rule that, like the laws of the Medes and Persians, was never changed. The rule was to set a certain number of posts for each cut loaded at the face, and as many more as the miner might wish or think necessary. In order to carry out this rule with fairness to the miner, it was necessary to keep his place well supplied with timber cut to the right length and squared at both ends.

The height of the coal varied in different parts of the mine; and the timber yards were systematically arranged to keep the several sizes or lengths of timber separate, each length being piled in a section by itself where it could be readily found when needed. All cap-pieces were cut 18 in. long and made in wedge shape, which greatly assisted the setting of the posts in the mine.

It will cause no surprise to state that, although this company operated five mines, they have not had a single fatality or specially serious accident from a fall of roof in many years. This is the result of adopting a safe rule in timbering the working places and going the limit to carry it out. The plan adopted made it practically impossible for a miner to say, "I had no posts in my place to set and was obliged to take some chances until the posts came."

The orders were: "Never wait for a miner to order timber for his place." Instead, the assistant boss was held responsible, first, last and always, for keeping an ample supply of timber in every man's place, together with the necessary cap-pieces.

Pikeville, Ky. GEORGE EDWARDS.

Inquiries Of General Interest

Purpose of Revised Certificate Law

Enactment of Miner's Compensation Law in Pennsylvania, Made Operators Liable for Injuries to Workmen, Without Giving Them Free Choice of Men to Put in Charge in the Mines

REGARDING the extended discussion, in *Coal Age*, relating to the employment of uncertified men in the positions of mine foreman, assistant foreman and fireboss, as provided in the revised Pennsylvania law, it would be interesting to know the purpose of such provision.

In other words, what arguments were used to induce legislators to change the old law and make it possible for coal operators to employ men to act in these official capacities when they had not been certified as competent to fill such positions.

Reading the excellent letter of John Wall, Sr., *Coal Age*, Nov. 17, p. 807, it appears that the old law requiring certification of underground officials had been in force for thirty years (1885-1915). The results accomplished during that time leave little room for doubt in regard to the value of the old law.

With these facts before us, it seems there must have been some outstanding reason that caused the State Assembly to make this change, which it would seem, from the present discussion, is universally condemned by the rank and file of underground workers. It is to be hoped that *Coal Age* can throw some light on this matter.

Gans, Pa. R. W. LIGHTBURN.

As has been explained in *Coal Age*, at different times, previously, it was the enactment of the Miners' Compensation Law in Pennsylvania, which went into effect Jan. 1, 1916, that led to the revision of the former certificate law enacted in 1885. Though the old law providing for certification is still in force, it is greatly modified by the later enactment.

As is well known, the compensation law made all coal operators who elected to come under its provisions liable for injuries received by their workmen while in the performance of their duties in and around the mines. That being the case, it was argued as being only reasonable to accord the operator the right to choose the kind of men he might place in charge of his mine.

It was claimed that the employment of a certified man in a responsible position in no way relieved the operator of his liability, which is true. "Why then" it was asked, "compel the operator to employ such certified men, who may not be such as he would choose for these positions?"

While the argument appeared logical, the enactment as it stands today makes the question of certification an anomaly, for the reason that there is no legal force in that section of the law which would compel the employment of certi-

fied men in all positions of responsibility underground.

At the same time, there is a great deal of truth in the statement so often made that certified men are in demand. Few coal operators, today, are willing to employ an untried and uncertified man in any responsible position underground. Only a few of the older men, who have earned their right to act in an official capacity by long years of service, are to be found filling the positions named.

In the opinion of *Coal Age*, such should be granted certificates of service, making them eligible for the office they hold, as long as they remain in the employ of the same company.

Examination Questions Answered

Tennessee Mine Foremen's Examination Held at Knoxville, Oct. 18-20, 1921

(*Selected Questions*)

QUESTION—*What observations should a mine foreman make during his visits through the mines of which he has charge?*

ANSWER—A foreman should visit each working face with his eyes open to detect any dangerous condition or practice, which it is his duty to correct. He must note particularly the amount and kind of timber on hand, the manner in which the place is timbered, condition of the roof and coal and method of mining and blasting to see that everything is done safely and in compliance with the law. The foreman must observe the amount of coal that is down, the number of cars on hand or loaded, how much powder the man has in his place and where he keeps it, the way in which he handles and keeps his tools and other things pertaining to the man's safety. He must see that the place is properly ventilated, the breakthroughs of sufficient size and the air conducted forward so as to reach the face. If the place is generating gas and safety lamps are used, he must examine to see that the lamps are in good condition and each place safe for work.

QUESTION — *An anemometer registers a velocity of 30,000 ft. per hr., in an airway 5 x 8 ft. in section; what is the volume of air passing through such airway per minute?*

ANSWER—A velocity of 30,000 ft. per hr. is 500 ft. per min. The sectional area of this airway is $5 \times 8 = 40$ sq.ft. Assuming an average velocity of 500 ft. per min., the volume of air passing in this airway is $500 \times 40 = 20{,}000$ cu.ft. per min.

QUESTION—*How would you ascertain whether an anemometer is in good working condition or not?*

ANSWER—Where great accuracy is required, an anemometer in constant use should be returned to the factory for checking its calibration at least every year or two, depending on the care taken of the instrument. A mine foreman will sometimes apply what is called a "smoke test." For that purpose, he selects a straight piece of entry about 100 yd. in length and of uniform size throughout. Having stationed a reliable helper at the inby end of this stretch, the foreman, holding the instrument exposed to the air current traveling the center of the airway, sets off a flash of powder and at the same time throws the instrument into gear. According to instructions previously given him, the helper signals with his lamp the moment the first smell of powder reaches him and, at that moment, the foreman throws the instrument out of gear. If the anemometer is registering correctly, its observed reading starting from zero should correspond to the distance measured on the entry, between the foreman and his helper.

QUESTION—*Under what conditions would you consider coal dust dangerous in mines?*

ANSWER—Coal dust accumulated in any considerable quantity, at the working face or on the roads air-courses and traveling ways, is always an element of danger in a mine. The danger increases with the fineness and inflammability of the coal, and is much greater if the mine is generating a small amount of gas. Other things being equal, coal dust is more dangerous in mines where blasting is performed, particularly if black powder is used for that purpose.

QUESTION—*If you have an explosion and find it necessary to call the mine-rescue corps, what preparation would you make while it is arriving?*

ANSWER—While waiting for the arrival of a mine-rescue team, following an explosion in the mine, every possible effort must be made to restore the circulation underground, by examining the ventilating apparatus and making any repairs that may be necessary. At the same time, word should be sent summoning physicians, and men should be employed to gather the neccessary supplies of timber, canvas, brattice boards, nails and tools that will be required on entering the mine. First-aid supplies of every description should be procured and made ready for use, including blankets, stretchers and ambulances.

QUESTION—*Which would you prefer, a force fan or an exhaust fan? Give your reasons.*

ANSWER—The choice between a force or an exhaust fan will depend primarily on conditions in the mine. If the mine is generating gas, to such an extent that the main haulage road has been made the intake airway, it becomes necessary to employ an exhaust fan, in order to avoid the use of doors on the main haulage road. On the other hand, a force fan will often prove advantageous in the ventilation of a mine containing a considerable area of abandoned workings. The mine is then ventilated under a pressure greater than that of the atmosphere, and the tendency is to drive the gases back and keep them from entering the live workings. Under these conditions, the gases confined in the old works will often drain outward and escape to the surface through old openings or crevices in the strata.

QUESTION—*In treating mine fires, which would you prefer, a live fire or a smothered fire and why?*

ANSWER—It is not possible to state an absolute preference, in this case, without knowing the existing conditions. Both fires may be equally dangerous. A live fire, having gained considerable headway may be impossible of approach and require the sealing off of the mine or an entire section of the workings, before it can be controlled. While a smothered fire may generate a much larger proportion of deadly gas, as carbon monoxide, and often prove difficult to handle and extinguish, it can generally be approached on the intake side, which gives the workmen an advantage. A smothered fire, however, will often work its way under the gob and, for a time, defy all efforts to extinguish it.

QUESTION—*Give the advantages and disadvantages of a gasoline pump, an air pump and an electrical pump.*

ANSWER—A gasoline-driven pump will generally cost less to operate, but is objectionable in a mine, owing to the noxious gases discharged. A pump driven by compressed air has the advantage of supplying fresh air to the confined workings where it is located. Its operation, however, requires the installation of a pipe system, which is always expensive and liable at any time to be broken down by a fall of roof. An electric pump has a wider scope for use in the mine, because of the greater flexibility of a wire system for transmitting power to the pump. This installation will cost less than a pipe system. The disadvantage of an electric pump lies in the danger of gas being ignited by the sparking of wires or commutators and the blowing of fuses, which limits the use of such pumps to mines free from gas.

QUESTION—*State the advantages of good roads in coal mines.*

ANSWER—Good mine haulage roads are the chief factor in producing a large daily output of coal. The cost of repairs for rolling stock is much less; fewer accidents occur and the cost of production is decreased.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

OF BUSINESS sentiment as defined by the incidents of the closing weeks of the year, it may be said that there is a prevailing atmosphere of hopeful expactation, according to the December bulletin of business conditions issued by the Mechanics & Metals National Bank of the City of New York. "Actual volume of current business, apart from that which is distinctly seasonal," the bulletin continues, "is not large, nor is there any indication that a robust trade revival is in the course of development. As a matter of fact the country's commercial turnover is less than at the corresponding time in any of the past six years, yet a spirit of optimism marks the predictions which are being made for 1922.

"Underlying the prevailing confidence is a consciousness that some of the most difficult steps in the progress of domestic readjustment have been accomplished. The fact that commodity prices have for the most part checked their long and painful downward course and have even, in special instances, improved from their lowest recent level, is accepted as a sign that the period of severest deflation has run its course. A re-employment of a part of the army of men made idle through lack of work, an adjustment downward of wages to a level more in line with the scale of prices, and a relief from the menace of perennial strikes are factors which have helped to bring about a hopeful attitude; in addition there have been the evidences of progress toward cheaper transportation and lessened distribution costs, toward more equable distribution of taxation, and toward a scale of expenditures, both private and governmental, far removed from the extravagance that was lately rampant.

"We see now, in a new perspective, what difficulties were stored up for the country during the period of rash inflation that we chose, from 1915 to 1920, to call a war boom. Deflation from a condition such as the country stood in two years ago has shown itself to be at best a hard performance. The principal difficulties have arisen from the disproportions that were brought about and by the manner in which these have thrown affairs out of balance at a time when stability was needed more than anything else.

"Our business structure at the moment is unquestionably nearer to a wholesome condition than we could, two years ago, have hoped for. Yet it is still to be determined how far we have proceeded toward that degree of stability from which a forward movement, on healthy, orderly lines, can confidently be counted on."

Americans Get Electric Contracts

A $2,000,000 contract for electrical apparatus has been awarded to the Westinghouse Electrical International Co. by the Daide Electric Power Co. of Japan. The machinery is to be used in two hydro-electric plants which are to form part of a great power system for the Tokio distict. The current is to be transmitted at 154,000 volts, the announcement said.

The International General Electric Co. has been awarded an order involving more than $1,000,000 for the electrification of forty miles of the Spanish Northern Railway.

Construction Work Increases

Statistics made public by the United States Chamber of Commerce show that new construction work throughout the country in the first ten months of this year nearly equalled construction for the whole of last year. The Chamber's survey is compiled from figures from forty-four important cities reporting $603,000,000 in new construction projects in the ten months.

Ranks of Idle Reduced 40 P. C.

The latest bi-monthly survey by the National Industrial Conference Board of industrial economic conditions in the United States finds that opportunities for employment are becoming more numerous, especially in the Eastern States. Wage deflation continues to make progress, although against considerable organized resistance, and with lower wage scales business activity tends to increase. While at the beginning of the President's unemployment conference the number of unemployed was placed at about 3,500,000, the latest Government figures place the number at not more than 2,000,000.

N. Y. Central Orders Rails

The New York Central R.R. has placed contracts for the delivery of 125,000 tons of rails during 1922 and is said to be in the market for 25,000 tons additional. Inquiries for these orders have been in the market for some time. Allotment of the tonnage to steel companies has not yet been completed, but the Lackawanna Steel Co., the Illinois Steel Co. and the Inland Steel Co. are expected to receive the major portion of the order. The Cambria Steel Co. also is mentioned.

Railway Conditions Improving

Reports to the U. S. Railroad Labor Board show steadily improving conditions among the railroads of the country, according to a statement made Dec. 4 by Ben W. Hooper, vice chairman of the board. Mr. Hooper also took occasion to point out that the board's decision not to consider wage reductions for any class of employees until working rules for the class had been disposed of had not delayed consideration of wage disputes on any railroad or for any class of employees. The railroad situation is more conducive to optimism than it has been for many months, he said.

Steel Production Gaining

Steel production in November, according to the *Iron Age*, reached 1,415,481 tons, or at the rate of 47,183 tons daily, as contrasted with 1,246,676 tons, or at the daily rate of 40,215 tons, in October. Twenty-four furnaces were started in November and none blown out. The capacity of 120 furnaces active Dec. 1 was 51,665 daily, compared with 40,850 tons for 96 furnaces on Nov. 1. In reviewing events in the steel trade during the past week the journal says: "The Steel Corporation blew in twelve furnaces, or half of those that started in November, and the independent steel companies five, the remaining seven being merchant stacks."

In Upholding Right to Bar Pickets Supreme Court Deals Severe Blow to Organized Labor

IN declaring anti-picketing injunctions against labor unions valid, if they restrain acts of force and intimidation, the U. S. Supreme Court upheld the American Steel Foundries Co. in its suit against the Tri City Central Trades Council.

The decision, read by Chief Justice Taft Dec. 5, is one of the most serious in years from the standpoint of labor, dealing as it does a severe blow to what has hitherto been one of the most effective weapons of organized labor.

The decision of the court was by a vote of eight to one. Justice Clarke dissented and Justice Brandeis concurred in part.

Following is a summary of the decision:

The first question is whether section 20 of the Clayton Act is to be applied in this case. The act was passed while this case was pending in the Circuit Court of Appeals. In Duplex Co. vs. Deering, a suit to restrain a secondary boycott had been brought before the passage of the act but did not come to hearing until after its passage. It was held that because relief by injunction operates in future and the right to it must be determined as of the time of the hearing section 20 of the act relating to injunctions was controlling in so far as a decree entered after its passage should conform to its provision. The decree here appealed from the District Court had been entered before the Clayton Act passed but the whole case was taken up by the appeal. The complainant had no vested right in the decree of the District Court while it was subject to review. The Circuit Court of Appeals was called upon to approve or change the decree and was obliged therefore to regard the statute in its conclusion and so are we. (The court then quotes section 20 of the Clayton Act.)

It has been determined by this court that the irreparable injury to property or to a property right in the first paragraph of section 20 includes injury to the business of an employer and that the second paragraph applies only in cases growing out of a dispute concerning terms or conditions of employment between an employer and an employee, between employers and employees, or between employees, or between persons employed and persons seeking employment and not to such dispute between an employer and persons who are neither employees nor seeking employment (Duplex Printing Co. vs. Deering). Only two of the defendants who left at the time of the strike can invoke in their behalf section 20. We must therefore first consider the propriety of the decree as against them and then as against the other defendants. It is clear that Congress wished to forbid the use by the federal courts of their equity arm to prevent peaceful persuasion by employees, discharged or expectant in promotion of their side of the dispute and to secure them against judicial restraint in obtaining or communicating information in any place where they might lawfully be. This introduces no new principle into the equity jurisprudence of those courts. It is merely declaratory of what was the best practice always. Congress thought it wise to stabilize this rule of action and render it uniform.

The object and problem of Congress in section 20 and in courts of equity before its enactment was to reconcile the rights of the employer in his business and in the access of his employees to his place of business and egress therefrom without intimidation or obstruction, on the one hand, and the right of the employees recent or expectant to use peaceable and lawful means to induce present employees and would-be employees to join their ranks, on the other.

If in their attempts at persuasion or communication with those who would enlist with them, those of the labor side adopt methods which, however lawful in their announced purpose, inevitably lead to intimidation or obstruction, then it is the court's duty with the terms of section 20 to modify so as to limit what the propagandists do as to time, manner and place in such a way as to prevent infractions of the law and violations of the right of the employees and of the employers for whom they wish to work.

How far may men go in persuasion and communication and still not violate the right of those whom they would influence? In going to and from work men have a right to as free a passage without obstruction as the streets afford, consistent with the right of others to enjoy the same privilege. We are a social people and the accosting by one of another in an inoffensive way and an offer by one to communicate and discuss information with a view to influencing the other's action are not regarded as aggression or a violation of that other's rights. If, however, the offer is declined, as it may rightfully be, then persistence, importunity, following and dogging become unjustifiable annoyance and obstruction which is likely soon to savor of intimidation. From all of this the person sought to be influenced has a right to be free and his employer has the right to have him free. The nearer this importuned intercepting of employees or would-be employees is to the place of business, the greater the obstruction and interference with the business and especially with the proprietor's right of access to the employer. Attempted discussion and argument of this kind in such proximity is certain to attract attention and congregation of the curious or, it may be, interested bystanders, and thus to increase the obstruction as well as the aspect of intimidation which the situation quickly assumes.

In the present case the three or four groups of picketers were made up of from four to twelve in a group. They constituted the picket line. Each union interested had several representatives on the picket line and assaults and violence ensued. They began early and continued from time to time during the three weeks of the strike after the picketing began. All information tendered, all arguments advanced and all persuasion used under such circumstances were intimidation. They could not be otherwise. It is idle to talk of peaceful communication in such a place and under such conditions. The numbers of the pickets in the groups constituted intimidation. The name "picket" indicated a militant purpose inconsistent with peaceful persuasion. The crowds they drew made the passage of employees to and from the place of work one of running the gauntlet. Persuasion or communication attempted in such a presence and under such conditions was anything but peaceable and lawful. When one or more assaults and disturbances ensued they characterized the whole campaign which became effective because of its intimidating character, in spite of the admonition given by the leaders to their followers to use lawful methods to be pursued, however slowly.

Our conclusion is that picketing thus instituted is unlawful and cannot be peaceable and may be properly enjoined by the specific term because its meaning is clearly understood in the sphere of the controversy by those who are parties to it. We are supported in that view by many well seasoned authorities, although there has been contrariety of view.

A restraining order against picketing will advise earnest advocates of labor's cause that the law does not look with favor on an enforced discussion of the merits of the issue between individuals who wish to work and groups of those who do not under conditions which subject the individuals who wish to work to a severe test of their nerve and physical strength and courage. But while this is so we must have every regard to the Congressional intention manifested in the act and to the principle of existing law which declares that ex-employees and others properly acting with them shall have an opportunity so far as is consistent with peace and law to observe who are still working for the employer, to communicate with them and to persuade them to join the ranks of his opponents in a lawful economic struggle. Regarding as primary the rights of the employees to work for whom they will and undisturbed by annoying importunity and intimidation of numbers, to go freely to and from their place of labor, and keeping in mind the right of the employer incident to his property and business to free access of such employees, what can be done to reconcile the conflicting interests?

Each case must turn on its own circumstances. It is a case for the flexible remedial power of a court of equity which may try one mode of restraint, and if it fails or proves to be too drastic may change it. We think that the strikers and their sympathizers engaged in the economic struggle should be limited to one representative for each point of ingress and egress in the plant or place of business and that all others be enjoined from congregating or loitering at the plant or in the neighboring streets by which access is had to the plant; that such representatives should have the right of observation, communication and persuasion but with special admonition that their communication, arguments and appeals shall not be abusive, libelous or threatening, and that they shall not approach individuals together but singly and shall not in their single efforts at communication or persuasion obstruct an unwilling listener by importunate following or dogging his steps. This is not laid down as a rigid rule but only as one which should apply to this case as disclosed by the evidence and which may be varied in other cases. The purpose should be to prevent the inevitable intimidation of groups of pickets but to allow missionaries. With these views it is apparent that we cannot sustain the qualification of the order of the District Court which the Circuit Court of Appeals made.

There remains to consider the part of the decree of the District Court which forbade them by persuasion to induce employees or would-be employees to leave or stay out of complainant's employ. The effect of it is to enjoin persuasion by them at any time or place. This certainly conflicts with section 20 of the Clayton Act. The decree must be modified as to these two defendants by striking out the word "persuasion."

The second important question is as to the form of the decree against the Tri City Trades Council and the other defendants. What has been said as to picketing applies to them, of course, as fully as to the ex-employees, but how as to the injunction against persuasion? The argument made on behalf of the American Foundries in support of enjoining persuasion is that the Tri City Trades Council and other defendants, being neither employees nor strikers, were intruders into the controversy and were engaged without excuse in an unlawful conspiracy to injure the Foundries by enticing its employees and therefore should be enjoined.

Is interference of a labor organization by persuasion and appeal to induce a strike against low wages under such circumstanees without lawful excuse and malicious? We think not. Labor unions are recognized by the Clayton Act as legal when instituted for mutual help and lawfully carrying out their legitimate object. They have long been thus recognized by the courts. A single employee was helpless in dealing with an employer. He was dependent ordinarily for his daily wage for the maintenance of self and family. If the employer refused to pay him the wages that he thought fair he was nevertheless unable to leave the employ and resist arbitrary and unfair treatment. Union was essential to give labor opportunity to deal on equity with employers.

The right to combine for such a lawful purpose has for many years not been denied by any court. The strike became a lawful instrument in a lawful economic struggle or competition between employer and employees as to the share or division of them of the joint products of labor and capital. To render this combination at all effective employees must make their combination extend beyond one shop. Therefore they may use all lawful propaganda to enlarge their membership and especially among those whose labor at lower wages will injure their whole guild. It is impossible to hold such persuasion and propaganda to be without excuse and malicious. The principle of the unlawfulness of maliciously enticing laborers still remains and action may be maintained therefor in proper cases, but to make it applicable to local labor unions in such a case as this seems to be unreasonable.

Counsel for the steel foundries rely on two cases in this court to support their contention. The first is that of the Hitchman Coal & Coke Co. vs. Mitchell. The principle followed in the Hitchman case cannot be invoked here. There the action was

...al mining company of West Virginia against the officers of an international labor union and others to enjoin them from carrying out a plan to bring the employees of the complainant company and all the West Virginia mining companies into the international union, so that the union could control, through the union employees, the production and sale of coal in West Virginia in competition with the mines of Ohio and other states. The plan thus proposed was carried out in the case of the complainant company by the use of deception and misrepresentation with its non-union employees, by seeking to induce such employees to become members of the union, contrary to the express term of their contract of employment, that they would not remain in complainant's employ if union men, and after enough such employees had been secretly secured, suddenly to declare a strike against complainant and to leave it in a helpless situation, in which it would have to consent to be unionized. This court held that the purpose was not lawful and that the means were not lawful and that the defendants were thus engaged in an unlawful conspiracy which should be enjoined. The circumstances of the case make it no authority for the contention here.

The Hitchman case was cited in the Duplex case but there is nothing in the *ratio decidendi* of either which limits our conclusion here or which requires us to hold that the members of a local labor union and the union itself do not have sufficient interest in the wages paid to the employees of any employer in the community to justify their use of lawful and peaceable persuasion to induce these employees to refuse to accept such reduced wages and to quit their employment. For this reason we think that the restraint from persuasion by the District Court was improper and in that regard the decree must be modified. In this we agree with the Circuit Court of Appeals. The decree of the Circuit Court of Appeals is reversed in part and affirmed in part and the case remanded to the District Court for modification of its decree in conformity with this opinion.

Judge Maxwell Affirms Decision Reducing Tax Valuation of Coal Lands

IN THE tax valuation case of the Woodward & Williamson and Reynolds estates in Luzerne County, Pennsylvania, Judge Maxwell, of Bradford County, has affirmed his previous decision and has sealed the bill. These coal properties had been valued at approximately $1,300,000. Representatives of the estates made appeals from the decision of the County Commissioners and Judge Maxwell was brought in to hear the case. He reduced the valuations to approximately $400,000, but granted a rule to show cause why his adjudication should not be reopened. His affirmation of the original decision marks the end of this second hearing, though counsel for Edwardsville borough and Edwardsville school district, which will lose about $20,000 in taxes, probably will appeal to the Supreme Court.

Harding Approves Doubling Appropriation For Work in Interest of Foreign Trade

IN view of the propitious start made by the commodity divisions of the Department of Commerce, the President and the Director of the Budget have approved a request for an appropriation of $540,000 for the continuance of the work in the interest of the export industries during the next fiscal year. This is an increase of $290,000 over the amount appropriated for this work during the current fiscal year. It is proposed to set up seventeen additional commodity divisions, of which petroleum will be one. The existing commodity divisions include one on fuels, which will become a coal division. The present fuels division is receiving an allotment of $15,000. In each case the chief of the division is to receive a salary of $6,000, and the assistant chief, $2,000.

For the general work of promoting commerce Congress is asked to appropriate $524,050, an increase of $199,050 over the appropriation for the current year. Under this appropriation it is proposed to establish new trade commissioner offices in Russia, Greece and Canada. It also is the plan to undertake special technical investigations in connection with fuels in England, Belgium and Germany.

In addition, $213,650 is asked to promote further the commerce between the United States and Latin America. This is an increase of $113,650 over the current year's appropriations. A portion of the increase is to be applied to the establishment of new trade commissioner offices in Cuba, Colombia, Uruguay and Venezuela.

State to Open Rescue Stations and Demand First Aid of Foremen and Inspectors

AT a meeting held by L. Blenkinsopp, chief inspector, Department of Mines, at Lexington, Ky., for the purpose of creating first-aid stations throughout the State of Kentucky, the following inspectors were present: William Roberts, Madisonville; W. H. Hunt, Central City; J. A. Lewis, Lexington; R. D. Collett, Pineville; Lacy Laxton, Harlan; H. C. Faulkner, Hazard; M. L. Wells, Paintsville and Grant Phillips, Pikeville.

A committee appointed by Mr. Blenkinsopp adopted the following resolutions and presented them to him for his approval: That the Department of Mines give each inspector at a proper place in his district a first-aid and rescue station, equipped with three Paul breathing apparatus and a complete first-aid outfit, with proper supplies for its maintenance and operation. That the inspectors of each district co-operate with the operators in training teams at each mine and give all the instructions and information possible to prepare first-aid and rescue teams throughout the state. That applicants for first-class mine foreman's certificates be required to pass a first-aid examination before being considered qualified for a first-class certificate. After discussion the resolutions were accepted.

J. M. Webb, foreman, U. S. Bureau of Mines, Knoxville, Tenn., gave inspectors several days of extensive training in first-aid and rescue work.

Kentucky Inspectorate

From left to right: J. M. Webb, foreman, U. S. Bureau of Mines, Knoxville, Tenn.; M. L. Wells, Lacy Laxton, Will Roberts, Beatrice Langley, chief clerk, Lexington; J. A. Lewis, R. D. Collett, W. H. Hunt, H. C. Faulkner, Grant Phillips and L. Blenkinsopp, chief inspector, Lexington, Kentucky.

Congress Scrutinizes Prices in Considering Government Appropriations for Coal

WITH the annual appearance of government officials before Congressional appropriations committees the discussion of coal prices is resumed. Acting Supervising Architect Wetmore of the Treasury said the Treasury Department had purchased coal for public buildings cheaper than other departments. At the mines in carload lots delivered to communities it had bought bituminous for $5.50 a ton and anthracite for $9.50. Chairman Madden of the House Appropriations Committee said the National Home for Disabled Volunteer Soldiers had bought coal delivered in cellars at $6 a ton, and that Mr. Wetmore was in error in asserting he had bought coal cheaper than other departments.

Committee members thought the navy should get back to the pre-war days, when navy fuel appropriations averaged about $5,000,000 annually. Chairman Madden threatened to refuse any appropriation whatever in the future if the navy did not keep within the original yearly appropriations made by Congress. He said the navy had been extravagant in waste of fuel. He intimated that in future years the navy would be allowed only $7,500,000 annually for fuel.

Representative Kelley, of Michigan, in charge specially of naval appropriations for the committee, closely questioned Admiral Coontz and other naval officers as to fuel expenditures. It developed that on Oct. 1 of this year the navy had on hand 923,498 tons of coal, 69,000 tons being at Cavite, 4,000 tons at Guam, 300,000 tons at Hampton Roads, Va., 109,000 tons at Pearl Harbor and 111,000 tons at Tiburon, Cal. The average price for issues to the naval vessels during July, August and September had been $8.26, including transportation.

Power Plants Consumed 139.336 More Tons Of Coal in October Than in September

CENTRAL power stations consumed 2,720,826 net tons of coal in October, in the production of 2,402,069,000 kw.-hr. of electric power. The same plants used 2,581,490 tons in September, 2,572,569 tons in August, 2,453,945 tons in July and 2,434,349 tons in June.

October, therefore, represents a substantial gain over the summer months in the consumption of coal by public utilities. The total production of power by these companies in October was identical with that in January of this year, but in October 67.9 per cent of the total was generated by steam compared with 62.1 per cent in January, the remainder in each month having come from water power. The output by fuel power in October was the same as in October, 1920.

Sanitary Experts to Tell House Committee Effect of Mine Water on Streams

HEARINGS were to have been reopened on Dec. 7 by the Rivers and Harbors Committee of the House of Representatives to consider further the matter of pollution of waters. The fact that the committee is beginning hearings so promptly after the reconvening of Congress is an indication that it expects to take prompt action on this legislation. Those who favor regulations which will prevent the pollution of streams and coastal waters have made such a good case before the committee that it is feared the committee may be influenced to adopt regulations so drastic as to have an untoward effect on such industries as coal mining and manufacturing.

Little has been said in defense of the practice of dumping oil waste at sea and in harbors. The difficulty in legislating to meet that situation is that such a law could not be fully effective beyond the three-mile limit and because of the difficulties of apprehending those responsible for the discharge of these wastes at sea. It is believed, however, that some means will be devised which will make it easier for ships to rid themselves of oil wastes in harbors and which will make it hazardous for any boat to contribute to what is becoming a serious nuisance on the Atlantic and Gulf coasts. There is insistence that this legislation be coupled with laws governing pollution of inland waterways by industrial plants and mines.

Representatives of chemical plants already have testified before the committee as to the character of their wastes. Mine operators now are to be heard. The National Coal Association has been gathering data regarding the volume and possible effect of acid water discharges from mines. It is regarded as probable that its witnesses will be able to convince the committee that mine water constitutes an insignificant portion of the volume of most streams and that it tends to disinfect sewage pollution. Sanitary specialists will be brought forward to testify as to the general effect of mine water on streams.

Government Will Define Scope of Trade Association Activities

ACTIVITIES and functions that trade associations may legally engage in will soon be announced by the government, E. W. McCullough, manager of the fabricated production department of the Chamber of Commerce of the United States, told the American Face Brick Association in annual convention, Dec. 2, at White Sulphur Springs, W. Va. He said that such a statement would have been issued before now but for the fact that several governmental cases are now pending against certain trade associations, involving such questions as the proper use of statistics, open price plans and averages in cost accounting.

According to Mr. McCullough, Secretary Hoover, of the Department of Commerce, desires closer contact with the industries through their associations, but Secretary Hoover has intimated that such organizations should put themselves in position to speak for their industries by including in their membership the largest possible representation; and also through the perfection of their machinery for gathering, analyzing and compiling all desirable information not only of service to themselves but to the government and the public. It is to make possible such co-operation that the government is expected to define the proper functions of a trade association, Mr. McCullough said.

October Mine Fatalities Fewer Than Last Year; Ratio to Output Slightly Higher

THERE were 167 deaths during October as the result of accidents in and about the coal mines of the country, according to a report by the U. S. Bureau of Mines. This represents a decrease of 27 fatalities, or about 14 per cent, from the coal-mine fatality record for October, 1920, in which month 194 men were killed. Based upon an estimated output of 51,321,000 net tons in October, 1921, the fatality rate is 3.25 per million tons produced. The rate for October, 1920, was 3.22, when the production of coal was 60,200,000 tons.

Of the total number of fatalities in October of the present year, 131 occurred at bituminous mines throughout the country and 36 at the anthracite mines in Pennsylvania. Pennsylvania bituminous mines had 30 fatal accidents, an increase of 1 over October a year ago; West Virginia 30, a reduction of 3; Illinois 17, a reduction of 12; Ohio 12, no change; Kentucky 11, a decrease of 3; Indiana 5, a reduction of 7; and Alabama 3, a reduction of 2.

During the first ten months of the present year 1,629 men died from accidents at all coal mines, against 1,880 during the corresponding months of 1920, a decrease of 251 fatalities, or 13 per cent. These figures represent a fatality rate of 3.93 per million tons mined in 1921 and 3.57 per million tons in 1920.

For the Pennsylvania anthracite mines alone, fatalities during the present year have averaged 44.3 per month, as compared with a monthly average of 41.2 during the first ten months of 1920. The fatality rates have been 5.95 per million tons mined in 1921 and 5.63 per million tons mined in 1920.

Calls Coal Mining a Spendthrift Industry; Consumer Can Do Most to Stop Leaks

CHARACTERIZING coal mining as a spendthrift industry in an address before the Coal Mining Institute of America at Pittsburgh, Pa., Dec. 7, George Otis Smith, Director of the U. S. Geological Survey, based his indictment on "its wasteful use of natural wealth, its wasteful use of invested capital and its wasteful use of labor—three national resources that we cannot afford to waste."

Thereupon he took this "close-up" of coal reserves:

"Pennsylvania, with an original holding of only 5 per cent of the coal of the United States, has furnished nearly half of the coal mined in the whole country since 1807. Or, taking an even closer view, we see that the Pittsburgh coal bed, which included about 10 per cent of the original tonnage of Pennsylvania coal, has contributed nearly 30 per cent of the coal mined in this state. In round figures, two billion tons out of the fourteen billion tons mined in the United States has come from the Pennsylvania portion of this single bed, which originally contained less than one-half of 1 per cent of the country's supply of coal above the grade of lignite. In other words, then, while there is more than 99 per cent of the coal left in the country as a whole, there is only about 80 per cent left of the Pittsburgh bed in this state. Making further reference to the facts furnished to me by M. R. Campbell, of the U. S. Geological Survey, I note that fully half of this reserve of Pittsburgh coal underlies Greene and Washington counties at considerable depth. In short, of the easily mined and better quality Pittsburgh coal only about twice as much remains as has been mined, and this coal is being mined faster than ever before. Indeed, in 1918 the Pittsburgh bed contributed 53 per cent on Pennsylvania's output and 16 per cent of the soft coal mined in the whole country, as well as another 6 per cent from the same bed in adjacent states. This record of the Pittsburgh coal adds to the renown of the city for which the coal was named and for whose prosperity it has been the foundation. But that pace cannot be maintained forever."

More Than Two Billions Invested in Coal Mining

"Unfortunately we lack exact knowledge as to how much capital is tied up in the business of mining coal," he continued. "The census figures available indicate that there was in 1919 about $1,900,000,000 in the bituminous mining industry and over $400,000,000 in the anthracite industry. Dividing these totals for capital by a normal year's production gives a little over $3.50 of capital per net ton of soft coal produced and nearly $5 per net ton of anthracite produced. This investment of two and one-third billion dollars makes the business one in which any appreciable saving on capital account is well worth while.

"In an off year, like 1919, however, the capital which had to be assessed against each ton of soft coal mined was $4 instead of $3.50. As figured by Mr. Tryon, to whom, as usual, I am largely indebted for my statistics, the soft coal mines of the country have an annual capacity of 800,000,000 tons. This is overdevelopment, for it means that the capital in terms of capacity is less than $2.50 a ton, while in terms of actual output in the census year it was more than $4 a ton. The coal mines therefore don't need more capital; they need more product. Is it not a spendthrift industry that uses $4 of capital where $2.50 will do the work?

"It is conservative to say that our total mine capacity is fully a third larger than the largest annual output, and even a fifth larger than the largest output for a single week—and that week a most exceptional one. This is a larger factor of safety than we can well afford, and to that extent, then, is there inflation in soft-coal mining. This indicates that there is half a billion dollars tied up in the soft-coal business that is misplaced capital—capital needed elsewhere. In so far as this capital is paid the wages that are its due the consumer of a ton of coal is paying in normal years for the use of $3.50 where $2.50 or less would serve his purpose.

"This is a simple statement of the wastefulness of having too many mines, and never was the condition worse than now. Evidently the competitive system has poorly served the consumer of coal.

"Naturally, the wasteful inflation in mine capacity is paralleled by an equally wasteful equipment of the mines with labor. This year, for instance, it appears that the average mine worker in the bituminous districts of the country will work only 172 days, but he and his family must live during the 136 days of enforced idleness due to lack of demand on the average mine for its product. Even in a more normal year the percentage of lost days is so high that we coal consumers are evidently supporting not only idleness of capital but idleness of labor. . . .

"The responsibility of the general public in its attitude toward coal has never been sufficiently emphasized. Indeed, the first step is to prove to the average citizen that he has any duty in the matter other than to pay for the coal he buys. . . .

"Were I addressing coal consumers rather than coal producers my advice to those who ask for cheaper coal would be to stop the leaks nearest home and then help the coal operator to stop his leaks. The high cost of distribution may be relatively much higher than the high cost production, and its control is nearer the coal buyer, who can personally learn how much more it costs the local dealer to deliver his largest tonnage when the blizzard strikes town and to equip his yard to handle a peak demand far in excess of the average requirements of his trade. Then as the coal user in his investigation goes farther from home he will discover what added expense is put on the railroads by being forced to haul the most coal in winter, a requirement resulting in overworked locomotives in mid-winter and idle freight cars in spring and summer. And then a visit to the mines will show the coal user a similar distribution of idleness, the mines and miners working only half time during the spring and summer because there is then this limiting factor, 'no market for the coal.' . . .

Coal Business Too Crowded for Public Good

"The investor likewise has a duty to perform; he should refuse to add to the oversupply of capital in the coal industry. Whether legislation can stop this overdevelopment or not, public opinion ought to brand as almost criminal any further inflation of the coal business, whether in opening new mines promiscuously or in starting new jobbing firms or new retail yards; the whole coal business is too crowded for the public good.

"In short, what we need in these United States of ours are fewer and larger and better coal mines—even mines that might work three shifts a day; fewer enlistments in the army of mine workers, who then could count on the opportunity to work 290 or 300 days a year, a privilege which coal miners in the European countries had in the pre-war years. Of course, the desired deflation of mine labor would not mean the actual discharge of experienced mine workers but rather the adjustment of recruiting to the real needs of the industry. Also we need fewer middlemen, for too often they perform a worth-while service only in times of excessive demand, when the market belongs to the sellers, and fewer retailers, who then could charge lower prices for their service because they, too, would not have to maintain idle equipment and idle employees during many months of the year.

"Yes, the coal industry is a spendthrift, but the consumer pays for all this waste, and he is the one who can help most in stopping the leaks. A new view must be taken of the present price of coal; the worst of it is that coal costs too much because we pay for too much idleness—our spendthrift industry loafs too many months in the year."

NELSON B. GASKILL, of New Jersey, a Republican member of the Federal Trade Commission, succeeded to the chairmanship of the commission Dec. 1 for a term of one year. Mr. Gaskill, who was vice-chairman during the past year, succeeds to the chairmanship under the rule of the commission which provides for rotation in the office of chairman among the several commissioners. Mr. Gaskill was appointed to the commission in December, 1919.

Coal Consumption Exceeding Output; Danger of Stocks Dwindling to Unsafe Level in Event of Strike

By Paul Wootoon
Washington Correspondent

INFORMATION reaching both official and private agencies in Washington during the past week indicates clearly that the country is now burning considerably more coal than it is producing. In view of the fact that two strike scares have not materialized, it is feared that the country will continue to coast on its stocks until it will be too late to build them up again even should there be advance indications that the threatened coal strike may be called.

While the Nov. 1 stocks were relatively large and worry could be dismissed were there nothing to consider more than the ordinary complications of winter weather, high government officials are not at all optimistic in the view they are taking of the labor situation in the coal industry. No publicity has been given to a number of conferences which have been held in Washington with the leaders of the mine workers, but it is known that no progress has been made in the effort to devise a peaceable solution of the labor situation. The President's reference to labor codes in his message to Congress is an indication of the attention which the chief executive has been giving this matter. It is generally recognized in official circles that should the administration be able to devise a satisfactory means of avoiding the threatened coal strike, thereby setting a precedent which could be followed in other disputes, this one accomplishment would be sufficient to insure the classification of the administration as a successful one. In that connection much significance is attached to the recommendations which probably will be made by Senator Kenyon in connection with the investigation of the Mingo situation. It is believed that this recommendation will contain suggestions of a most significant sort. It is recognized that the non-union fields hold the key to the situation.

Discusses Relations of Capital and Labor

President Harding's remarks on the relations of capital and labor were as follows:

"The right of labor to organize is just as fundamental and necessary as is the right of capital to organize. The right of labor to negotiate, to deal with and solve its particular problems in an organized way, through its chosen agents, is just as essential as is the right of capital to organize, to maintain corporations, to limit the liabilities of stockholders. Indeed, we have come to recognize that the limited liability of the citizen as a member of a labor organization closely parallels the limitation of liability of the citizen as a stockholder in a corporation for profit. Along this line of reasoning we shall make the greatest progress toward solution of our problem of capital and labor.

"In the case of the corporation which enjoys the privilege of limited liability of stockholders, particularly when engaged in the public service, it is recognized that the outside public has a large concern which must be protected, and so we provide regulations, restrictions, and in some cases detailed supervision. Likewise, in the case of labor organizations, we might well apply similar and equally well-defined principles of regulation and supervision in order to conserve the public's interests as affected by their operations.

"Just as it is not desirable that a corporation shall be allowed to impose undue exactions upon the public, so it is not desirable that a labor organization be permitted to exact unfair terms of employment or subject the public to actual distress in order to enforce its terms. Finally, just as we are earnestly seeking for procedures whereby to adjust and settle political differences between nations without resort to war, so we may well look about for means to settle the differences between organized capital and organized labor without resort to those forms of warfare which we recognize under the name of strikes, lockouts, boycotts and the like.

"As we have great bodies of law carefully regulating the organization and operations of industrial and financial corporations, as we have treaties and compacts among nations which look to the settlement of differences without the necessity of conflict in arms, so we might well have plans of conference, of common counsel, of mediation, arbitration, and judicial determination in controversies between labor and capital. To accomplish this would involve the necessity to develop a thoroughgoing code of practice in dealing with such affairs. It might be well to frankly set forth the superior interest of the community as a whole to either the labor group or the capital group. With rights, privileges, immunities and modes of organization thus carefully defined, it should be possible to set up judicial or quasi judicial tribunals for the consideration of and determination of all disputes which menace the public welfare.

"In an industrial society such as ours the strike, the lockout and the boycott are as much out of place and as disastrous in their results as is war or armed revolution in the domain of politics. The same disposition to reasonableness, to conciliation, to recognition of the other side's point of view, the same provision of fair and recognized tribunals and process ought to make it possible to solve the one set of questions as easily as the other. I believe the solution is possible.

"The consideration of such a policy would necessitate the exercise of care and deliberation in the construction of a code and a charter of elemental rights dealing with the relations of employer and employee. This foundation in the law, dealing with the modern conditions of social and economic life, would hasten the building of the temple of peace in industry, which a rejoicing nation would acclaim."

Wage Cut Causes Spurt in New River Field; Upper Potomac Miners Restive

MINING activities in the New River smokeless coal field are increasing, the change being due to miners of fifteen mines reverting to the 1919 wage scale. Pick and machine men now receive 24c. less a ton and day men $5 instead of $7.50. Union miners of the fifteen mines have surrendered their charters to the district headquarters of the United Mine Workers at Beckley, it is said, so that they will be free of obligation to the national headquarters.

Developments in the upper Potomac region of West Virginia indicate that miners there are becoming restive almost to the point of withdrawing from the union in order to obtain work. The upper Potomac field is in District 16, United Mine Workers, which also embraces the Georges Creek field. Some of the mines in the upper Potomac field are in West Virginia and some are in Garrett County, Maryland, the mines being served by the Western Maryland Ry. The mining rate in the upper Potomac region is $1.31 a ton, which operators say is so much higher than that prevailing in other fields that they cannot compete, and hence their mines are idle. Mine owners have indicated that they are willing to resume operations on a lower rate and many miners have shown a disposition to accept a reduction but have been dissuaded from doing so by union officials. That has been particularly the case at Blaine, W. Va., where miners were on the point of accepting reduction when they were influenced to hold out for the higher rate by officials of the union. So far the Blaine mines are still idle.

AFTER HAVING SPENT SEVERAL MONTHS in investigating the immediate problems of agriculture, the joint congressional committee on agriculture now has taken up an investigation of coal. The committee expects to include in its conclusions some recommendations as to coal.

Watkins Attributes Depression to War Profits And Wages: Must Cut Coal Costs

ADDRESSING a meeting of the Chamber of Commerce of Altoona, Pa., Dec. 8, Thomas H. Watkins, president of the Pennsylvania Coal & Coke Corporation, said that nothing would prevent further depression in business conditions but a determination on the part of all to pull together for the common good. He charged that depression was being prolonged by selfish groups trying to preserve war profits and wages.

After reviewing general business conditions Mr. Watkins said that coal is a basic industry and that the operator and miner must bring down the cost, incidentally giving the following outline of the trend of coal miners' wages during the last twenty years:

"It must be admitted that twenty years ago conditions surrounding the bituminous industry of this country were deplorable, both for the miner and the operator. As we look back, this country was considered prosperous as compared with other countries at that period; wages in all lines of industry were more or less balanced, and the cost of living was somewhat in line with the wages earned. Up to April 1, 1900, the wages of the highest-paid men working by the day was $1.90. Motormen were paid $1.75. From 1901 to 1903 the standard rate was $2.25. In 1904 it was $2.40. In 1905 it was reduced to $2.27. In 1907 it was restored to $2.40. In 1910 and 1911 it was $2.53, remaining at that figure until April 1, 1916, when it was raised to $2.77.

"With the foreign war, higher wages ensued. The same class of rates was advanced in April, 1917, to $3.60. On Nov. 1, 1917, as a result of another demand on the part of the miners, wages were advanced to $5 a day. The national strike began Nov. 1, 1919, and lasted about six weeks, the men returning to work on a rate of $5.70 per day. On April 1, 1920, under the award of the Bituminous Coal Commission, the wage was advanced to $6. The miners, protesting against that decision, forced another increase on Aug. 15, 1920, to $7.50, so that we see in twenty years wages advanced from $1.90 per day to $7.50 per day. The rate for pick mining in the central Pennsylvania district went from 50c. per ton in 1900 to $1.2803 a ton, the present rate. The miners can, and do, earn at these rates from $150 to $350 per month.

"The miners' union takes credit for these advances, while, as a matter of fact, they were caused by conditions which affected wages generally up to last year. Breaking of contracts and strikes caused some of them. The last administration's policy of coddling labor through the war and threats with time watches held over our Congress by the railroad unions forced the Adamson law, and organized labor leaders found all they had to do was threaten and the administration would "fall" for all their demands—the public and employer rendered helpless. These increased wages caused increased freight rates, caused the increase in the cost of living, and the vicious circle went on."

Awards Contracts for 96,650 Tons of Coal For Ohio State Institutions

CONTRACTS for 96,650 tons of coal have been awarded by the Ohio Purchasing Department for fuel for various state institutions. Bids for this coal were opened Nov. 21 after contracts awarded by the former incumbent in the office were declared illegal in the courts. New bids will be asked for for about 20,000 tons of coal for the Ohio Penitentiary and the State Hospital at Columbus, as it was decided to ask for bids on nut, pea and slack instead of mine-run, thereby making a saving of about $17,000.

The Hemlock Coal Co., of Nelsonville, was awarded the contract for 10,000 tons of nut, pea and slack for the Epileptic Hospital, Gallipolis, at $2.34 per ton; 11,000 tons of nut, pea and slack for the Orient Institution for the Feeble Minded at $2.90; 11,000 tons for the Columbus Institution for the Feeble Minded at $2.62; 3,000 tons of nut, pea and slack for the Reformatory at Mansfield at $2.90; 5,000 tons of nut, pea and slack for the State Hospital at Dayton at $3.25; 3,000 tons of nut, pea and slack for the State Hospital at Lima at $3.32; 5,500 tons of nut, pea and slack for the State Hospital at Cleveland at $3.32 and 1,200 tons of mine-run for the Woman's Reformatory at Massillon at $3.74.

The Consolidated Coal Co., Columbus, was awarded contracts for 3,300 tons of mine-run for the Girls' Industrial School at Delaware at $3.61; 500 tons of mine-run and 100 tons of lump for the Orient Institution for the Feeble Minded at $3.61 and $4.14 respectively; 2,000 tons of mine-run for the Sanitarium at Mount Vernon at $3.61; 250 tons of mine-run and 1,150 tons of mine-run for the prison construction department and the London prison farm at $4.03. The Union Coal Co., of Cleveland, will furnish 1,500 tons of mine-run for the Cleveland State Hospital at $3.56; 6,500 tons of mine-run for the Ohio Soldiers' and Sailors' Home, Sandusky, at $3.91, and 7,000 tons mine-run for the Toledo State Hospital at $3.91.

The Fletcher-Williams Coal Co., of Columbus, will furnish 1,200 tons of mine-run for the State Institution for the Blind, Columbus, at $4.35, and 450 tons of mine-run for the Wyandotte Building, Columbus, at $4.36. Wayne Coal Co., of New Lexington, will furnish 7,000 tons of nut, pea and slack for the State Hospital at Massillon at $2.82, and 700 tons of mine-run for the same institution at $3.22. The Woodland Coal Co., of Nelsonville, will furnish 6,500 tons of mine-run for the State Hospital at Athens for $2.84; the Highland Coal Co., of Nelsonville, will furnish 4,500 tons of mine-run for the Boys' Industrial School at Lancaster at $3.12, and the Burns Coal Co., of Columbus, will furnish 1,300 tons of nut, pea and slack, delivered at $3.34.

Blames Freight on Coal, Not Mine Cost, For Competition of Corn as Fuel

FARMERS of the Middle West are able to sell their corn to householders for fuel at a higher price than they can get for it at the elevator, and householders can pay the price of corn and still save money by not having to pay the current price for coal in that territory, according to a statement made public Saturday, Dec. 10, by George H. Cushing, managing director of the American Wholesale Coal Association, in a letter to Senator Frelinghuysen, whose bill to stabilize the coal industry is before the Senate.

Mr. Cushing told Senator Frelinghuysen that when coal prices rise above a certain level, competing fuels supplant it. Corn is the newest competing fuel. Others which he mentioned are fuel oil, natural gas, wood and sometimes refuse tar. Mr. Cushing asked Senator Frelinghuysen to explain in his forthcoming speech how stabilization of coal by law will allow it to compete with these other fuels.

At the conclusion of his letter Mr. Cushing said that coal is ruled out of these Western markets not by the selling price of coal at the mine but by the railroad freight rate to market. This, he said is now 40 per cent. above war levels and has not come down in company with commodity prices.

SENATOR FRELINGHUYSEN HAS GIVEN NOTICE that he expects to address the Senate in the near future on his coal fact-finding bill. It is not improbable that he will endeavor to bring the bill before the Senate for discussion, but it is thought unlikely that he will attempt to press it to a final vote at this time.

THE GENERAL SUBJECT OF GOVERNMENT COAL PURCHASES was discussed at a conference Dec. 8 between W. R. Coyle, president of the American Wholesale Coal Association; George H. Cushing, managing director of the same organization, and W. R. Wadleigh, representing the government Committee on Co-ordination of Purchases. The discussion was along the lines of that with the representatives of the National Coal Association. The Wholesale Coal Association will formulate recommendations as to various phases of government coal purchases and will submit them to Mr. Wadleigh. Mr. Wadleigh is studying co-ordination of government purchases and is compiling suggestions from producers, consumers and foreign governments as to the most effective methods of conducting government purchases.

European Countries Show Great Progress in Industry and Trade, Hoover Reports

ECONOMIC recovery of Europe is necessarily slow and difficult, according to a review of international trade conditions issued Dec. 11 by Herbert Hoover, Secretary of Commerce. "It contains great dangers," he said, "but it is not at all as gloomy as some statements would make it appear."

"Year by year since the Armistice," he continued, "the combatant states (except Russia) show steady gains in social and political stability; they show great progress in recovery of agriculture, industry, foreign trade and communications. The one field of continuous degeneration is that of governmental finance—that is the unbalanced budgets, the consequent currency inflation, etc., of certain countries with its train of credit destruction. The commerce of the whole world obviously suffers grievously from this failure in fiscal finance and the apprehension that flows from it, and unless remedies are found the great recuperation in the five great fields of social, political, industrial, agricultural and commercial life of the past three years are endangered. Its effects spread constantly outside the borders of those states predominantly concerned, and substantially check our recovery also. . . .

"Outside of the government finance of a limited number of states the outlook is very encouraging. . . .

"In the field of economic life the progress of agricultural and industrial production year by year since the war is very marked. Famine has disappeared from Europe except in Russia. Except in countries where credit machinery is checked by danger of fiscal bankruptcy such as is the case of Austria their food, fuel and clothing supplies are sufficient albeit at a low standard of living in some places, but in even these countries the standards are much higher than the low point after the Armistice, and are thus not such a factor of discontent as would otherwise be the case. Populations have fairly settled to work and industrial efficiency and productivity is being steadily restored. The private credit institutions of the world are demonstrating their ability to handle the international trade and credits except for those regions excessively disabled by the currency demoralization. Transportation and communications have been reconstructed.

"Generally, there is progress and the problem yet to be solved are being steadily narrowed and their solutions better understood."

Larger Appropriations Asked by Geological Survey and Bureau of Mines

APPROPRIATIONS totalling $3,381,525 have been requested by the President and the Director of the Budget for the work of the Geological Survey and the Bureau of Mines during the next fiscal year. Of that amount, $1,721,060 is requested for the Geological Survey and $1,660,465 for the Bureau of Mines. The Survey's estimate represents an increase of $106,720 over the amount appropriated for its work during the current fiscal year. The Bureau of Mines' estimate requests $186,165 more than was appropriated for the current year's work.

The major divisions of the Survey's appropriation are as follows: Topographic surveys, $430,000; geologic surveys, $352,000; chemical and physical researches, $40,000; mineral resources of Alaska, $75,000; gaging of streams, $180,000; geological maps, $140,000; classification of lands, $300,000, and mineral resources, $125,000. The major increase over last year's expenses is in connection with the topographic surveys, in which instance an additional $100,000 is requested.

The appropriation for the mineral resources covers coal and coke statistics, which takes from $22,000 to $25,000 of the total, and covers the regular annual collection of production data as well as providing for the weekly reports.

The major divisions of the Bureau of Mines' appropriation are as follows: Investigating mine accidents, $414,065; testing fuel, $136,000; mineral-mining investigations, $130,000; non-metallic investigations, $35,000; petroleum and natural-gas investigations, $135,000; mining experiment stations, $175,000; experiment stations and mine inspection in Alaska, $35,000; operating mine rescue cars, $178,000; enforcement of oil-leasing act, $162,000. The increases asked, as compared with the amounts appropriated for the current year's work, are as follows: Investigating mine accidents, $5,000; mineral-mining investigations, $5,000; enforcement of oil-leasing act, $30,000. There was a reduction of $25,000 in the amount asked for the expenses of mining experiment stations and a reduction of $6,500 in the amount asked for testing fuel.

The navy renews its request that $1,000,000 of its fuel appropriation be made available for its coal-mining operations in Alaska.

Shipments of Anthracite in November Were 558,769 Tons Less Than in October

SHIPMENTS of anthracite for November, as reported to the Anthracite Bureau of Information at Philadelphia, amounted to 5,314,014 gross tons, compared with 5,872,783 tons in the preceding month and 5,765,347 tons in November, 1920. The decrease last month as compared with the other two periods is accounted for by the fewer number of working days in November as compared with October this year and by a marked falling off in the washery tonnage from November, 1920, with an additional holiday on Armistice Day last month.

Shipments by initiating carriers were as follows:

	November, 1921	October, 1921
Philadelphia & Reading	1,017,409	1,104,828
Lehigh Valley	913,737	1,048,996
Jersey Central	512,613	570,189
Lackawanna	814,131	759,492
Delaware & Hudson	756,598	898,376
Pennsylvania	429,638	492,632
Erie	503,488	618,034
New York, Ontario & Western	136,945	126,925
Lehigh & New England	229,455	253,311
Totals	5,314,014	5,872,783

Freight-Car Loadings Decrease 112,844 in Week; Idle Cars Increase 69,403

FREIGHT-CAR loadings totaled 673,827 during the week ended Nov. 26, a decrease of 112,844 cars from the previous week, due principally to the observance of Thanksgiving Day. The Nov. 26 report, however, according to the report of the American Railway Association, was 129,874 cars less than during the corresponding week of 1920, which also included the same holiday, and 65,370 cars below the total for the same week in 1919.

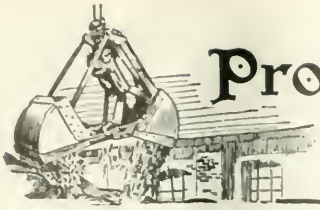
Coal loadings amounted to 137,432 cars, the lowest for any week since July 9.

Lessening demand for freight cars is resulting in an increase in the number of cars idle because of business conditions. On Nov. 30, reports by the American Railway Association showed 455,376 such cars, an increase of 69,403 within a week, of which 132,693 were surplus coal cars, an increase of 43,648 cars in one week.

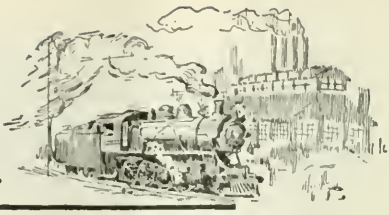
SOLICITOR GENERAL BECK, on behalf of the government, opposes the suit of the Pine Hill Coal Co. before the Supreme Court, to obtain $239,261 from the government based upon a profit of 75c. a ton on coal of which the company is alleged to have been deprived by reason of price-fixing by the Fuel Administration. The coal company lost its case in the Court of Claims and has appealed to the Supreme Court. The government's position was stated in the suit of the Morrisdale Coal Co., covered in a news item in *Coal Age*, Nov. 17, p. 816.

J. G. Bradley, president of the National Coal Association, is interesting himself personally in the gathering of complete data from members on mine realization and prices. It is believed that this material will be found highly essential during the consideration of freight-rate reductions.

IN CONNECTION WITH THE PREPARATION of a bulletin on flame safety lamps there have been collected at the Pittsburgh experiment station about 110 flame safety lamps representing about fifty different patterns.



Production and the Market



Weekly Review

QUIETUDE characterizes the bituminous market. The usual pre-holiday slump is accentuated by general dullness in the industrial field, which has curtailed the buying power of domestic and steam users alike.

Purchasers of industrial fuels are not disposed to place orders at this time. Their stocks are adequate to meet prevailing low requirements for some time to come. This usually is the time when business people are eyeing their inventory sheets and no one is anxious to show money tied up in coal stocks, especially in view of the fact that the removal of the freight tax on Jan. 1 will depreciate the value of supplies carried over, even though it may be only a few cents per ton. In addition, all hands cling fondly to the hope of a reduction in freight rates, although late developments indicate this is unlikely before April 1 at the earliest.

Steam Prices Up as Domestic Sags in Midwest

Unseasonable weather favors the householder, who is inclined to delay ordering to the last moment. This tendency is not aiding the retailer, whose stocks are heavy. The mine position is the reverse of a week or so ago. Then domestic coal was in good call and steam sizes were sacrificed to increase prepared production; today mine sidings, especially in the Indiana and Illinois fields, are full of "no-bills" of domestic coal for which there is no market, while steam sizes are commanding comparatively good prices, not because consumption has increased but due to lessened output.

Prices apparently have touched their lowest point for the year. *Coal Age* Index of spot bituminous prices stands at 83 on Dec. 12, as compared with 84 on Dec. 5. Recently coal houses have not been quite so free in broadcasting their quotations, feeling that they are only being used as a buyers' basis from which to hammer down the market on actual trading.

The Lake season is closed. Coastwise and export markets are inactive, and with Inland trading at a minimum it is difficult to find a ray of encouragement for the coal trade until after the holiday season.

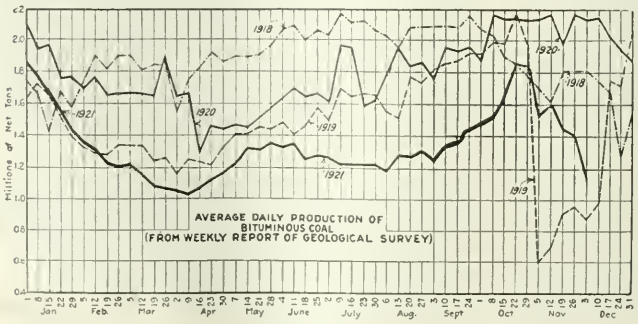
Labor evidently is feeling the continuation of poor working time. A wage cut of 27 to 30 per cent in Kentucky, an even greater reduction in Colorado, and the resumption of 15 New River operations on the open-shop basis with a return to the 1919 scale might be taken as an indication of a softening of the policy of "all or none" that has characterized the relentless refusal of the miners to liquidate high wages.

Warm Weather Hurts Retail Anthracite Trade

Anthracite demand is on the decline and production is lower. Retail business has been slowed up by the warm weather. The public is feeling poor and is not buying until forced to do so, and then only in small lots. Independent premiums are slipping on domestic coals and operations are being curtailed. Steam sizes are available on buyers' terms in the Eastern centers and the companies are storing heavily.

The coke market is dull. Inquiries are lacking, al-

Not only has Great Britain concluded large coal contracts in the West Indies but she is selling coal in Boston and New York. So far as relative costs are concerned there is no reason why Great Britain cannot compete successfully for a considerable portion of the coal business on the Atlantic seaboard. Statements to this effect were made by Commerce Secretary Hoover Dec. 12. He pointed out that both labor and transportation in the United States are charging war rates whereas coal is being produced in Great Britain at pre-war costs. Mr. Hoover seems to attach considerable significance to the progress being made by British coal exporters and pointed out that they had made more headway in the last few months than has been possible for twenty years.



Estimates of Production

(Net Tons)

BITUMINOUS COAL

Week Ended:	1921	1920
Nov. 19 (*b*)	8,871,000	11,693,000
Nov. 26 (*b*)	7,102,000	11,488,000
Dec. 3 (*a*)	7,077,000	12,813,000
Daily average	1,179,000	2,135,000
Calendar year	379,178,000	508,342,000
Daily average calendar year	1,336,000	1,781,000

ANTHRACITE

Nov. 19	1,910,000	1,993,000
Nov. 26	1,677,000	1,708,000
Dec. 3 (*a*)	1,845,000	2,070,000
Calendar year	82,635,000	81,894,000

COKE

Nov. 26 (*b*)	110,000	367,000
Dec. 3 (*a*)	111,000	375,000
Calendar year	5,047,000	19 567,000

(*a*) Subject to revision. (*b*) Revised from last report.

though the majority of agreements expire Jan. 1. Contract activity is being held in abeyance until conditions clear, and in the meantime spot prices are weak.

BITUMINOUS

Production continues to decline sharply. During the first week in December the output, according to the Geological Survey, was 7,077,000 net tons, the smallest of any full-time week since April 30. Loadings on the first two days of the next week—Dec. 5-10—indicate a further slight decrease in tonnage mined.

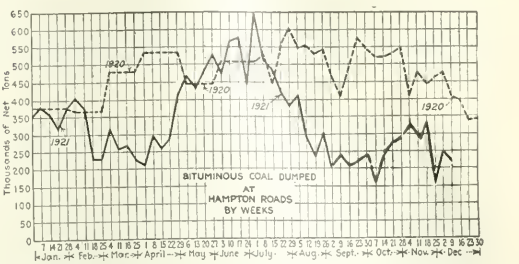
Tidewater movement in November declined to 2,554,000 net tons, or 9.2 per cent less than in October. Hampton Roads dumpings for the week ended Dec. 8 were 221,472 net tons, as compared with 250,754 the week previous.

TIDEWATER BITUMINOUS COAL SHIPMENTS, NOVEMBER, 1921

(In thousands of net tons)

Destination	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total Nov.	Total Oct.
Coastwise to New England.	97	62	97	685	..	941	987
Exports	...	25	39	165	9	238	271
Bunker	222	32	25	145	1	425	502
Inside capes	...	183	87	16	..	286	320
Other tonnage	582	1	...	81	..	664	732
Nov. total	901	303	248	1,092	10	2,554	2,812
Oct. total	1,055	328	235	1,175	19	...	....

Accumulations are lighter at the Hampton Roads piers, and this has checked the price concessions which were being made to move tonnage. New England markets are surfeited with smokeless coals and shippers are advising their mine connections to further curtail their output. All-rail movement to New England during the week ended Dec. 3 was 2,786 cars, compared with 2,928 the week preceding.



The export market is absolutely flat. Some inquiries are appearing from time to time, but our price element is so far out of line with British figures that but few quotations are being made. Cargoes of British coal being shipped to

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	Nov. 14, 1921	Nov. 28, 1921	Dec. 5, 1921	Dec. 12, 1921†
Pocahontas lump	Columbus	$4.75	$4.35	$3.75	*$3.50@$3.75*
Pocahontas mine run	Columbus	2.55	2.35	2.25	*2.10@ 2.30*
Pocahontas screenings	Columbus	1.60	1.60	1.55	**1.50@ 1.75**
Pocahontas lump	Chicago	4.75	4.00	3.85	*3.50@ 3.75*
Pocahontas mine run	Chicago	2.85	2.35	2.25	2.00@ 2.50
Pocahontas lump	Cincinnati	....	....	3.10	**3.00@ 3.50**
Pocahontas mine run	Cincinnati	....	....	....	2.00@ 2.50
Pocahontas screenings	Cincinnati	....	....	....	1.25@ 1.50
*Smokeless mine run	Boston	4.80	4.80	4.80	4.75@ 4.90
Clearfield mine run	Boston	1.95	1.80	1.80	1.60@ 2.00
Cambria mine run	Boston	2.45	2.35	2.35	2.10@ 2.60
Somerset mine run	Boston	1.90	1.85	1.85	1.65@ 2.00
Pool 1 (Navy Standard)	New York	3.05	3.00	3.00	2.75@ 3.25
Pool 1 (Navy Standard)	Philadelphia	3.15	3.15	3.00	2.80@ 3.25
Pool 1 (Navy Standard)	Baltimore	2.70	2.60	2.40	*2.30*
Pool 9 (Super. Low Vol.)	New York	2.40	2.35	2.30	**2.25@ 2.50**
Pool 9 (Super. Low Vol.)	Philadelphia	2.45	2.35	2.35	2.25@ 2.50
Pool 9 (Super. Low Vol.)	Baltimore	2.40	2.40	2.05	**2.10@ 2.15**
Pool 10 (H. Gr. Low Vol.)	New York	2.15	2.05	2.05	2.00@ 2.15
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2.15	2.10	2.05	2.00@ 2.10
Pool 10 (H. Gr. Low Vol.)	Baltimore	2.10	2.10	1.85	**2.00**
Pool 11 (Low Vol.)	New York	1.90	1.85	1.70	**1.70@ 1.90**
Pool 11 (Low Vol.)	Philadelphia	1.85	1.85	1.85	1.75@ 1.95
Pool 11 (Low Vol.)	Baltimore	2.00	2.05	1.75	1.75
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.70	1.75	1.55	1.50@ 1.65
Pool 54-64 (Gas and St.)	Philadelphia	1.70	1.70	1.70	1.60@ 1.80
Pool 54-64 (Gas and St.)	Baltimore	1.65	1.70	1.60	*1.40@ 1.50*
Pittsburgh sc'd gas	Pittsburgh	2.65	2.65	2.65	**2.60@ 2.80**
Pittsburgh mine run (St.)	Pittsburgh	2.15	2.15	2.15	2.10@ 2.20
Pittsburgh slack (Gas)	Pittsburgh	1.55	1.40	1.35	**1.50@ 1.60**
Kanawha lump	Columbus	3.30	3.10	3.00	*2.75@ 3.10*
Kanawha mine run	Columbus	2.00	1.85	1.90	*1.80@ 1.95*
Kanawha screenings	Columbus	1.15	1.00	1.00	0.90@ 1.10
Kanawha lump	Cincinnati	....	....	2.75	*2.25@ 2.75*
Kanawha mine run	Cincinnati	....	....	1.65	*1.25@ 1.75*
Kanawha screenings	Cincinnati	....	....	0.95	**1.00@ 1.25**
Hocking lump	Columbus	3.25	3.20	3.10	*2.90@ 3.25*
Hocking mine run	Columbus	2.10	2.00	1.95	1.90@ 2.00
Hocking screenings	Columbus	$1.10	$0.95	$1.15	$1.05@$1.25
Pitts. No. 8 lump	Cleveland	3.25	3.25	3.05	**3.00@ 3.25**
Pitts. No. 8 mine run	Cleveland	2.10	2.05	2.00	**2.00@ 2.10**
Pitts. No. 8 screenings	Cleveland	1.35	1.35	1.50	**1.50@ 1.60**
Midwest					
Franklin, Ill. lump	Chicago	3.65	3.65	3.80	3.50@ 4.50
Franklin, Ill. mine run	Chicago	3.15	2.75	2.75	2.50@ 3.00
Franklin, Ill. screenings	Chicago	1.50	1.85	1.75	**1.60@ 2.00**
Central, Ill. lump	Chicago	3.50	3.35	3.35	3.00@ 3.75
Central, Ill. mine run	Chicago	2.65	2.35	2.25	**2.25@ 2.75**
Central, Ill. screenings	Chicago	1.60	1.25	1.70	1.60@ 1.75
Ind. 4th Vein lump	Chicago	3.55	3.35	3.35	3.00@ 3.75
Ind. 4th Vein mine run	Chicago	2.80	2.75	2.75	2.60@ 2.90
Ind. 4th Vein screenings	Chicago	1.95	1.70	1.90	1.75@ 2.00
Ind. 5th Vein lump	Chicago	3.05	2.80	2.80	2.60@ 3.00
Ind. 5th Vein mine run	Chicago	2.45	2.45	2.45	2.25@ 2.60
Ind. 5th Vein screenings	Chicago	1.90	1.35	1.50	**1.50@ 1.60**
Standard lump	St. Louis	3.10	2.85	2.85	*2.75@ 2.85*
Standard mine run	St. Louis	2.05	1.95	1.95	1.90@ 2.00
Standard screenings	St. Louis	0.90	0.95	1.15	**1.25**
West. Ky. lump	Louisville	3.00	2.75	2.60	**2.25@ 3.25**
West Ky. mine run	Louisville	2.00	1.90	1.75	1.50@ 2.00
West Ky. screenings	Louisville	0.95	1.00	0.95	**0.50@ 1.60**
South and Southwest					
Big Seam lump	Birmingham	3.75	3.65	3.65	3.00@ 4.25
Big Seam mine run	Birmingham	2.15	2.00	2.00	1.50@ 2.50
Big Seam (washed)	Birmingham	2.30	2.30	2.30	2.15@ 2.40
S. E. Ky. lump	Louisville	3.90	3.10	3.00	**3.00@ 3.25**
S. E. Ky. mine run	Louisville	2.10	2.10	2.05	*1.65@ 1.85*
S. E. Ky. screenings	Louisville	1.45	1.10	0.95	**0.75@ 1.25**
S. E. Ky. lump	Cincinnati	....	....	3.15	3.00@ 3.25
S. E. Ky. mine run	Cincinnati	....	....	1.75	*1.25@ 1.75*
S. E. Ky. screenings	Cincinnati	....	....	0.85	**0.85@ 1.00**
Kanawa lump	Kanawa City	5.50	5.00	5.00	5.00
Kanawa mine run	Kanawa City	4.25	4.25	4.10	4.00@ 4.25
Kanawa screenings	Kanawa City	2.50	2.50	2.50	2.50

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in heavy type, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	Nov. 28, 1921 Independent	Nov. 28, 1921 Company	Dec. 5, 1921 Independent	Dec. 5, 1921 Company	Dec. 12, 1921† Independent	Dec. 12, 1921† Company
Broken	New York	$2.61	.....	$7.60@$7.75	.....	$7.60@$7.75	.....	$7.60@$7.75
Broken	Philadelphia	2.66	$7.60@$8.20	7.75@ 7.85	$7.60@$8.00	7.75@ 7.85	*$7.00@$7.50*	7.75@ 7.85
Egg	New York	2.61	7.75@ 8.00	7.60@ 7.75	7.50@ 8.00	7.60@ 7.75	*6.50@ 7.25*	7.60@ 7.75
Egg	Philadelphia	2.66	8.00@ 8.35	7.75@ 7.85	7.75@ 8.00	7.75@ 7.85	*7.25@ 7.75*	7.75@ 7.85
Egg	Chicago	5.63	8.00*	7.15*	8.00*	7.15*	8.00*	7.15*
Stove	New York	2.61	8.50@ 9.00	7.90@ 8.10	8.25@ 8.75	7.90@ 8.10	*8.25@ 8.50*	7.90@ 8.10
Stove	Philadelphia	2.66	8.75@ 9.00	8.00@ 8.35	8.50@ 9.00	8.00@ 8.35	*8.50@ 8.75*	8.00@ 8.35
Stove	Chicago	5.63	8.50*	7.40*	8.50*	7.40*	8.50*	7.40*
Chestnut	New York	2.61	8.50@ 9.00	7.90@ 8.10	8.25@ 8.75	7.90@ 8.10	*8.25@ 8.50*	7.90@ 8.10
Chestnut	Philadelphia	2.66	8.50@ 9.00	8.05@ 8.25	8.50@ 9.00	8.05@ 8.25	*8.50@ 8.75*	8.05@ 8.25
Chestnut	Chicago	5.63	8.25*	7.40*	8.25*	7.40*	8.25*	7.40*
Pea	New York	2.47	5.25@ 5.50	6.05@ 6.45	4.75@ 5.00	6.05@ 6.45	*4.25@ 5.00*	6.05@ 6.45
Pea	Philadelphia	2.38	5.00@ 5.50	6.15@ 6.25	4.75@ 5.00	6.15@ 6.25	*4.25@ 5.00*	6.15@ 6.25
Pea	Chicago	5.63	6.10*	5.80*	6.10*	5.80*	6.10*	5.80*
Buckwheat No. 1	New York	2.47	2.50@ 3.00	3.50	2.50@ 2.75	3.50	*2.25@ 2.75*	3.50
Buckwheat No. 1	Philadelphia	2.38	2.50@ 3.00	3.50	2.50@ 3.00	3.50	*2.25@ 3.00*	3.50
Rice	New York	2.47	1.95@ 2.25	2.50	1.50@ 2.00	2.50	*1.60@ 1.75*	2.50
Rice	Philadelphia	2.38	1.75@ 2.00	2.50	1.75@ 2.00	2.50	1.75@ 2.00	2.50
Barley	New York	2.47	1.00@ 1.25	1.50	1.00@ 1.25	1.50	*0.75@ 1.00*	1.50
Barley	Philadelphia	2.38	1.00@ 1.25	1.50	1.25@ 1.50	1.50	*1.00@ 1.25*	1.50
Birdseye	New York	2.47	.....	2.50	.....	2.50	.....	2.50

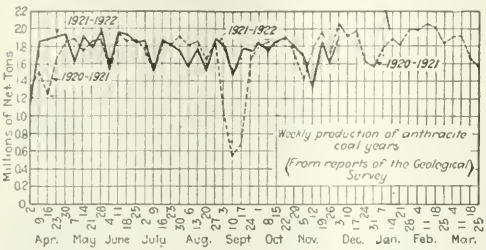
†Advances over previous week shown in heavy type, declines in *italics*
*Net tons.

our Atlantic seaboard cause little concern, as it is felt that this tonnage is being taken "in ballast" where vessels have return cargoes waiting. This practice is by no means unusual in normal times. Bunker business is holding, although the volume is affected by the limited amount of shipping being done.

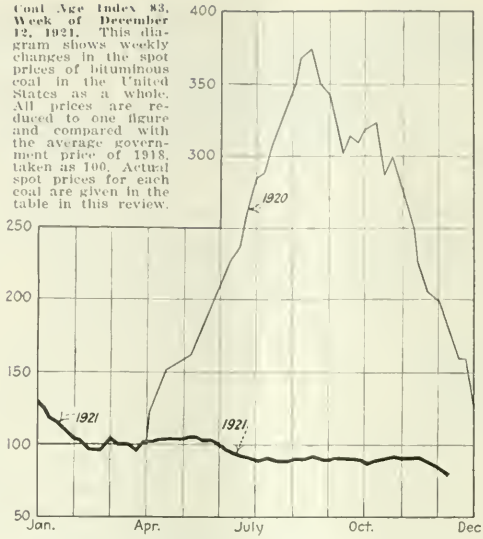
Following the reduction of wages at the Colorado Fuel & Iron Co.'s operations, seven more mines in Cororado have announced their intention to cut wages. The reduction is to become effective Jan. 1, and will range up to 33⅓ per cent of the present scale.

ANTHRACITE

Production of hard coal during the week ended Dec. 3 showed a recovery from the Thanksgiving period, but the output of 1,845,000 net tons was below the average of recent full-time weeks. The quiet retail market is reflected in some mine closings by the independent operators, whose domestic premiums have dropped on even the favored family sizes. Egg and pea are a drug on the market and the former is quoted in some instances as low as $1 under company schedules. Steam sizes are in distress and are being priced according to the anxiety of the individual shipper to move tonnage, while the companies are maintaining prices and storing such sizes as do not move readily.


1921-1922
1921-1922
1920-1921
1920-1921
Weekly production of anthracite coal years
(From reports of the Geological Survey)
Millions of Net Tons
Apr. May June July Aug. Sept Oct Nov. Dec. Jan. Feb. Mar.

The Lake movement is closed. A few scattered cargoes are being cleaned up, some of which will remain in storage. Dumpings during the week ended Dec. 7 were 48,800 net tons, compared with 53,500 the week previous. All-rail movement to New England was 3,050 cars in the week ended Dec. 3, compared with 3,184 cars the week before.



Coal Age Index 83, Week of December 12, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.

COKE

Beehive coke production amounted to 111,000 net tons during the week ended Dec. 3, or 1,000 tons in excess of the preceding week's output. The increase was centered in the Connellsville region, where furnace ovens have been active.

The freight-rate situation is a damper to coke consumers. The majority of contracts now in effect expire on Jan. 1, but there is no interest being shown in renewals for the first quarter. Connellsville quotations are: Spot furnace, $3; first-quarter contracts, $3.50; spot foundry, $4@$4.50.

Foreign Market And Export News

Unconcerned Over British Sales on the Pacific Coast, Government Seeks to Retain Atlantic Bunker Trade

Coal specialists at the Department of Commerce do not attach significance to the small movements of English coal to the West Coast of the United States and to Hawaii. Such coal formed the ballast in ships intended for other special return cargoes. It is not believed that there will be any further movement in appreciable quantities.

The Secretary of Commerce was told on Dec. 8 by Export Manager Rios of the Berwind-White Coal Co., that our entire coal trade with the West Indies is threatened by English competition. The situation is receiving special study both at the Department of Commerce and at the Interstate Commerce Commission.

A survey of the situation in regard to coal sold for bunkering purposes is being made by the Fuel Division of the Department of Commerce. The amount of American coal being used for bunkering has declined very greatly. The object of this special study is to ascertain how much of the loss is chargeable to decreased sailings and to secure exact knowledge as to the proportion of ships that are bunkering abroad for the round trip.

Reports from Hampton Roads show that business continues to decline. Only four export clearances were made last week. General stagnation features the situation. The low pace set by November bids fairs to fail of acceleration in December.

One agency has offered Pool 1 bunker coal through December for $4.75, and other dealers have met the figure. Even this price has not had the effect of stimulating the market to any appreciable extent.

Business at the Newport News Piers fell off to a greater extent than at the other Hampton Roads coal centers, the record of only nine vessels cleared from there in November being one of the outstanding features of the generally dull business.

Only in bunker business is there a sign of activity. The New England trade is extremely dull and very little change has been seen in freight rates, although in some instances slight modifications have occurred.

Only thirty vessels cleared from Norfolk with coal cargoes in November, which is less than 50 per cent of normal.

Destination of British Coal Exports, October, 1913, 1920 and 1921.

	Quantity (Tons) October		
Country	1913	1920	1921
Russia	756,112	8,008	34,648
Sweden	503,863	50,802	204,398
Norway	200,079	46,364	91,341
Denmark	281,369	68,235	260,919
Germany	835,839	.....	114,333
Netherlands	167,299	11,181	255,545
Belgium	181,591	30,899	119,325
France	1,077,519	745,608	879,149
Portugal	88,192	25,379	53,686
Azores and Madeira	6,556	.....	3,116
Spain	261,776	30,794	120,900
Canary Islands	67,195	12,412	19,598
Italy	910,513	171,837	474,412
Austria-Hungary	103,433	1,401	.....
Greece	84,033	4,987	29,393
Algeria	108,422	17,259	61,108
French West Africa	7,690	8	4,024
Portuguese West Africa	10,908	5,471	6,707
Chile	35,310	112	1,951
Brazil	147,943	.....	19,573
Uruguay	33,612	2,835	.....
Argentine Republic	297,148	11,043	111,792
Channel Islands	14,726	8,410	13,939
Gibraltar	25,311	49,069	35,886
Malta	42,068	19,528	6,057
Egypt	229,100	51,619	115,159
Anglo-Egyptian Sudan	.....	.....	3,505
Aden and Dependencies	20,881	5,529	.....
British India	14,216	.....	134,704
Ceylon	23,764	.....	10,904
Other countries	203,005	38,708	219,900

British Exports Gain; Output Improves; Wage Reductions Continue

British production continues to gain, according to a cable to *Coal Age*. The output during the week ended Nov. 26 was 4,674,000 gross tons, as compared with 4,646,000 the week previous and 4,373,000 Nov. 12.

Most of the South Wales collieries are booked up with export orders until Jan. 1. Anticipated reductions, however, are causing buyers to hold off placing much 1922 business. Quotations show no material change. Swiss railways are negotiating for 150,000 tons of patent fuel and nut coals. The Bombay and Baroda Ry. Co. has purchased 25,000 tons of Durham coals at 21s. 6d. for shipment during 1922.

The trade at Newcastle has shown a decided improvement recently, especially in steam coals where there is a good demand. In fact the demand has been such that there is a shortage in steam coals which has not been previously the case since the stoppage. Signs of appreciable revival are also manifest in gas and coking coals. The Christiania gasworks has ordered 8,000 tons of Wear special gas coal and the Nord Railways of France 4,000 tons Durham unscreened.

The east coast of Scotland has partially revived its export trade through demands from Scandinavia, although the export to this locality is still far below normal on account of the stocks of United States coal accumulated by the Scandinavians during the British strike. A certain amount of stagnation in Scotland is due to the accumulated small coals which prevent owners from producing main coal; in the meantime many pits are idle solely on economic grounds.

Throughout Britain generally accumulated stocks was appreciably dwindling, chiefly on account of the much lower prices prevailing. Not only are wages falling but individual output has improved.

Durham miners' wages for December have been brought down to 119.73 per cent above the standard prevailing in 1879. This cut involved a reduction of 23.16 per cent in November, and 77.72 per cent on October rates. Northumberland miners were also reduced 5d. @8½d. per shift.

At a meeting of the Joint Wages Board at Manchester miners' wages were reduced by 2½ per cent per week during December in Lancashire, Cheshire and North Staffordshire. This decision affected the wages of about 100,000 miners. In Wales during the month there has been a reduction of ½d. per shift for colliers and ¼d. for laborers.

The coal stoppage entirely drained the funds of the Nottinghamshire miners with the result that a levy of £4 10s. is to be made on each adult member. The strike cost the miners in this district alone about £400,000.

Swiss Coal Imports

According to official figures just published, the imports of American coal into Switzerland rose from 550,930 net tons in 1919, valued at 91,960,000 fr., to 1,393,528 tons in 1920, valued at 275,000,000 fr. The increase in the value of the imports was about 18 per cent higher than that of the quantity imported.

SWISS COAL IMPORTS, 1919–1920

	1919		
Countries	Net Tons	Million Francs*	Dollars
United States	550,930	91.96	$18,748,280
England	78,484	11.30	2,180,900
Germany	441,586	68.93	13,303,490
Belgium	492,287	63.24	12,205,320
France	329,367	48 07	9,277,510
Other countries	7,826	1.11	214,230
Total	1,900,480	284,610	$54,929,730

	1920		
	Net Tons	Million Francs*	Dollars
United States	1,393,528	275,00	$53,075,000
England	677,915	127,40	24,588,200
Germany	641,214	108,62	20,963,660
Belgium	127,078	21,40	4,130,200
France	69,004	10,80	2,084,000
Other countries	9,590	2,174	419,582
Total	2,918,329	545,394	$105,261,042

*American dollars figured at normal rate of exchange, 1 fr. = 19.3c.

Coal Paragraphs from Foreign Lands

GERMANY—Coal production in the Ruhr region during the week ended Nov. 28 was 1,907,000 metric tons, according to a cable to *Coal Age*.

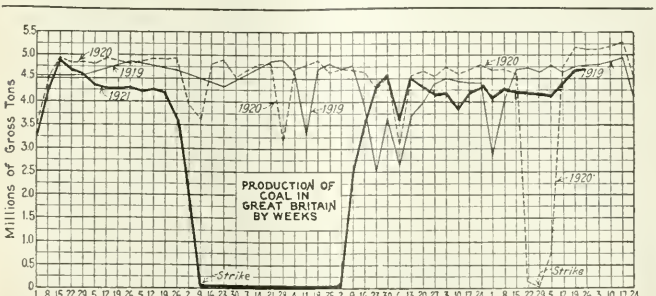
ITALY—Cardiff steam firsts are weaker, according to a cable to *Coal Age*. Prices on the Genoa market are 39s., as compared with 39s. 3d. during the first week in December.

FRANCE—The depression in the coal market is especially marked in industrial fuel. A decree is being issued fixing the price of fuel delivered to iron and steel plants, etc., providing for a price of 65fr. for blast furnace coke, used in the manufacture of products for internal consumption and 55fr. in the case of export products.

BELGIUM—There is little to report regarding the situation of the coal market. There has been a stronger domestic demand owing to the cold weather. Industrial coal is still slow.

October production was 1,906,410 tons as compared with 1,876,390 in September and a 1913 average of 1,903,460 tons. Stocks on Nov. 1 were increased 150,250 tons to 904,680 tons. During the first nine months of 1921 Belgium received 3,800,000 tons of German coal. Imports of French coal also increased from 700 to 236,000 tons. On the other hand, there has been a great increase in export tonnage.

SWEDEN—Imports during the week ended Nov. 19 were 12,800 tons, out of which 10,150 tons of coal and 2,450 tons of coke came from the United Kingdom.



Hampton Roads Pier Situation

N. & W. Piers, Week Ended		
Lamberts Point	Dec 1	Dec 8
Cars on hand	1,399	1,520
Tons on hand	72,363	76,801
Tons dumped	102,958	104,583
Tonnage waiting	9 000	17,050
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	1,503	1,680
Tons on hand	75,150	84,000
Tons dumped	84,614	47,653
Tonnage waiting	9,046	5,000
C. & O. Piers, Newport News:		
Cars on hand	1,571	1,174
Tons on hand	78,000	58,700
Tons dumped	36,316	45,607
Tonnage waiting	925	1,623

Export Clearances, Week Ended Dec. 8, 1921

FROM HAMPTON ROADS:

	Tons:
For Atlantic Islands:	
Nor. S.S. Hallgferd, for Guayabal	1,890
For Brazil:	
Br. S.S. Erlesburn, for Buenos Aires	5,300
For Cuba:	
Swed. S.S. Holmia, for Cienfuegos	2,527
For Colombia:	
Nor. S.S. Tosto, for Puerto Colombia	308

Pier and Bunker Prices, Gross Tons

(Foreign Bunker Quotations by Cable to Coal Age)

PIERS	Dec. 3	Dec 10†
Pool 9 New York	$5.40@$5.60	*$5.40@$5.50*
Pool 10, New York	5.25@ 5.35	5.25@ 5.35
Pool 9, Philadelphia	5.50@ 5.75	*5.50@ 5.60*
Pool 10, Philadelphia	5.25@ 5.60	*5.25@ 5.50*
Pool 71, Philadelphia	5.90@ 6.00	*5.75@ 6.00*
Pool 1, Hamp. Rds	4 80	*4.70*
Pools 5-6-7 Hamp Rds	4.25@ 4.50	*4.25*
Pool 2, Hamp. Rds	4.65	*4.60*
BUNKERS		
Pool 9, New York	$5.70@ 5.90	5.70@ 5.90
Pool 10, New York	5.55 @ 5.65	5.55@ 5.65
Pool 9, Philadelphia	6.00	6.00
Pool 10, Philadelphia	5.75@ 5.85	*5.65@ 5.85*
Pool 1, Hamp. Rds	4.95	*4.80*
Pool 2, Hamp. Rds	4.80	*4.70*
Welsh, Gibraltar	45s. f.o.b.	40s. f.o.b.
Welsh, Rio da Janeiro	65s. f.o.b.	65s. f.o.b.
Welsh, Lisbon	52s. f.o.b.	45s. f.o.b.
Welsh, La Pleta	60s. f.o.b.	62s. 6d. f.o.b.
Welsh, Marseilles	125fr. f.o.b.	*120 fr.* f.o.b.
Welsh, Genoa	45s. t.i.b.	*40s.* t.i.b.
Welsh, Madeira	45s. f.a.s.	*42s.6d.* f.a.s
Welsh, Teneriffe	45s. f.a.s.	*42s. 6d.* f.a.s.
Welsh, Malta	47s. 6d.f.o.b.	*45s.* f.o.b.
Welsh, St. Michaels	60s. t.i.b.	60s. t.i.b.
Welsh, Las Palmas	45s. f.a.s.	*42s. 6d.* f.a.s.
Port Said		51s. 6d. f.o.b.
Belgian, Antwerp	40s. f.o.b.	40s. f.o.b.
Alexandria	49s. f.o.b.	*46s.* f.o.b.
Bombay	35 rupees	38 rupees
Capetown	42s. 6d.	42s. 6d.

C.I.F. Prices, American Coal

(In Gross Tons)

	—Dec. 3— Low Vol.	High Vol.	—Dec. 10†— Low Vol.	High Vol.
French Atlantic	$8.60	$8.85	$8 70	*$8.50*
West Italy	8.60	8.85	8 70	*8.50*
The Plate	8.75	9.00	8 50	*8.70*
Havana	6.70	6.90	6.75	*6.50*

These quotations are purely nominal and as far as can be learned, no business is being done in these markets.

Current Quotations British Coal f.o.b. Port, Gross Tons

Cardiff	Dec. 3	— Dec. 10† —
Admiralty, Large	25s.9d.	25s. 6d.@26s.6d.
Steam, Smalls	18s.3d.	*17s.6d.@18s.6d.*
Newcastle:		
Best Steams	25s.	*24s.6d.@25s.*
Best Gas	22s.3d.	22s.@22s.6d.
Best Bunkers	21s.9d.	*21s.@22s.*

† Advance over previous week shown in **heavy type**, declines in *italics*.

Reports From the Market Centers

New England

BOSTON

Market Continues Ragged — Smokeless Producers Curtail—Rumors of English Coal—Receipts at Minimum—Domestic Anthracite in Moderate Demand—Independents Slash Prices.

Bituminous—The market continues without any favorable reaction. Now that heavy accumulations at Hampton Roads have been somewhat cut down, less is heard of distress coal at Boston and Providence, but there are certain ragged price features that survive. The average quotation for Navy grade Pocahontas and New River, on cars Boston for Inland delivery, ranges $6.40@$6.75, although occasional prices are heard on the $6.25-level. Figures less than that can now be attributed to shippers of second grades. The few consumers interested in the current market are well aware, however, that coal can be bought on offers and that actual sales would show a materially lower level than the quotations named.

Many of the West Virginia producers are operating only every other week. In the New River district the curtailment is especially severe, some operations being closed down with no intention of resuming until the market improves. Export demand is of course practically nil. Slack has been reported sold at less than $1 per gross ton, f.o.b. mines, although there is next to no demand whatever for it in this market.

There has been some interest here this week in "cargoes" of English coal said to be enroute here for sale in the open market. It has been represented that certain Cardiff could be laid down here at figures that would be closely competitive with our smokeless grades. A certain amount of Lancashire coal has come "in ballast" but we have not yet been able to confirm any actual sales. If coal is coming overseas more as an incident to other merchandise it is on an altogether different footing than if it were seriously a commercial venture. Before the war it was not unusual for certain steamers to bunker at Cardiff, West Hartlepool or Newcastle for the return trip and at the same time put aboard enough extra coal to trim the ship down to certain marks. More than likely some of the current rumors have little more foundation than this.

Central Pennsylvania operators are still faring hard. The tonnage moved is extremely light and for the most part is confined to railroads. Spot sales are at discouragingly low prices. It is nothing unusual for sales agents to quote a net ton price and then accept the same figure for a gross ton.

Receipts continue on the same meager basis as for several weeks past. Tonnage figures rose somewhat a week ago, but this was due to numerous arrivals after a week of unfavorable weather, rather than to any better inquiry.

Coastwise freights maintain about the same range that has obtained now for 60 days. The usual marking up of rates at this season has apparently been offset by the lack of orders. While large schooners may still be had on easy terms at 85c.@90c., the smaller bottoms, such as 1,800@2,500 ton barges, can now and then get charters at $1@$1.10.

Anthracite—Stove and chestnut are in fair demand, but the movement of anthracite continues dependent upon weather conditions. Egg and pea are still the hard sizes to move. Retail trade is extraordinarily dull and dealers find it difficult to plan ahead. There is a disposition to go light on stocks for the present.

The "independents" are following their usual practice of slashing prices to force output on indifferent buyers. Egg has been quoted freely here at $7 and pea at $5.25; or a full dollar less than certain of the company prices.

Tidewater—East

NEW YORK

Anthracite Buying Falls Off — Independent Quotations Lower—Cancellations Increase—Bituminous Situation Quiet—Early Prospects Not Bright.

Anthracite—Lower temperatures will be the only solution to the situaton here. Demand is on the decline and operators find it more difficult daily to dispose of egg and pea. With regard to the steam sizes it is a buyers' market as they practically dictate the price they are willing to pay.

The wholesale market is on the decline and while the larger companies have been able to keep their output on the move, conditions have already resulted in many cancellations. Salesmen report that there are many loads on sidings between Tidewater and the mines. Unless conditions show almost immediate improvement there will be a severe cut in production. Several of the smaller operations have already suspended mining, lacking orders.

Local houses in addition to reporting slack business in this market, say that demand from the West and North has fallen off. The line trade, adjacent to New York is quiet. Dealers are well suppled and unless consumption improves considerably are not likely to re-enter the buyers' field for many weeks to come.

The better grades of the steam sizes are easier to move than the others. Some operators and shippers are dumping their coals into boats because they find it cheaper to hire boats than to pay car charges.

Bituminous—Buying is from "hand to mouth." As a result there is slow movement to tidewater. Even under present conditions there were about 1,800 cars reported at the various local piers on Dec. 8, while on the previous day 425 cars were reported as having been dumped.

The prospects for better business are not bright. Many mines have suspended operations, some of them until after New Years.

While present quotations are down to rock-bottom there have been inquiries received in some quarters regarding prices after April 1, but operators, in view of the uncertainty of labor conditions at that time, are not even making a guess at quotations.

Large consumers are practically out of the market. Their stocks are sufficiently large enough to carry them for several weeks unless business conditions improve. In addition to having well-filled bins, consumers are also delaying buying to avail themselves of the discontinuance of the war tax on freights after Jan. 1.

Average quotations are about the same as last week. It was reported that some Pool 17 was was offered at one of lower piers on a basis of $2.80 at the mines, or less than the freight rate. Odd lots of Pools 34 and 44 were said to have been offered at $1.40 and $1.20 respectively.

PHILADELPHIA

Retail Trade Moderately Stimulated—Wholesale Business Dull—Retail Prices Weak—Steam Sizes Indifferent—Bituminous Demand at Low Ebb—Prices Low, but Firm.

Anthracite—Viewed from the retail standpoint there has been some improvement in trade, but even this betterment is far below what had been hoped for, following the snowstorm of the Sunday previous. There could not help but be some ordering, but in no instance was a dealer rushed, and as the week wore on the retailers reported a slackening of the demand.

The wholesale trade received little or no impetus from the slightly better retail demand, and many producers are even worse off as regards the two slow sizes—egg and pea. Retailers seem determined to cut their stocks, and most of them now claim they have enough egg and pea to carry them through the winter.

There have been many rumors of independent egg coal being offered at less than company price, with few sales. The large companies are also beginning to feel the effects of numerous cancellations, and as a result are putting quite a little pea in the storage yards.

In the steam sizes there is no firmness and the consumer, after a car or two of buckwheat, can easily get it for $2.50, while rice seems to have no demand at any price. So far the bulk of barley is moving around $1.50, but a plentiful tonnage can be had at $1.25.

Bituminous — An extremely small spot tonnage has been moved recently. Considering that December has never been a particularly good coal month, little hope is held out for better business for the balance of the year, as it is usually a time when business people are accustomed to take inventory and are not anxious to show money tied up in coal, especially in view of the fact that a depreciation is certain because of the removal of the freight tax. In addition they have not lost hope of a freight reduction, although from latest developments this does not seem at all likely before April 1.

It is remarkable how close the consumer is letting his stocks run down, as even some of the very largest of them when they do order a few cars are

surprised when delivery is not made inside of a week and often call upon the shipper to urge movement. Railroads are continuing their policy of curtailed buying, which has contributed much to the light production.

It would seem that current quotations will stand as the lowest to be reached this year. Recently some houses have not been so free to quote prices, feeling that they were merely being used as a basis to bear the market down.

Bunkering continues to be the best business at Tide, but light at that. There is probably a greater tonnage standing at the piers than for some weeks, as with the advent of the recent snowstorm extra tonnage was ordered in, but there was little or no increased call. The export trade is far from satisfactory, with unimportant tonnage offering and negotiations for this often hampered by difficult financial arrangements. This latter factor recently threw a moderate tonnage of high-grade fuel back on the market at a distress price.

BUFFALO

Market Extremely Quiet — No Early Improvement Looked for — Stocks too Heavy—Independent Anthracite Prices Decline.

Bituminous—"My trade has doubled lately," reports a facetious shipper. "I sold one car last week and two this week." The pleasantry comes too near to actual conditions for any member of the trade to enjoy it, but it does not strike quite all of them. Some shippers are operating on the 5c. margin basis, but it is declared that nothing short of 20c. will cover expenses in the Canadian trade. Freight prepayment, slow collections and numerous rejections, added to light trade at best, make that market an especially expensive one.

The difference in production cost is having its effect. Mines paying the 1920 scale are badly handicapped and production is still falling off. Visitors from No. 8 field, which is now depending on this market more than ever, say that shutdowns are numerous and there will need to be more of them to meet conditions.

The Eastern trade is now about as slow as Canada. Consumers are heavily supplied and have been ever since the last strike was predicted. Shippers think it was a mistake to cry "Wolf" so often and some of them say they will do less of it in the future. Rumors of some big combinations of bituminous operators indicate that moves are soon to be made to help reduce production.

Prices remain at $2.75 for Youghiogheny gas lump, $2.50 for Pittsburgh and No. 8 steam lump, $2.25 for Allegheny Valley and all mine run and $1.50@$1.75 for slack.

Anthracite—Demand has improved slowly since the weather became more wintry. Consumers seem satisfied that there is not to be any shortage and are still looking for lower prices. The supply is good, so that it is difficult to sell independent anthracite, even with no premium included.

Lake—Shipments are practically at an end. For the week ended Dec. 7, made by a single shipper, the loadings were 48,800 tons, of which 34,300 cleared for Milwaukee and 14,500 for Duluth. Rates are not changed. Shipments for the season are 3,765,985 tons, and for the same time last year, 3,498,286 tons. The light movement of late, the surplus over last season of about 600,000 tons coming down to 267,000 tons, is accounted for by the fact that the upper docks are heavily loaded and the supply appears sufficient.

Coke—It is seldom that the furnaces are in the market for anything that is not already planned for. Some increase of activity is under way, but the local byproduct ovens are also starting up to correspond. Prices are $4.15 for 72-hr. Connellsville foundry, $3.15 for 48-hr. furnace and $2.75 for stock.

BALTIMORE

Export Situation Absolutely Flat—Line Sales Unsatisfactory — Anthracite Ordering Below Normal.

Bituminous—December has brought the worst export and bunker situation in the recent history of this port. Only one ship has cleared so far during the month, taking 5,500 tons of cargo and 2,000 tons in bunkers, on foreign account. November had shown a decline over the month previous, only six ships under four different flags, carrying 29,438 tons cargo and 2,295 tons bunker, having cleared during that period. From Nov. 26 to Dec. 9 not a single export coal cargo cleared this port.

While the sales of best steam coals probably average $2.10@$2.15, there have been sales of excellent Pool 9 at $2. It is no longer to be doubted that some of the producers are selling in the present market below actual production costs, or at least without profit. The same may be said of the middleman, who in quite a few instances here has probably found when he takes into consideration demurrage and rejection overhead, that he has no margin of profit to record for recent operations.

Poor grades of steam coals are way down the list, some sales around $1.40@$1.50 being noted. Best grades of gas lump of Pennsylvania production is for the most part around $2.10, while Fairmont screened is obtainable at $1.80@$2.

Anthracite—Dealers still report the demand subnormal. There can no longer be doubt in the face of both household economy in consumption, due to financial reasons, and the continued mild winter that a considerable part of the normal shortage in receipts here has been absorbed. While more or less guess work, some dealers estimate that the present shortage in cellars and yards against the amount usually there in mid-December is about 70,000 to 80,000 tons at present.

Northwest

DULUTH

Harbor Closed—Interior Shipments Small, but Prices Firm up.

Coal shipments to the Head-of-the-Lakes have practically ceased for the season, with but six cargoes received last week and three reported on the way from lower ports. This will wind up the year's shipments, as the harbor here is filled with ice except for the ship channel, and navigation is difficult.

Thirteen of the seventeen dock companies here received coal during the month of November, according to figures compiled by shippers, which bear a close comparison with the government figures. Bituminous receipts last month were 322,540 tons as compared to 1,337,700 last year, and anthracite receipts were 157,470, compared with 255,500 last November. For the season to Dec. 1, bituminous receipts were 8,307,718 tons, an increase of 1,351,816 over last year, and anthracite receipts showed a gain of 306,195 tons with the total standing at 1,825,085 tons.

Shipments from the docks during November fell off to a considerable degree, only 18,276 cars going out, as compared with 28,722 during October and 20,453 in November, 1920. The shipments were light for reasons which have been explained before, and the unfavorable condition still continues. Dealers are following the trend of the public and waiting on the weather before buying.

Cuts in prices which were recorded last week have been called off and docks are again selling at list, and holding prices firm with a determination which indicates that they will stick to regular schedules, and take a chance of moving stocks before next spring. Indications are that several sections will be in a bad way for coal should a heavy storm materialize and take up the Northwest's railroad facilities.

MINNEAPOLIS

Demand Entirely a Weather Proposition — Price Cutting More Common — Seasonable Temperatures Needed.

When there was a touch of wintry weather a fortnight ago, it started a little increased buying. But about as soon as the snow was trodden down and the walks shoveled, the buying impetus subsided.

Of greater interest to the trade than these port-mortems, is what may be expected. So far as present indications go, there is little hope for anything more than reluctant buying. People never did and never will buy coal until they have to. But there are gradations of sullen resistance. And the present is about the *N*th degree.

A deep resentment against the retail cost of coal makes the buyers strike function at its best. This situation is augmented by the difficulties of financing which makes it highly desirable to put over until another month any and all purchases that can possibly be deferred.

In the steam trade there is also less buying for the future than ever before. Much of this may be due to less industrial requirements. This does not apply to office buildings and apartments, of course, whose requirements are regulated only by the weather and the efficiency of their plants.

So the coal market is a weak and wobbling affair, with hardly a steady price outside of anthracite. For there is considerable need of turning coal into money and the usual method is not through salesmanship but through the reverse price-cutting. This is an effective way to put over an order which otherwise might remain torpid, and as such is being resorted to freely.

There are a number who are still standing pat on the matter of the list price or no sale, but they are seeing trade go elsewhere as a result of their adherence to principle. And the next few weeks—five or six—will probably tell the tale as to whether they have been commercially wise and prudent in their positions or not.

MILWAUKEE

Mild Weather Halts Buying — Dock Congestion Is Troublesome—Some Cargoes Diverted.

The status of the coal market is unchanged. The weather continues mild. Temperature is the ruling factor during the inclement months, but it is especially so this season, when buyers are balking at prices and limiting their orders to the minimum.

The yards are loaded to the limit and some dock areas which have not been fully utilized for years now contain all the coal they can hold. Anthracite sheds were so full that it was hard to accommodate some late cargoes, and vessels had to be shifted from one dock to another. One cargo was diverted to Duluth after the steamer had arrived in the harbor. There is absolutely no market for soft coal, and the trade is at a standstill, while smouldering fires threaten huge piles which cannot be moved or shifted.

November's Lake arrivals aggregated 109,927 tons of anthracite, and 247,657 tons of soft coal, making the season's total 957,972 tons of the former, and 3,589,502 tons of the latter. December, thus far, has to its credit three cargoes of hard coal, amounting to 23,190 tons, and a 7,000-ton cargo of soft coal Two more cargoes are still booked for arrival.

Inland West

ST. LOUIS

Mild Weather Curtails the Market on Steam and Domestic — Lower Mine Prices Threaten to Cut Retail Figures —Buyers Indifferent.

The consuming public seem to be buying from week to week and is indifferent as to what the future may hold as regards the supply of coal. Consumers have been holding off now for several months and are able to buy from a few of the cut-price dealers at figures prevailing last summer, while the larger dealers who have put thousands of tons in the bins, bought at a higher price this fall, are unable to sell at the circular price.

While Mt. Olive has some little movement, the only thing worth while seems to be the small lots of Standard. Even smokeless and anthracite have dropped off entirely and coke has declined to a great extent. A somewhat similar condition prevails in the country.

Locally steam is at a standstill. There is no storage coal coming in and the industrial situation is far from what was expected. The country steam business has also dropped off and outside of the larger towns there is practically no steam coal moving.

The movement of Standard and Mt. Olive coal to Kansas City, St. Joseph and Omaha dropped off the last week on account of the low price made by the Springfield operators.

CINCINNATI

Curtailed Production Cuts Distress Tonnage—Prices Still Unstable—Retail Trade Outlook Better.

Colder weather helped a little to revive the falling spirits of the trade last week, though a reduction in the accumulation of loaded cars originating on the N. & W. and the C. & O. did a great deal more. Mine closings in all of the nine fields that send their product through the Cincinnati gateway has had its effect. The number of "no bills" at Portsmouth were cut in half and for the first time in several weeks there were only 600 of such to draw from.

Several operating companies with sales agents in this city have turned out to be wholesalers, claiming that it is cheaper to buy coal to supply their contracts than to go on mining at a loss.

Prices are still unstable. Smokeless stiffened a trifle. Very little difference in prices separated the offerings from the various bituminous fields.

Retail prices reflect little of the drop in wholesale figures. About the only price-cutting there has been is on bituminous mine run which wavers between $5.50@$6.25, and slack at $4@$5. The City Council has approved the ordinance setting the gas rate at a sliding scale, from 50c.@70c. as against a 35c. rate with 5c. a thousand off for prompt payment. As this makes gas considerably more costly than coal it is expected that there will be a consequent increase in retail demand.

CHICAGO

Domestic Coal in Distress — Eastern Fuels in Keen Competition — Steam Prices Strengthened by Low Production.

The market is as dull today as it has been any time this year, and when one goes back over the year, which is nearly ended, it is realized what a remark like this means in the way of business stagnation.

Illinois operators are beginning to pay some attention to the competition they are receiving from the non-union fields in the East and it is rumored, although without any definite authority, that prices on high-grade southern Illinois coals will be reduced shortly. Pocahontas mine run at $2 and even less is an everyday occurrence, with prepared sizes bringing from $2.50 up.

One railroad did the coal trade a real service last week. It seemed this had around seventy cars of block coal on hand, which it had to sell for freight charges. This railroad, therefore, sent out a circular to all the Chicago trade, offering the coal to highest bidder, and advising them of the quality and the circumstances under which it was shipped, etc., thus giving the whole situation wide publicity. Whether or not the cars were sold, we do not know but the fact that some operator had to take a terrific loss on this tonnage has been brought to mind very forcibly to those in the Chicago trade who have been in the habit of shipping consignment coal.

Steam prices are strengthening although the industrial situation in Chicago does not warrant any improvement. Steam production has been greatly curtailed on account of lack of demand for domestic and good southern Illinois screenings have advanced as much as 25c. a ton during the past week, with further advances freely predicted. It is expected that considerable steam coal will be thrown on the market a little later on, principally on account of the strike in the stock yards. If the strike continues much longer it will mean some of the plants will have to curtail activities and this, in turn, will mean screenings on the market.

Some authorities claim that the present dull market situation is due to some extent to the holiday season, and after the holidays an increased demand can be expected. Backing up this claim they also call attention to the fact that many industries will take occasion to stock a little extra coal after the first of the year in order to protect themselves against any possible strike around the first of April.

COLUMBUS

Quietude Characterizes Ohio Coal Trade —Little Demand for Either Domestic or Steam—Prices Are Weaker.

With dealers fairly well stocked up and a minimum of demand from steam users the coal trade is in a state of quietude. Buying is limited strictly to present needs, which are very small when the season of the year is taken into consideration. Little hope for improvement is held out until some real winter weather appears.

The high temperatures have not made it necessary for householders to come into the market and practically all residents who were able to stock up for the winter have done so. Retail prices are somewhat weak, although the more substantial dealers are holding up fairly well. "Snow birds" are now appearing and are cutting the prices to extremely low points. Hocking lump retails $5.75@$6.50 depending on the preparation, while West Virginia splints sell $7@$7.50. Pocahontas lump is quoted $8.50@$9 and anthracite is still around $14.50&$15.

Steam demand is decreasing rather than increasing. This is due to the closing down of plants during the holiday season and also to accumulations of fuel stocks about a month or six weeks ago. Outside of public utilities there is very little demand reported as railroads are not taking any great tonnage.

Several Lake cargoes were loaded in Toledo during the week ended Dec. 10, but official announcement is made that no more will be loaded.

Production in all Ohio fields is very low. With the ending of the Lake trade the eastern Ohio field dropped off materially. Hocking Valley, Pomeroy Bend and Cambridge fields produced less than 25 per cent.

DETROIT

Sales of Bituminous Are Small—Receipts Being Held Down—Buyers Delay Purchases.

Bituminous—In both the steam and the domestic divisions, buyers are still following the dilatory policy that has featured the market for several months. Offerings of stock of high quality, from districts whose product was formerly eagerly sought after seems to awaken little interest.

Although steam plants are taking some coal, their buying is of an irregular nature and usually limited to small lots or bargains. There is a seasonal influence in the proximity of the holiday period and the fact that at this time many of the large establishments are taking inventory.

Buyers, anticipating a reduction in railroad freight rates, are not willing to purchase coal liberally at this time, but are holding off in the hope of effecting a saving by stocking up after the expected new rates are announced. Receipts of smokeless are a little more liberal than the condition of the market justifies, proving rather difficult of assimilation.

Quotations are nominal, with smoke-

less lump and egg $4.25@$4.50, mine run, $2.25@$2.50, nut and slack, $1.25 @$1.50. West Virginia lump is $3.15@ $3.25, egg $2.50, mine run $2, nut and slack $1.15@$1.25. Ohio lump is $3@ $3.25, egg $2.25@$2.40, mine run $1.75 @$1.90, nut and slack $1@$1.25.

Anthacite — Demand for prepared sizes is not urgent. Most of the retail yards have rather plentiful supplies at present, although stocks would be speedily depleted with a period of active buying. Extensive unemployment is a factor in reducing sales.

CLEVELAND

Slack Prices Improve as Output Falls —Market a Dead Affair—Industry Less Active and Buyers Cautious.

The single splash of color in a market of unusual somberness has been the appearance of strength in slack coals. Mine screenings which not long ago were offered freely at around $1.25 in distress lots, have now advanced to $1.50@$1.60. Unfortunately it is impossible to report that this betterment in price is due to growing demand. The real reason of course is to be found in the shrinking supplies as production of prepared sizes slumps. It reflects also the fact that stocks of slack laid in during the rail and mine strike scares have largely disappeared.

As far as the general situation and outlook is concerned the trade seems to be in for a winter of extreme dullness. Industrial activity apparently reached its peak in October and has been diminishing slightly ever since. There is no thought that the rate of operations generally will drop back to the midsummer pit of depression, but there is nothing in present conditions to justify hope that further gains can be made before spring.

Ingot production which forged ahead rapidly from August to October gained only 2.6 per cent in November. However, operations are still only about 50 per cent of capacity and business is showing a tendency to slide off rather than increase. The great hope in the steel industry now is for lower freight rates.

The depression in the market for coal is exceptional. Distress stocks are still appearing from Virginia and West Virginia fields and many cases of sales to pay freight charges are reported. Production in the eastern Ohio mines is at the lowest ebb since April. A few contracts are being placed for next year, but the majority of industrial consumers apparently have no intention of getting into the market before early in the year. Then they hope to be able to measure their probable requirements better than now.

Receipts of bituminous coal during the week ended Dec. 3, were 661 cars. 455 for industry, and retail 206, a decrease of 80 cars, as compared with the preceding week. Receipts were the smallest since the latter part of August.

Southwest

KANSAS CITY

Cold Weather Fails to Aid Domestic Situation—Steam Coals Scarce—Lump "No Bills" Heavy.

The Southwest had its first touch of real winter Dec. 3. Wheat crops will be greatly benefitted by the snow as the wheat was beginning to show the need of moisture. However, the change in weather had little or no effect on the coal trade.

There was a spurt of about one day at the retail yards but no appreciable increase in demand on the mines. Steam coal continues in strong demand and domestic grades are going begging. Mines in Kansas, Arkansas, Missouri and Oklahoma are carrying large numbers of cars of unbilled lump. This is also true in Illinois and prices broke to a certain extent on the Springfield district lump and egg but held firm in Kansas. In fact, operators in Kansas are down to bed rock in their prices and have been for some time.

Prices are as follows: North Missouri lump, $4.75, mine run, $3.50, washed slack, $3.25, raw slack, $2.50; Arkansas lump, $7@$7.50, although some was sacrificed as low as $5.50, mine run, $3.75@$4.25, slack, $2.50@$2.75; McAlester lump, $8.50, nut, $7, slack, $2.50@$2.75. Springfield Illinois lump is $2.85@$3.75, egg, $2.60@$3.25, slack, $2@$2.25; Franklin County Illinois lump, $4.25, egg, $4.05.

West

DENVER

Colder Weather Increases Demand — More Mines Announce Early Wage Cut —Dissension Among U. M. W.

Colder weather is increasing the demand. Six or seven companies have taken the lead of the Colorado Fuel and Iron Co., and announced wage cuts of 33⅓ per cent about Jan. 1. The thirteen mines of the Colorado Fuel and Iron Co. are turning out more tonnage daily, and this is strengthened, in part, by reports of a revolt against the United Mine Workers, in which a union leader in the Walsenburg field, is said to be taking an active part.

The men are insisting upon the recall by the national organization of Robert Foster and Frank Hefferly, organizers, who are charged with being unfair during the strike, which has not yet been officially called off.

Among those who have announced a wage cut are the Sunnyside, Turner, Dick, Brennan and Gordon Coal Mining companies. The lower scale involves a reduction from $7.75 to $5.25 a day for basic operations, and a reduction of 24c. a ton in diggers' rates, which range from $1.02 to $1.07 a ton.

SALT LAKE CITY

Demand Revives with Colder Weather —Prices Increase—Ogden Retailers at Odds.

Following an extremely warm spell, during which production was at a minimum, the weather has turned colder. This has resulted in a revival of demand and prices have strengthened accordingly. Lump is quoted $5 f.o.b. mines, nut $4, pea $2.25 and slack $1.75. City prices reflect this strength.

The retail trade has also improved, and with the better lump production, screenings are again in good supply. Dealers in Ogden are in a price war as the result of extremely keen competition.

South

LOUISVILLE

Market Shot to Pieces—Better Demand Possible in January — Wage Cuts May Reduce Prices.

Eastern Kentucky prices are weaker and are getting down to the West Virginia average. The Eastern Kentucky operators, in announcing reductions of 27 to 30 per cent in mine wage scales, have found that the miners are anxious to work, are taking it quietly, and showing willingness to cooperate in what they realize to be a tight situation.

Many mines have been down for months, labor is getting anxious for employment, especially steady employment. Even at the reduced wages not many mines are starting up, as there is not enough demand to go around.

The market may go lower when mines really get started on the new wage scale. Hazard is breaking the $3 level by 15c., which is in line with Elkhorn and West Virginia quotations. Production of lump, while small, is not small enough to balance the steam market, and screenings are draggy at 65c.@ $1.15, while mine run is selling down to $1.50@$1.75.

Slump in demand for prepared coal as a result of mild weather, falling market, and large stocks on retailers hands, has caused a small production of all sizes in Western Kentucky, and pea and slack is scarce.

Straight Creek and Jellico mines are reported as being almost all down, with many Harlan operations still closed. Some producers are so disgusted with conditions that they are not at all anxious to resume operations.

BIRMINGHAM

Production Slowed Down to Meet Extreme Dullness — Demand Lightest of Year—Prices Unchanged.

On account of the unsatisfactory condition of the market for both steam and domestic grades, production for December will be much less than the November output. Many operations in the Warrior and Cahaba fields have closed down entirely, while others are only making one to three days per week on account of "no market." Conditions affecting the production and marketing of coal are not only the tightest of the year, but the most unsatisfactory that the industry has faced for many years.

Rehabilitation in industrial lines has been so slow that its effect has not been felt in the coal industry. Buying of fuel is held in the most contracted limitations consistent with actual and immediate needs and no amount of inducement can effect a more liberal policy. Disinclination to accumulate further stocks this year and a belief that freight reductions will be effected at a later date are no doubt depressing factors in the present situation.

Railroads and other contract consumers are taking as little tonnage as possible under existing agreements. Bunker coal is in slight demand at Southern ports. Some bunker business has been taken on the past week for Galveston, which gives promise of further development when the coal terminals at Mobile have been completed to handle shipments moving by rail to that point.

News From the Coal Fields

Northern Appalachian

CONNELLSVILLE

Inquiry Practically Absent—Iron and Steel Prospects Poor for Next Two Months—Prices Soft.

Inquiry for Connellsville coke is practically absent. Furnaces in operation seem to be fully supplied by contract and do not buy any prompt coke at all, while foundries are running at low rates and are buying only occasionally.

Probably all furnace coke contracts now running expire at the end of the month, but consumers show no interest in the matter of renewals. An Eastern furnace interest inquires for prices on 7,500 tons for January shipment only. Here and there foundries are inquiring for prices on first quarter but do not seem to be seriously interested.

A Youngstown steel interest, which has lately been supplying byproduct coke to some merchant furnaces in the valleys, has notified the furnaces involved that it will not be able to furnish coke after Jan. 1, but no inquiries for Connellsville coke have resulted.

The iron and steel industry is somewhat less active and prospects for the next two months are more or less uncertain. Some of the merchant furnaces are piling part of their current make of pig iron and it is more likely that some merchant furnaces will blow out than that others will blow in. The common view is that conditions will be much better by February or March, but prospects for the interim are poor.

The *Courier* reports production in the week ended Dec. 3 at 48,000 tons by the furnace ovens and 35,070 tons by the merchant ovens, making a total of 83,070 tons, an increase of 8,450 tons.

EASTERN OHIO

Industrial Demand Weaker — Production Drops—Slack Is Firm but Other Grades Decline—Dull Period Ahead.

Operations continued on the retrograde during the week ended Dec. 3, and the lowest output for any week since the middle of April was registered, 300,000 tons or at the rate of 48 per cent of capacity. Association mines worked 41 per cent of possible work time during the week as compared with 43 per cent the preceding week, and approximately 45 per cent of capacity was produced.

While the railroads are curtailing their fuel orders, yet with the decreasing operations it is estimated that between 40 and 45 per cent of the tonnage mined is going to that quarter.

As yet there has been no revival in demand, and many do not expect any appreciable improvement during the present month. Sheet mills which were operating 75 per cent of capacity, are said now to be doing no better than 50 per cent, and Bar mills 25 to 30 per cent. Railroad traffic is showing little or no improvement and the weather continues mild. All of these factors contribute to a subnormal consumption of coal. The prevailing opinion is that neither industry nor retail yards have consumed the stocks laid by early in the month and that a point of saturation still exists, and until this situation changes the demand will continue sluggish. Another element is that, with the close of the year at hand, industries desire to keep inventories as low as possible and are therefore putting off coal purchases until after the first of the year.

Owing to the diminishing production of prepared sizes, there has developed during the past ten days a scarcity of slack, and by reason of this scarcity, the price has held firm, with some tendencies to further stiffening. As to other grades, there have been some small quantities of distress coal sold.

UPPER POTOMAC

Idleness Still General — Miners Grow Restless—Discussions on Lowered Wages.

Idleness was general during the week ended Dec. 3, nearly all the Upper Potomac district mines being closed. There is a growing feeling among the miners favoring the resumption of the 1917 wage scale, on which basis operators say they would be justified in resuming work. However, union officials have so far dissuaded the men from following the lead taken by certain New River union mine workers who have returned to work at lowered wages.

PITTSBURGH

Market Remains Stagnant—Gas Slack Does a Trifle Better—Non-Union Competition too Strong.

The market continues stagnant. Business, such as it is, goes almost entirely to non-union districts, where costs are much lower. Such production as occurs is chiefly against a few contracts for steam coal, with a fair sprinkling on contracts for high grade gas, for consumers who would not be satisfied with gas coal from other districts.

Slack has been practically a drug on the market for many weeks past, being produced in excess of demand on account of production of screened coal, for gas coal contracts and current sales of domestic lump. Gas slack has been in slightly better demand in the past week and prices have strengthened.

The wide difference between operators' views as to prices, comparing Panhandle steam and domestic with high grade gas coal, is due to producers of the latter figuring a high exhaustion charge while the Panhandle operators bought their coal acreages at low prices.

CENTRAL PENNSYLVANIA

Usual Pre-Holiday Slump — November Production Figures Available — Non-Union Mines Get Bulk of Business.

Operators experienced a big slump in business during November, as compared with October. Production for the month was 3,219,002 tons, which was 680,000 tons less than for October.

The total production for the eleven months of 1921 reached 36,130,000 tons. This indicated that the year's output will not exceed 40,000,000 tons, less than two-thirds of the 1918 production, when 60,002,000 tons were mined. In the corresponding period in 1920, production was 32,738,000 tons.

One reason for the declining output is the general industrial condition. Operators assert, however, that the refusal of the United Mine Workers to consent to a readjustment of the wage scale, so that the district may be able to compete with other fields, is the principal cause.

During the period the union mines have lost 30,020 cars of business while the non-union mines have lost but 600.

ANTHRACITE

Demand Very Sluggish—Only Popular Sizes Move Easily — Part-Time Operations.

The market is very sluggish. It is almost impossible to move pea coal and some of the companies are having difficulty in disposing of their egg. A number of the independent collieries have been forced to operate on part time the past week. One of the larger companies is also working only part time.

Some threatened trouble among the employees of the Lehigh Valley in the Hazelton region seems to have been settled without a strike. The Susquehanna Collieries, independent producers in the Shamokin region, has resumed operation, employing 7,000 men.

FAIRMONT AND PANHANDLE

Cancellations Are Heavy — Distress Tonnage Satisfies Demand — Production Even Lower.

Fairmont

Conditions went from bad to worse during the week ended Dec. 3, and even some of the larger companies were forced to suspend operations because of the lack of orders. Shipments of railroad fuel took a decided drop and domestic orders were being canceled in many instances as buyers found it possible to meet their requirements by taking distress coal.

Northern Panhandle

The output was greatly restricted. Western movement was declining and the slight domestic demand was insufficient to stimulate production. Domestic fluctuated around $2.40@$2.70, mine run $1.50@$2, and nut and slack $1.40.

UNIONTOWN

No Contract Negotiations—Freight Rate Situation a Damper—Prices Weaker.

While in ordinary times the present period would see negotiations for contracts both for coal and coke at their height there is little if any activity noted in that respect in the Connellsville region.

Although coal is sold f.o.b. to the consumer the freight rate situation has undoubtedly acted as a damper on renewed business and it is now apparent that business intends to await reductions before an effort will be made to get the industrial situation back to a normal basis.

Sales of coal are few and prices are weak, the quotations being $1.30@$1.45

for steam and $1.60@$1.75 for by-product. Furnace coke is also weak at $2.75@$3 but foundry is showing a little life at $3.85@$4.

Middle Appalachian

LOW-VOLATILE FIELDS

Partial Resumption to Open-Shop Basis—Demand Extremely Poor—Domestic Markets Surfeited—Prices Soft.

New River and the Gulf

Comparatively few mines in the New River field found it possible to operate during the week ended Dec. 3, although some mines had resumed operations on an open-shop basis under the 1917 wage scale. Demand was so poor that the output was limited to about 8,500 tons daily, representing contract shipments for the most part.

There was a marked decrease in Winding Gulf production. Out of 56 operating companies, 22 have been forced to shut down because of the inability to secure orders. Tidewater business was at a standstill and Western markets were sluggish.

Pocahontas and Tug River

Pocahontas production steadily declined, the output paralleling a sharp decrease in demand for all grades. There was no call for prepared coals in the Western markets, and contract business was about all that was left to producers, who managed to mine 230,000 tons during the week.

Although a reduction of output in the Tug River field was caused by a sluggish market, yet production was higher than in other smokeless territories. Fairly large shipments to steel companies having their own mines in the region accounted for this, although the Western movement still held. There was little or no spot demand for domestic sizes, and most of the production moved on contract.

HIGH-VOLATILE FIELDS

Production Declines — Demand Hits Bottom—"No-Market" Losses Heavier Than Ever.

Kanawha

Production during the week ended Dec. 3 was not more than 7,500 tons per day, or less than 25 per cent of capacity. Demand for all grades had come to an almost complete standstill. Even the domestic call had quieted, and prices kept pace with the declining demand.

Logan and Thacker

Even with adjusted wages Logan producers were not securing many spot orders. Contract business enabled some mines to continue but the output was not over 40 per cent of normal, with "no market" losses aggregating over 50 per cent.

There was an output of less than 35 per cent in the Williamson field. "No market" amounted to nearly 58 per cent of capacity. Contract orders and railroad fuel alone sustained production, as spot demand was non-existent.

Northeastern Kentucky

With only a weak demand it was no longer possible to market prepared sizes and nearly all operations curtailed production. Having adjusted wages to meet declining prices, many concerns still found it impossible to secure any business.

Virginia

The output dropped to less than 50 per cent of capacity. Only such companies as could prepare coal were able to operate, as domestic sizes alone were in demand. Low spot prices were also a factor in checking production and contract orders furnished the bulk of the business.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Demand Fails to Improve—Some Operations Closed Indefinitely — Lowered Wages Favored.

Not the least flicker of demand was apparent last week, regardless of the fact that production had been cut down to 15 or 20 per cent. Several of the large companies have disbanded office forces and are closed until after holidays. Others are down until the market is "born again," as they state that their coal has been marketed for several months under actual cost.

Reliable information is out that the men at several of the closed operations are anxious to go back to work on a reduced wage scale if the mines can be operated. However, while a lower scale would better enable operators to compete with other fields, it would do no good at the present time, because industries are well stocked with coal and refuse to take on more at this time. Retail yards are full to overflowing and cannot move their stocks because of continued warm weather. There seems to be nothing to do but to close and stay closed until there is some demand.

Middle West

WESTERN KENTUCKY

Demand Slow—Reduction of Prepared Production Causes Shortage of Screenings—Lull in Mine Operations.

Two or three weeks ago screenings were very plentiful and weak in price, selling low at 40c. The market has now tightened up as it is almost impossible to move lump coal. Steam coals would probably go higher except for coming into competition with eastern Kentucky screenings when the price gets too high to offset the difference in freight rates, western Kentucky screenings moving to Louisville about 50c. less than eastern Kentucky.

Pea and slack today is hard to find under $1.25 for any fair grade, and $1.05 for the poorest kinds. Nut and slack ranges as high as $1.75. Retail stocks are heavy and domestic coals are in a distressed position.

MIDWEST REVIEW

Domestic Market at Standstill — "No-Bills" Heavy — Steam Scarcity Raises Prices — Outlook Gloomy.

Even nature seems to have it in for the coal industry, for instead of having seasonable December weather in the Middle West, we are still out playing golf and living under weather conditions far more suitable for Spring. The worst of it is there is no cold weather in sight and it would take at least four weeks of blizzard, plus transportation difficulties and every other hindrance imaginable to make any real difference in the market.

Retail dealers, when they are buying at all are doing so in very small quantities and their trade reflects this attitude. Perhaps the very general prevailing idea of a reduction in freight rates is having something to do with this sluggish domestic market, but it is doubtful if the agitation for reduced rates is alone responsible. The public is feeling poor and this is the main reason why coal is being purchased in such small quantities. It is reported from fairly reliable sources that there are over ten thousand cars of domestic coal now on track at the Indiana and Illinois mines.

Prices on screenings are slowly mounting upward, principally because very few mines are operating on account of the fact that they are blocked with domestic loads which cannot be moved. A week or so ago certain high-grade southern Illinois screenings were offered at $1.65. Today it is almost impossible to buy this grade at $2.

From statistics at hand and from reliable sources it is outlined that the industrial situation in the Middle West is no better off than it was some time back. In fact, there seems to be a very general depression. The iron people and their allied industries are enjoying a fair measure of running time, but this is the only line on which there is a certain definite betterment. As most of the big iron people have their own coal mines, this improvement is not helping the situation in the Middle West to any great extent.

Labor conditions are fairly satisfactory. The fight between President Farrington of the Illinois United Mine workers and Mr. Lewis of the international union continues, with funds from the treasury of the Illinois union flowing out to Kansas to support the striking miners in that district. At the mines both in Illinois and Indiana, labor is settled and is paying strict attention to business and working sincerely. Perhaps this is on account of the Christmas season, as expenses are high and all the men want to accumulate a little surplus by working when opportunity affords. Running time, however, has decreased materially and probably will slump further for the next few weeks, at all events, until after the holiday season.

The check-off injunction proceedings remain unchanged. No one has been able to find out as yet when a decision can be looked for in this matter. Even the most sanguine operators are not expecting anything prompt. In the meantime, producers are taking advantage of every possible opportunity to run their mines, although the best of them cannot average more than two days a week.

SOUTHERN ILLINOIS

Mild Weather Keeps Production Down —Domestic Prices Weaken—Steam Shows Improvement — "No-Bills" Are Heavy.

Several Carterville mines have been idle now close to two weeks on account of their inability to move lump coal.

Screenings are in demand and some few mines are crushing mine run to keep up with their screenings contracts.

The mild weather is given as one reason for the congested condition of lump size and another is that a great many domestic consumers are using a cheaper fuel. Nearly all fields have cut the price of their domestic sizes, excepting southern Illinois and the Harrisburg district.

Low working time has caused uneasiness among the miners. This is giving some concern to the operators, for they fear that after the first of the year if the demand revives and their miners continue to leave that they will suffer a serious handicap.

Market conditions are such that independent operators have cut the price on nearly everything. Lump is $3.50, egg $3.25 and about $3 on No. 1 nut, mine run, $2.65 and screenings $1.75 @$2, with a tendency for the screenings price to show constant improvement. Railroad tonnage showed a decrease last week.

Operating conditions in the Duquoin field are somewhat similar. Nearly all the mines have been forced to cut their prices in order to work, and at that they are only getting about one day in every two weeks.

The Mt. Olive situation is unusually bad. There is practically no domestic coal being shipped to St. Louis. A little is moving Northwest and into Chicago. The Chicago and St. Louis price is $3.50. The country price is supposed to be $3.75, but this is too high for the coals that meet Mt. Olive in competition, with the result that Mt. Olive is not moving. Springfield district coal going into Mt. Olive territory is selling as low as $3 in Kansas City and Omaha and $3.25 in the country for 6-in. lump, while some of the other smaller sizes are down to $2.50.

In the Standard field the old system of selling coal below cost is working again. Screenings are in good demand at around $1.25, but the supply is short and it is somewhat of a speculators' market, with a tendency to show a decidedly better price. The railroad tonnage is light and many mines have not worked for the last two weeks, while others are getting only one and two days. No bills are heavy.

News Items From Field and Trade

ILLINOIS

Over 2,000 acres of coal land has recently been leased in the vicinity of Elkville, Jackson County, by officials of the **Valier Coal Co.**, and other coal men from Pittsburgh, Pa. Announcement has not been made of the sinking of a new mine, but it is the general opinion in mining circles in the district.

The Victory Coal & Mining Co., Mine No. 5 at Duquoin, owned by the **Buehmer Coal Co.**, has resumed operations after a shut down of several weeks.

Walter E. Rutledge, president of the Security Coal & Mining Co., Chicago, has returned to his home from an annual quail hunt in Southern Illinois. He was accompanied by a party of coal men from St. Louis and Chicago.

C. E. Saxon and **David Brown**, of the United States Bureau of Mines are at present on a tour of Southern Illinois mining towns, giving instructions in mine rescue and first aid work. They are giving lessons in such towns as Harrisburg, Eldorado, Benton, Marion, West Frankfort and others.

The Big Muddy River recently overflowed its banks and flooded Mine No. 9 of the **Consolidated Coal Co.**, Murphysboro. Two adjoining mines were also closed because of the backwaters.

The Delvalley Coal Corporation has been incorporated with capital of $100,000 by J. C. Carico, Robert Fletcher, C. M. Busby, John Chamberlain and J. A. Kern. Address J. A. Kern, Ridge Farm, Ill.

Fire of incendiary origin recently destroyed a large portion of the boiler room and engine house of the **National Coal & Mining Co.**, near Belleville. The loss is estimated at about $10,000.

M. A. Rowan, mining engineer and operator of Chicago, present owner of the New Prosperity Mine at Carterville and Globe Fourth Vein Mine in Sullivan County, Ind., has recently completed a deal whereby he becomes owner of the Eastside Mine at Equality. The mine is fully developed and equipped with electrical machinery throughout.

A. F. Del Valley and Sons of West Terre Haute, Ind., coal operators, have purchased from **Albert H. McFarland** of Tilton, 105 acres of coal land, and will begin operations in the new field by early spring.

The following itinerary of the **Illinois Miners' Examining Board** for December has been announced: Dec. 8, Belleville; Dec. 9, Harrisburg; Dec. 10, Herrin; Dec. 12, West Frankfort; Dec. 13, Duquoin; Dec. 14, Staunton; Dec. 15, Carlinville; Dec. 17, Decatur; Dec. 19, Danville; Dec. 20, La Salle; Dec. 21, Peoria.

C. M. Wasson, president of the Wasson Coal Co., Harrisburg, recently gave a banquet to the officials executive board members and department heads of the company. Talks were made by various members of the company along mining principles.

The officials of the **Egyptian Coal Co.** and the **O. K. Coal Co.**, at Marissa, recently banqueted the district officials of the Illinois Central.

INDIANA

Damages of $5,000 as the result of cancellation of a coal contract for approximately 7,000 tons, are asked of Carl A. Seibel, doing business under the name of the **Dunn Coal Co.**, Ft. Wayne, in a suit filed in Federal Court recently by the **Riverside Coal Co.** of Jackson, Ky. The complaint charges that in March, 1920, Seibel contracted with the Tuttle Coal Co., sales agents for the plaintiff, for the delivery of 10,000 tons at $3.80. Nov. 27, after 3,098 tons had been delivered, the defendant refused to accept further shipments. Meantime, the price of coal broke sharply. The damages represent the difference between the contract price and market price at the time of cancellation.

KENTUCKY

The Brown & Sharp Coal Co., capital $20,000, has been chartered by G. P. Sharp, Middlesboro; John E. Brown, Lejunior, and R. O. Sharp, Middlesboro.

John C. Lepping has affirmed ownership of the **River-Rail Coal Co.** This concern has no connection with the Rail & River Co., jobbers, in the Republic Building, Louisville.

The Kentucky Straight Creek Coal Co. has filed amended articles, increasing its capital from $10,000 to $20,000.

The Himler Coal Co., Himlerville, is planning to spend about $175,000 in new developments and construction of its mining town.

H. H. Graves, general manager of the Bolce Coal Co., has purchased the Madisonville Machine Works, and arranged with Philip Crof, former owner and manager, to continue as general manager of the shop.

Harry A. Thompson, formerly assistant traffic manager for the Wholesale Coal Co., Pittsburgh, has been transferred to the Covington, Ky., office, Lawyers Building.

Marion T. Knight, who has been mining engineer for Jewett, Biglow and Brooks at Pineville, severed his connection with this company on Dec. 1. He has taken up his duties as chief mining engineer for the Harlan Fuel Co., at Yancey.

Announcement is made of the sale of the **Devon Coal Co.**, of Harlan County, to Richmond, Virginia, parties, who expect to develop the property on a big scale. The new name for the company is to be the **Virginia-Harlan Coal Co.**, capitalized at $150,000. Headquarters of the new company are to be in Pineville.

John P. Gorman, well known operator in the Hazard and Jellico fields, has purchased the mine at Diablock, formerly known as Four Seams Collieries Co. This company will be known as the **John P. Gorman Coal Co.** Extensive improvements are planned.

Abner Lunsford, general manager of the Banner Fork Coal Corporation, belonging to the Ford interests, has been in Detroit on business.

OHIO

The Bureau of Mines has prepared a motion picture, which will be loaned for exhibition, covering coal stripping operations in Ohio in connection with the use of heavy excavating machinery used in mining operations.

Suit has been filed in Toledo against the **Manufacturers' Coal Co.** to have the company declared a bankrupt. The **Davis-Lewis Coal Co.**, of Toledo, the **Sunnybrook Coal Co.** and the **Mancoort Winters Coal Co.** of Michigan are the plaintiffs.

It is now announced that **R. B. Isner** is to have charge of the general Western business of the Old Dominion Coal Corporation with headquarters at Cincinnati.

L. B. Ramsey, president of the Logan **Fuel Co.** of Charleston, was a recent visitor in Cincinnati.

Russell V. Johnson of Cleveland has been named Ohio purchasing agent to succeed Edward J. Shattuck who resigned because of a controversy over coal contracts. He was treasurer under Governor Harry L. Davis when he was Mayor of Cleveland.

P. W. Henry, president of the Kentenia Coal Co., will make the Cincinnati office of his company his headquarters until spring or later. He has been looking after the company's tidewater business with his office in New York for over a year.

Harry Walker, prominent coal operator and banker of Dillonvale, underwent an operation in Battle Creek recently. Mr. Walker, in addition to being president of banks in Dillonvale and Tiltonville, is president of the H. Walker Coal Co., at Adena, and the H. Walker Coal Mining Co., Tiltonville.

L. A. Gilson, recently appointed general sales manager of the Maher Collieries Co., took up his new duties on Nov. 15th. For several years past Mr. Gilson has been fuel agent for the Cleveland Electric Illuminating Co., a concern which uses upward of a million tons of coal annually.

S. J. Patterson Co., of Dayton, has secured the sole agency for seven mines of the **Solvay Collieries Co.**, located in the Pocahontas No. 3 vein and the Tug River fields of the N. & W. in West Virginia.

The Sterling Mine Supply & Manufacturing Co. has been chartered with a capital of $100,000 by L. B. Turnbull, Jr., H. A. Bayless, John R. Schindel, Morrison H. Waite and E. M. Grooms.

The Community Coal Co. has been incorporated with a capital of $20,000 to mine coal in the eastern Ohio field. Incorporators are Thomas J. McNames, J. H. Anderson, George L. Sandrock, James McDonough and Albert W. Kennon.

A. J. Salzer, of the Southern Coal Corporation, with headquarters at Fairmont, was at Akron recently.

PENNSYLVANIA

The Hazel mine of the **Chartiers Creek Coal Co.**, near Canonsburg is being put in readiness for operation. The plant has been closed since early in the spring.

The question "When Is a Strike Over," which has been before the Pennsylvania Industrial Board for a year, is to be settled at a public hearing next February. The state Chamber of Commerce submitted the last suggestion to the board to the effect that when more than fifty per cent of the employees of a plant where a strike has occurred have returned to work the strike is over. This definition will be considered with others at a public hearing of the board to be held in February.

Seward E. Button, chief of the Pennsylvania Department of Mines, with Thomas J. Williams, district inspector, has made an investigation of the mine fire at the Red Ash Mine of the **Red Ash Coal Co.**, in Luzerne County. This fire, which has been raging for some time with disastrous results, will be taken in hand by the department and Chief Button says every effort will be made to extinguish it.

Improvements in progress at the Audenreid colliery of the **Lehigh and Wilkes-Barre Coal Co.** will make that plant one of the most up-to-date in the Lehigh field.

J. E. Gaskill of the Southern Coal Corporation of Fairmont was in Pittsburgh recently calling on the coal trade.

The State Workmen's Compensation Board has granted a hearing de novo in the case of Alex Phillips, Ernest, against the **Jeffers & Clearfield Coal and Coke Co.**, Punxsutawney. The claimant appealed from the order of Referee Gleason, District No. 10, refusing a petition for a review of the compensation award. In the case of Frank Cheely, Rillton, against the **Westmoreland Coal Co.**, Irwin, the board dismissed an appeal by the company from the order of Referee Snyder, District No. 5, granting a petition for reinstatement of the compensation award. The board has affirmed the findings of fact, conclusions of law and the award of the referee.

Eugene S. Rielly, L. P. Monahan and **L. A. Quinlivan** announce their resignation as president, vice president and secretary respectively, of the Reilly-Peabody Fuel Co., whose name has now been changed to Peabody Fuel Co., and also their resignation as officers of the American Coke Corporation, affiliated company of the Peabody Fuel Co. **F. E. Peabody's** resignation as treasurer of the Eastern Fuel Co. and its subsidiary, the Georges Creek Coal Mining Co., has been accepted. The present officers of the Eastern Fuel Co. are: **Eugene S. Rielly**, president, **F. F. Merritt**, vice president, **Laurence A. Quinlivan**, secretary-treasurer, **E. Leon Carpenter**, assistant secretary-treasurer.

Stockholders in the **Harco Coal Co.**, most of whom are residents of Johnstown, will receive their regular dividend this year of 1¾ per cent on preferred stock and a dividend of 50c. on all common stock. The Harco company is one of the Cosgrove interests. This is the second dividend of the company on common stock and the eighth on the preferred stock.

With the recent announcement of the adoption of the 1917 mining scale by the **Brothers Valley Coal Co.**, of Somerset, labor trouble developed and the men affiliated with the U. M. W. went on strike. The mines are being operated with a reduced force until the ranks of the striking miners can be filled. The scale announced is $1.06 for pick mining and 65c for machine mining; outside laborers $4, and inside laborers $4.77.

John C. Cosgrove and a number of associates have acquired control of the **Grazier Coal Mining Co.**, in Somerset County, near the town of Foustwell. The deal involves the purchase of approximately 1,183 shares of the mining company stock which were taken over at $105 per share. The former owners of the stock were the J. A. Grazier estate, the H. F. Grazier estate, Hon. John M. Rose, Mrs. Etta C. Sheridan, Mrs. Charles S. Alter, Mrs. Jessie S. Grazier, Emory C. Dodson and Dr. J. H. Grazier.

The Clearfield Coal Corporation, has announced from the New York office the promotion of **H. B. Douglass** to the position of assistant to the president with offices at Indiana. **A. J. Mosser**, who has been head of the purchasing department for some time, has been appointed general manager with headquarters in Indiana, succeeding Mr. Douglass.

The Girardville Mining Co., Philadelphia, has notified the office of the Secretary of the Commonwealth that it has increased its capital from $5,000 to $500,000.

During the present year the **Pennsylvania Workmen's Compensation Board's** twelve referees have disposed of 3,391 cases. This is 776 cases more than the record for the entire twelve months of 1920, when 2,615 cases were disposed of by the referees. They still have 1,642 cases pending and but few of these will be finally disposed of before the close of the year.

The Pennsylvania State Water Supply Commission has approved the applications of the **Wallwork Coal Co.** to construct a culvert and change the channel of Red Bank Creek at Hawthorn, Clarion County, and of the **East Windyer Coal Co.** to construct a bridge across Stoney Creek River near Kring Station, Somerset County.

The Wenona Coal Co., Westmoreland County, has notified the Secretary of the Commonwealth at Harrisburg that it has dissolved.

Lloyd Kniffin, formerly general manager of the Hanover Bessemer Iron and Copper Co. of Fierro, New Mex., has been appointed construction engineer of the Madeira Hill Co. at Frackville.

VIRGINIA

The Norfolk office of the **Central Pocahontas Coal Co.** has been closed, and George H. Loeb, Norfolk manager, will be transferred to the Cincinnati office of the company.

H. M. Hall, president of the Fort Dearborn Coal Co., was in Norfolk recently calling on the trade and making a survey of business conditions.

WASHINGTON, D. C.

In a report to Congress the Shipping Board states that the following claims have been settled: **Berwind White Coal Co.**, $525 and $3,500; **New England Fuel & Transportation Co.**, $150, $144 and $3,416; **Lehigh Coal & Navigation Co.**, $1,746; **Westmoreland Coal Co.**, $1,124; **Logan Coal & Supply Co.**, $6,000; **Hutchinson Coal Co.**, $2,532 and $4,071; **Matlack Coal & Iron Co.**, $1,131; **Rogla Coal & Oil Co.**, $79,705 and $4,391.

In the annual report of the Interior Department submitted to the President by Secretary Albert B. Fall, it is stated that the general land office awarded under the leasing law 55 applications for coal prospecting permits, four leases and four licenses covering 87,781 acres in the United States and three leases for coal mining in Alaska covering 4,520 acres, and approved coal entries for 3,394 acres. Receipts from coal leases amounted to $8,683; royalty on coal mined in Colorado was $8,775. Coal entries received during the year amounted to 59; 66 were disposed of and 14 are pending. In the United States coal prospecting permits were issued to 55 applicants and four leases and four licenses were issued. In Alaska three coal leases were issued covering 4,520 acres, making a total of seven leases outstanding covering 6,540 acres in the Bering River field, 2,520 in the Matanuska field, 1,400 acres in the Cook Inlet and 566 in the Nenana field.

The Supreme Court, in an opinion by Justice McReynolds, dismissed the case from the California courts in which recovery of damages was sought from the **Western Fuel Co.** by administrators of M. Souza, a workman, who was killed while discharging a cargo of coal from a vessel by falling coal.

Representative Parrish has introduced a bill to pay $564 to the **Sewell Grain and Fuel Co.**, of Vernon, Tex., which it is said was wrongfully collected from the company by the government.

The Department of Justice has filed a brief in the court asking that the refusal of the District of Columbia Court of Appeals to enjoin the Interior Department from cancelling land selections of the Santa Fe Pacific railroad, be sustained. The case originated on protest of Thomas Leaden that the selection of the lands by the railroad would create a monopoly of coal lands in the vicinity of Gallup, N. M. The government exchanged lands with the railroad but it is alleged that the lands selected by the coal company were valued at from $62 to $83 an acre, while the government lands received in exchange from the railroad were valued at only $20 an acre.

The Supreme Court will not hear arguments in the **Morrisdale Coal Co.** case until early in January. This is due to the fact that argument of cases assigned for hearing in advance of cases on the regular docket will take up the intervening time, the coal case being on the regular docket and not especially assigned but taking its place in the call of the docket after cases advanced for argument.

A committee representing common stockholders of the **Reading Co.**, has asked the Supreme Court to advance for hearing the case in the Eastern District of Pennsylvania Court growing out of dissolution of the Reading combine. The controversy is between holders of the preferred and common stock of the Reading Co. It is understood that the government and opposing counsel are agreeable to advancement of the case.

The Bureau of Mines is conducting a number of coal investigations of interest. Co-operating with the Southern Appalachian Coal Operators' Association of Knoxville, the bureau has begun the work of sampling coal from mines in Tennessee and eastern Kentucky. The bureau has examined new coal stripping operations at Stigler, Haskell Co., Okla., where a steam shovel costing $100,000 has been installed, the coal seam being 22 inches thick and the overburden from 12 to 20 ft. The peat bogs of Wisconsin are being examined to define their relation to the formation of coal.

The Internal Revenue Bureau plans to add ten valuation engineers on coal, timber and metals valuation of income tax returns.

WEST VIRGINIA

The Cleveland Cliffs Iron Co. of Cleveland has completed arrangements for the construction of a steel tipple, equipped with shaker screens, picking tables, loading boxes etc., at its plant at Ethel, in the heart of the Logan region.

New equipment is being added to the plant of the **Robert Talbott Coal Co.** of Fairmont, at Lowesville, Monongalia County, this plant being on the Monongahela Ry. New equipment consists of a rope and button conveyor and loading equipment.

Two large steel tipples have just been built by the **Clinchfield Coal Corporation** at mines Nos. 8 and 9 at Moss, these mines being on the C., C. & O. Included in the equipment are conveyors, shaker screens, picking tables and loading booms. The company operates three mines at Moss, Va.

In connection with the development of coal property at Burch, in the Mingo field, the **Veritas Coal Co.** has installed screening, conveying and loading equipment and will soon be in a position to operate.

C. H. Jenkins, secretary and treasurer of the Hutchinson Coal Co. with headquarters at Fairmont, having demonstrated his prowess as a golfer, has been presented with a silver loving cup as one of the winners in the annual tournament held by the Fairmont Country Club.

The office of the **Security Coal Co.**, just organized, will be in Fairmont. This concern will operate in Monongalia County, capitalized at $50,000. Among those active in the organization are R. Morgan, T. Frank Reed, C. F. Crane, B. M. Simpson, all of Fairmont; John R. Steel, of Barrackville.

The West Penn Power Co. of Pittsburgh has applied to the County Court of Monongalia County for permission to construct electric lines through Union district and also has applied to the Preston County court for the same privilege. From all that can be learned the West Penn company proposes to absorb a number of smaller power concerns, if possible, and to furnish power to a number of the mines in northern West Virginia.

Dave Fleming has been placed in charge of the Eccles property of the New River Collieries Co., operating in the New River field, succeeding **C. P. Munch**, who has resigned on account of poor health.

Fred G. Wood, general manager of the Amigo Coal Co. of Amigo, has returned from a four months' tour of the West.

After spending the greater part of the summer and autumn on the Pacific Coast, **Colonel James Stirrat**, a well-known operator of Raleigh, Logan and Fayette counties, has returned to his headquarters in the Winding Gulf district.

Major W. P. Tams, head of the Tams interests in the Winding Gulf region, and **J. B. Clifton**, president of the Raleigh Smokeless Fuel Co., have returned from a hunting trip in the Maine woods.

At a recent meeting of the directors of the **New River Coal Co.**, the largest company operating in the New River field, it was decided to close down all the mines of the company until there is an improvement in market conditions. With coal around $2 per ton, it is said that it is no longer possible to operate the mines at a profit. There is also to be a substantial reduction in salaries, from the general manager down, the reduction in some instances amounting to as much as 50 per cent.

Thirty-one men were killed as the result of accidents in coal mines of West Virginia during October, according to the recent report of the **State Department of Mines.**

T. W. Arnett, president of the Antler Coal Co. of Fairmont was called to Elkins on business late in November.

A. Brooks Fleming, Jr., assistant to the president of the Consolidation Coal Co., was in the East on a business trip recently.

The Lundale Coal Co., Lundale, has purchased the **McGregor Coal Co.,** mines and all equipment at Slagle, and has started up full operation. These mines had been closed since July.

In Greenbrier County, some five miles from Rainelle, a new smokeless field is being developed, with five operating companies already installing their plants. Along with the mining development there has been built a railroad. This connects with the Sewell Valley R.R. near Rainelle and the Sewell Valley R.R. connects with the Chesapeake & Ohio at Meadow Creek. The B. & O. has offered to build 15 miles on the main line and connect with the Greenbrier & Eastern on the Gauley River side.

C. L. Logan, who has been superintendent for the Four Seams Block Collieries Co., at Diablock, Ky., has severed his connection with this company and will be employed at Crumpler as superintendent for the Greenbrier Coal & Coke Co.

Charles V. Critchfield, of Mt. Vernon and Cleveland, vice president of the Domestic Coke Corporation of Fairmont, was in that city recently, looking over the corporation's plant.

A. D. Showalter, after several months spent at his former home at Denver, has joined the forces of the Diamond and Forest Coal companies in Fairmont.

O. W. Rider, identified with the Morgantown Coal Co. was in the Buffalo market for a few days recently.

A visitor in the Fairmont region recently was **T. H. Johnson,** of Bellaire, Ohio, president of the Chesapeake Coal Co. Mr. Johnson also paid a visit to Morgantown.

At Lewisburg, Judge Sharp recently sentenced Steve Collins, Walter Asbury, Lige Cline, John C. McCoy and Bill Estep to two and one-half years each in the penitentiary at hard labor, and William Scarberry to two years, they having been convicted of participation in the shooting up of Mohawk on Sept. 21, 1920. These men were all members of the United Mine Workers who were on strike in Mingo County, and the evidence proved that they were endeavoring to close down the **Mohawk Coal and Coke Co.'s** property, a McDowell County and non-union mine.

The Boone County Coal Corporation, Sharples, announces the following changes in its organization: **A. F. Martin,** appointed sales manager; vice **R. B. Isner,** resigned; **O. M. Hayden,** appointed auditor; vice **A. F. Martin; J. P. Colgan,** appointed purchasing agent, vice **R. B. Isner,** resigned.

BRITISH COLUMBIA

A cablegram from London received at the office of the **Granby Consolidated Mining, Smelting & Power Co.** announces that the Privy Council has handed down judgment allowing the appeal of Charles Wilson v. the Esquimalt & Nanaimo Ry., a subsidiary of the Canadian Pacific Ry., and dismissing a similar appeal in the case of the Esquimalt & Nanaimo Ry. v. Elizabeth Dunlop. The appeal was with relation to an action on the part of the railway company to set aside the Crown grants to coal lands, which the Granby company had purchased in good faith and which it had developed. The decisions not only firmly establish the titles to the coal lands with the Granby company, but, being a test case, it automatically establishes the right to Crown grants by settlers. There are at the present time 172 applications for such grants on file. Much of these cover valuable coal lands, and the aggregate amount of money involved is large.

ONTARIO

The Fish Coal Co., Ltd., Toronto, has been awarded the contract for the supply of coal up to April 1, to the waterworks branch of the Toronto Department of Public Works.

George Bauder, of the Berwind Fuel Co., Cleveland, and **R. M. Hamilton,** of the Jefferson Gas Coal Co., Pittsburgh, were recent business callers on the coal trade in Toronto.

Traffic News

In the complaint of the **Far West Clay Co.,** an I. C. C. examiner recommends that shipments of coal from Burnett, Durham, Kankaskat and Morristown, Wash., to Clay City, Wash., during federal control were properly routed but that the rates were unreasonable.

The I. C. C. has postponed from Jan. 1 to Jan. 31, pending investigation, the taking effect of reduced rates on coal proposed by Henry Ford on his road, the **Detroit, Toledo & Ironton R.R.**

The commission has authorized the Southern Appalachian Coal Operators' Association, the Hazard Coal Operators' Exchange and the Harlan County Coal Operators' Association to intervene in the complaint of the **Cincinnati Association of Purchasing Agents,** involving rates on bituminous coal from mines on the L. & N. in Kentucky, Tennessee and Virginia, to points in the metropolitan Cincinnati, Ohio, district and to points in Kentucky from points in Virginia and Tennessee.

In the complaint of the **Mississippi Valley Iron Co.,** the I. C. C. decides that the rate on coke from St. Paul to St. Louis in 1918 was not unreasonable.

The L'Anguille River Ry. Co., and others, of Little Rock, complain that the rates on coal from points in Kentucky to Marianna, Ark., are unreasonable.

In the complaint of the **Cannelton Sewer Pipe Co.,** an I. C. C. examiner recommends that rates on bituminous coal from mines in the Boonville, Ind., district to Huntingburg, Tell City and Cannelton, Ind., during federal control were not unreasonable.

In the complaint of the **Edwards and Bradford Lumber Co.,** the commission holds that the rate on coal from Kenilworth, Utah, to Hillyard, Wash., is not unreasonable, but that it is prejudicial, and prescribes a relationship for the future.

The Covert Gear Co., Inc., and others of Lockport, N. Y., allege unreasonable rates on coal from points in Pennsylvania, Ohio and Virginia to Lockport.

Publications Received

Design of Atmospheric Gas Burners—Technologic Paper of the Bureau of Standards, Department of Commerce, No. 193. Pp. 62; 7 x 10 in.; illustrations and charts. The first of an extensive investigation of the design of gas burners.

Operating Regulations to Govern Coal-Mining Methods of Miners' Safety and Welfare of Miners on Leased Lands on the Public Domain—Department of the Interior, Bureau of Mines. Pp. 48; 6 x 9 in.

Artificial Gas and Byproducts in 1917-18, by R. S. McBride, United States Geological Survey, 61 pages, 41 tables, 4 diagrams Shows average and extreme conditions of operation for various types and sizes of gas plants.

Metal-Mine Accidents in the United States, 1919—Department of the Interior, Bureau of Mines. Technical Paper 286. Pp. 99; 6 x 9 in. Containing supplemental labor and accident tables for the years 1911 to 1919 inclusive.

Oil Camp Sanitation—Department of the Interior, Bureau of Mines. Technical Paper 261. Pp. 32; 6 x 9 in.; illustrated. Describing sanitary conditions in "boom" communities and suggestions for bettering their conditions.

The Merchants' Association of New York—New York City, Year Book 1921, Pp. 338; 7 x 10 in.; illustrated. Defining the purposes of the association and description of year's activities.

The Geology and Coal Resources of Dickenson County, Virginia—Virginia Geological Survey, University of Virginia. Bulletin XXI. Pp. 224; 7 x 10 in.; illustrations, charts and tables. Prepared in co-operation with the United States Geological Survey.

Trade Catalogs

Sullivan Rotators—Sullivan Machinery Co., Chicago, Ill. Bulletin 70-W, replacing Bulletin 70-J. Pp. 31; 6 x 9 in.; illustrated. Description of rotator hammer drills, "DP-33," "DP-32" and "DP-37".—Advertiser.

Pulverized Fuels — Hardinge Co., New York, N. Y. Catalog 9. Pp. 16; 9 x 11 in.; illustrated. Description of the Hardinge Mill, adapted to the pulverization of coal.

Oil Engines—Vacuum Oil Co., New York, N. Y. Pp. 22; 9 x 11 in.; illustrated. Containing educational data on oil engines, surface ignition type.—Advertiser.

Stationary Steam Engines—Vacuum Oil Co., New York, N. Y. Pp. 31; 9 x 11 in.; illustrated. Educational work covering steam valve and cylinder lubrication, stationary steam engines.—Advertiser.

Welding Torch and Carrying Case Outfit—Davis-Bournonville Co., Jersey City, N. J. Pp. 11; 3 x 6 in.; illustrated Description of compact welding outfit and carrying case.

Flory Capstans—S. Flory Mfg. Co., Bangor, Pa. Catalog 33. Pp. 14; 6 x 9 in.; illustrated. Describing hand, steam and electric capstans manufactured by the company.—Advertiser.

Atlas Valves and Regulators — Atlas Valve Co., Newark N. J. Junior Catalog 21. Pp. 20; 3½ x 6 in.; illustrated. Describing reducing valves, pump governors, pressure regulators, etc.

Modern Mine Transportation—Enterprise Foundry & Machine Works, Bristol, Va.-Tenn. Pp. 23; 6 x 9 in.; illustrated. Description of manufacture and use of Enterprise Chilled Car Wheels.—Advertiser.

Power Transformers — Allis-Chalmers Mfg. Co., Milwaukee, Wis. Bulletin 1108. Pp. 32; 8 x 10½ in.; illustrated. Description of the more common types of Allis-Chalmers Power Transfomers.—Advertiser.

Wooden Tanks for Every Purpose—The Hauser-Stander Tank Co., Cincinnati, Ohio. Pp. 62. Illustrations, charts and tables, 6 x 9 in. Describing water storage tanks for coal mines, etc.—Advertiser.

Obituary

James Redding, owner of the Dysart Coal Co., Dysart, Pa., died suddenly at his home in Altoona, recently, from heart disease. Mr. Redding was 56 years old.

J. Stuart Frame of the firm of Frame, Friend & Sitneman, Inc., Grand Central Terminal, N. Y. City, died on Dec. 5. He was formerly with the Davis Coal & Coke Co. of Baltimore, and had been directly connected with the coal business since 1896.

Coming Meetings

The American Institute of Consulting Engineers, Inc., will hold its annual meeting Jan. 16, 1922, at the Engineers' Club, 32 West 40th St., New York City. Secretary F. A. Molitor, 35 Nassau St., New York City.

New England Wholesale Coal Association will hold its annual meeting Jan. 10, 1922, at Boston, Mass. Secretary, R. S. Townsend, 27 Kilby St., Boston, Mass.

Southern Appalachian Coal Operators' Association will hold its next meeting Jan. 27, 1922, at Knoxville, Tenn. Secretary, J. E. McCoy, Knoxville, Tenn.

Pike County Coal Operators will hold their annual meeting Jan. 6, 1922, at Pikeville, Ky. Secretary, F. E. Miller, Pikeville, Ky.

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

Volume 20 NEW YORK, THURSDAY, DECEMBER 22, 1921 Number 25

Judge Anderson's Judicial Errors Not Without Their Benefit

HIGHLY technical is the characterization applied to the opinion handed down last week by the Circuit Court of Appeals in Chicago on Judge Anderson's famous injunction against the check-off. The outcome, however, plainly enough is an upsetting of Judge Anderson's theory and contention and a reversal for those who expected thus to be relieved without more ado of the burden of the check-off. For the Borderland Coal Corporation and the non-union operators the victory may not prove to be empty; time alone and the final decree of the Indianapolis court, to which the plea is again remanded for hearing, will tell.

So broad and sweeping was the original decree and so far does it appear that Judge Anderson overstepped "the limitations of the case and his own jurisdiction," that all hope of settling the question of the check-off by court processes is now behind us. It is true there remains the indictment under the Sherman law of 226 coal operators, miners and others, in which the check-off practice is under fire, but so many other matters are involved in this case and the time of its trial and settlement are so remote as not to figure in present counsels.

The check-off is illegal, it appears, only when the money collected thereby is put to illegal use. That Judge Anderson had decided otherwise caused wonderment among the laity in no way connected with the coal industry and not smarting under the evils of the practice. We find among those who wholeheartedly sympathize with the opposition of coal operators to the check-off a disposition to regard the decision of the Chicago court as reasonable and to have been expected. The sentiment of such observers is that the check-off should go but that it must be removed by another route, although perhaps on the same basis of reasoning.

Hence, unless the unexpected occurs, the check-off will be an issue in the wage negotiations early next spring. The few days that intervened between the original decree of Judge Anderson and the stay of judgment by the Chicago court afforded striking evidence of the temper of the coal operators with respect to the time-dishonored practice of the check-off. Indiana, of course, being indisputably within the jurisdiction of the Indianapolis court, would have obeyed. Illinois, wavering between the Indianapolis decree and that of a state court running counter to it, gave evidence of a desire to be purged of the check-off. Ohio, Pittsburgh and central Pennsylvania decided to accept the competency and obey the injunction of the Indianapolis court. The check-off was slated to go. Whether it can be overthrown in the next scale meetings remains to be seen. So tenaciously will the union cling to this—to them—life-giving privilege, that he who elects to oppose it faces a severe trial of force.

We stand with those who believe the check-off of today must be abolished in the interest of truly representative unionism and the good name of the coal industry. The judicial errors of Judge Anderson have not been without advantage in centering thought and opinion on the check-off.

Wherein Lies the Greater Opportunity?

WHO will eventually own the coal mines—the consumers or the purchasers? Wherein lies the greater opportunity for profit—in operating coal mines or in selling coal? Or is the real chance for wealth from coal in the holding of the resource, the coal land? The past five or six years have chronicled a definite movement of the control of coal production to the consumer. To understand this development it is only necessary to recognize coal as a raw material for industry. If the finished product be iron and steel, then the producer inherently turns to ownership of ore-bearing lands and iron mines, coal lands and coal mines, limestone and dolomite quarries, coke ovens and even railroads. The Steel Corporation is a typical large example of vertical combine, being essentially self-contained as regards reserves and producing units for all raw materials entering into its final products. The second largest steel company, the Bethlehem, now owns coal mines to supply its normal requirements. Other steel companies own mines sufficient to supply all or large portions of their requirements for byproduct, gas and steam coal.

Railroads likewise, particularly in the West and Middle West, are owners and operators of coal mines for engine fuel. In some instances, as in Illinois, the railroads have long-time cost-plus contracts for entire mine outputs, which has the same effect on the commercial demand as if owned outright by the consumer. Some industrials which are large coal consumers, as the Semet-Solvay, own and operate many coal mines. Henry Ford mines the coal he burns as well as other raw materials used in his manufacturing establishments.

Public utilities are fast entering the field as owners and operators of coal mines. Fuel is the one important raw material for the production of steam-generated electric power and many central-station operators are numbered among the coal operators. The plant and equipment of one of the newest and largest of these is described at length in this week's issue. A mine plant has here been designed under the ideal condition of a uniform and predetermined output definitely assured. Operating conditions are likewise ideal, for "car shortage" has been eliminated as a factor limiting production and "no-market" losses are reduced to the minimum.

It may be assumed that with these advantages and the best and latest equipment, both above and below ground, the cost of production will be correspondingly low. The company operating the coal mine in this instance is separate but subsidiary to the power company

and it follows as a matter of good business that the coal will be carried on the books of both to show a profit for the producing unit. But, lacking selling expense and with inherently low cost, it may well be that the coal company will be enabled to sell the power company at a figure that will make it difficult for other power companies without coal properties to compete, which circumstance will promote the acquisition of coal mines by the other public utilities. Thus is the unregulated coal industry in process of absorption by the highly regullated public utility. Even the retailer is becoming coal producer, it having been announced recently that the largest coal dealer in New York City is now part owner of an anthracite producing company.

It may not be far from the mark to say that the commercial coal business of this country has not increased materially in recent years; that the greatest increments to consumptive capacity have been and are being supplied by the development of new mines or the purchase of old mines by the consumer.

The corollary, of course, is for the coal producer to be owner of the business or industry that consumes his coal. One nationally known coal operator is a director in many of the enterprises to which he sells coal. Not a few producers and wholesalers have retail coal yards to facilitate the distribution of their product. Another producer of coal is partner in a byproduct coke oven enterprise that takes part of his coal output.

Because of the widespread use of coal there is no possibility of the commercial coal industry ever being wholly absorbed by the user, but there are several consequences of even partial control that are worthy of note. The industrially owned mine need not fight for a market; cost of production is something to be absorbed in the selling price of the final product. Therefcre the incentive is to maintain continuous operation. Strikes are to be avoided. There is lacking the outside pressure for lower costs through lower wages. The next step after an industrial acquires a coal mine is to buy coal cars, and it has been the general experience that private coal cars receive a preference in handling—are given an advantage on the rails.

On the other hand, at the industrial mines we are apt to find the mining practice giving the highest recovery of coal from the ground. A commercial operator, beset by keen competition, gets his coal in the cheapest manner, but the industrial coal operator can and does afford the practice in mining that comes nearest to taking 100 per cent of the deposit.

A Promise in Fulfillment

TO BE invited to Washington and to have support in high places, to be admitted into the common counsel of business and government, is an experience until last week denied the heckled coal operators since the days of Secretary Lane and of Dr. Garfield.

The occasion was a meeting called to find a way to effect a cut in freight rates on coal to tidewater for export, in a last desperate effort to save the remains of our foreign business. Week by week for three or more months the volume of cargo coal for offshore has been dwindling, in part because abroad, as here, consumption of coal and demand are low, but largely because Great Britain has been underbidding us.

Shipments on a contract for gas coal in Italy obtained for this country were hardly under way when suddenly stopped by a series of incidents abroad and cabled excuses. The world spot market is as enticing to buyers one place as another and English coal at some $2 less per ton delivered has been substituted for the American. Factors supplying bunker stations in the West Indies—business that belongs here as much as that of the Channel Islands does to England—have told the government that English shippers are in a way to supplant American coal at our front door. In fact, a dramatic climax, as it were, in the tragedy of our ailing export trade was the recent delivery in our seaports, both Pacific and Atlantic, of coal from Great Britain.

To meet this competition, which threatens not trade born of the war but business established ten or more years ago, the coal operators have cut mine prices to the bare bone. Ocean freights in foreign-flag boats can be had below cost; there remains but the railroad freight to tidewater that is still on a high perch. From $1.40 pre-war to $2.80 now, the rail rate on a gross ton of coal from the Smokeless fields to Hampton Roads stands doubled. It is to lower this rate by at least $1 that the government and coal operators are pressing the railroads.

That the coal exporters turned to the Department of Commerce and that Mr. Hoover not only expressed polite governmental interest in their problem but energetically took up the fight in their behalf is gratifying evidence that at last business has an avenue of approach to Washington that is the zenith of our hopes, as the invitations to Washington of Mr. Calder a year ago were the nadir.

The railroads may or may not extend the necessary relief in export coal rates, and if they do, but a small portion of the coal producers will be directly benefited. The really important issue is that it has been demonstrated that there is a place in the government in Washington to which the coal industry can take its problems of commerce and that there is a man who has the wisdom to appraise a situation and the courage and ability to pursue a solution. Even the slow-minded can now perceive what Mr. Hoover meant last spring when he said he planned to make the Department of Commerce an aid to industry.

IN VIEW OF A REPORT by a prominent firm of certified public accountants controverting the claim of the Bureau of Mines that the Government Fuel Yard has effected a saving on the coal handled through it for government use, Representative Rhodes, chairman of the Committee on Mines and Mining of the House of Representatives, has promised to reopen hearings before pressing the fuel yard bill, which now is on the House calendar. The accountants who went over the fuel yard's accounts and who assert that the government suffered a loss through this operation were retained by the National Retail Coal Merchants' Association. Frederick Stephens, president of that organization, and Joseph O'Toole, its secretary, spent several days in Washington last week. The accountant's report was laid before the chairmen of the committees on mines and mining of the Senate and of the House and also before General Dawes and Colonel Mosely, of the Bureau of the Budget.

PRIVATE FUNDS IN SUFFICIENT VOLUME to make possible a comprehensive study of seasonal coal movements are assured. The study is to be begun at once under the general auspices of the Committee on Mining of the President's conference on unemployment. This is the first of a series of surveys which are to be carried out by Edward E. Hunt, secretary of the conference, in co-operation with the Department of Commercee.

SPRINGDALE HEADFRAME, PREPARATION PLANT, HOIST HOUSE AND CENTRAL STATION

Springdale Mine Furnishes Fuel to West Penn Power Co. Plant, Cleaning Every Car of Coal Before Weighing

Coal Screened to Lump, Nut and Slack Before Picking — For Weighing, Last Two Sizes Are United and Reassembled, but Not Mixed with First — Lump Is Then Crushed and with Nut and Slack Goes to Boilers

By D. J. Baker
Charleston, W. Va.

MINING ENGINEERS have often wondered that coal should so frequently be hauled many miles from the tipple to power plants which might much more profitably be erected there or at least at a short distance away and have explained the uneconomical arrangement either by reflections on the conservatism of the coal operator or on his lack of knowledge of the public-utility business. The right place for the power-generating equipment is at the mine, for thereby the expense of transportation and the uncertainties of railroading are avoided.

At the Springdale mine of the Allegheny-Pittsburgh Coal Company, a subsidiary of the West Penn Power Co., no room could be found on the eastern bank of the river for the construction of a tipple and power plant. On the west side of the river the land is more level than is the east side, where the power company is possessed of a 4,000-acre tract of the "Thick Freeport" coal. Consequently twin tunnels were dug under the river from the steep bank on one side to the more nearly level slopes of the opposite bank.

The buildings have been erected in a swamp on foundations of such height as will permit 20 to 30 ft. of ashes to be dumped around the plant, thus giving a large level area on which operations may be conducted without interference from high water.

As the power plant doubtless is destined to be operating long after the last ton of coal is removed from the large acreage available, recourse is to be had later to river- or rail-borne coal. This coal will be delivered to a storage yard, whence it will be transported by a conveyor to the overhead bins of the plant.

In the instance here outlined the coal plant is merely an accessory of the power plant, which was erected by a power-plant company to meet the power needs of a region that is rapidly calling for more and more purchased power. The West Penn Power Co. has taken a large and valuable part in the supply of power to this region.

In designing the coal-handling equipment on the tipple, provisions were made for receiving foreign or storage coal into the building. Such coal will be crushed and prepared in the same fashion as that now accorded the local product.

Both tipple and power plant have been laid out and equipped so that they may function together in such manner as to effect the most economical production of power at present possible. The preparator has a capacity of 500 tons per hour, and the coal-hauling equipment receiving foreign fuel into the building has a like capacity. For transporting the coal from the tipple to the bunkers over the power house and distributing it evenly, six belt conveyors are utilized. These have an aggregate length including return strands of more than 1,500 ft. The foreign-coal conveyor, which is of the steel-apron type, is 148 ft. long.

The coal in the mine cars is discharged underground in a two-car rotary dump and lifted from the shaft bottom in tandem skips. Each skip has two compartments, one above the other, each of which is discharged through an automatic gate operated by a connecting rod common to both.

The tipple, or preparator, was designed by the company engineers. The general scheme was then detailed by Heyl & Patterson, Inc., Pittsburgh, which firm also fabricated and erected the building. It is built of a structural steel framework, composed mainly of H- and I-beam sections, and given the customary covering of

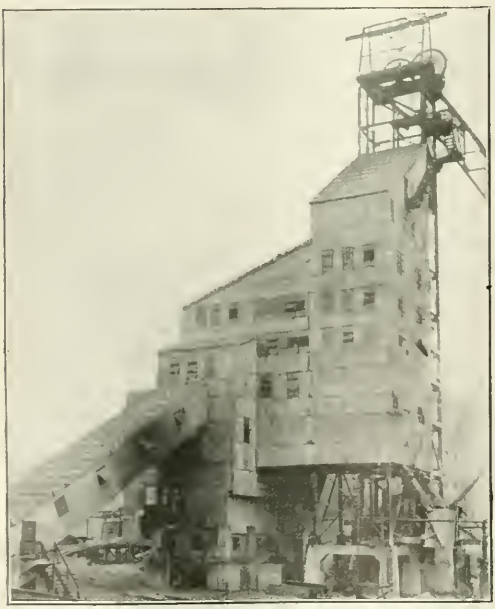
corrugated asbestos siding. The four headframe columns, as well as the connecting struts and braces, are given a protection of reinforced concrete from the shaft collar to a point 48 ft. above it.

The shafts supporting the head sheaves are 12 in. in diameter and made of forged steel. They are turned to 10-in. in diameter within the journals that run in liberally proportioned ring oiling boxes rigidly bolted to heavy steel beam supports.

A pair of the heaviest sheaves in the district are used. Each is 10 ft. in diameter and built up of a cast-iron rim and hub with double wrought-iron spokes. The rim in each instance is of heavy section with a deep groove to accommodate a rope 1¾-in. in diameter to which the tandem skips are attached. Each skip when loaded will weigh about twenty tons, hence the large cable. Incidentally this rope is one of the heaviest, if not the heaviest, employed in the western end of the state.

After the mine product has been discharged from each compartment of the skip it enters one of two pairs of receiving pans, one pair being provided for each compartment of the shaft. These receiving pans lie one above the other, so that each carload of coal may not lose its identity. This is desirable for reasons that will be mentioned later. Each pan is built up of ¼-in. steel plates and angles and is equipped with ⅝-in. flaring side guards to prevent loss by spillage. The bottoms of the pans are constructed of ⅜-in. steel wearing plate, and the sides are 24 in. high. Each plate section is renewable.

A flygate, forming a section of the bed, allows rock and refuse carried by either compartment of the skip to be shunted directly to a rock bin. This fly is operated electrically from the shaft bottom. The operating mechanism consists of a compressed-air cylinder and controlling valve, the latter actuated by a solenoid receiving current from a push-button control located convenient to the car-dump operator at the shaft bottom.



HEADFRAME, PREPARATOR AND FOREIGN-COAL CONVEYOR

Coal from other mines can be brought in by railroad or by boat. If it comes by railroad it is dumped into a large steel hopper and carried by a reciprocating feeder to an apron conveyor, which delivers it to the hoppers above the rolls. If it arrives by boat a gantry puts it either where a locomotive crane can deliver it to the railroad hopper or into storage, where it can be placed on railroad cars which carry it to the hopper. It can also be put into storage from railroad cars if that disposition of it is desired.

Thus when a skip compartment is loaded with rock at the bottom, the refuse material is properly directed into a chute and away from the preparation equipment by the mere pushing of a button, which throws the gate in the desired direction.

Heretofore, and particularly where self-dumping cages are used, the practice has been to station a man on the tipple to operate the flygate. When a car of rock was hoisted to the surface, he had to be signalled from below. This, of course, entails a certain appreciable loss of time, besides being prodigal of labor. With an arrangement such as the one at Springdale the men on the preparator are unmindful of whether rock or coal is being carried in the skip, so complete are the mechanical arrangements in this respect.

Rock Cars Cause Not an Instant's Delay

The methods of handling rock at this plant are unusual. No time is lost at the bottom in shunting cars out of a trip arriving at the landing. Each car passes through the rotary dump in its proper order regardless of what it contains. As a result all cars underground are in service and none lies about idle because the rock-disposal equipment is temporarily overburdened. A continuous and uninterrupted flow of cars takes place to and from the workings. Such a condition must obtain if the mine is to be operated economically.

From the receiving pans the coal passes by gravity to receiving hoppers having top dimensions of 7 x 18 ft. and a capacity of 4½ tons. Beneath each hopper an apron feeder 7 ft. long has been installed to control the delivery of coal to the screening rig. Each is built of two strands of steel-bushed roller chain to which are attached ¼-in. double-beaded pressed-steel pans 42 in. wide, the whole forming a continuous belt. Each of these devices delivers run-of-mine product to one of two lump screens at the rate of 620 tons per hour.

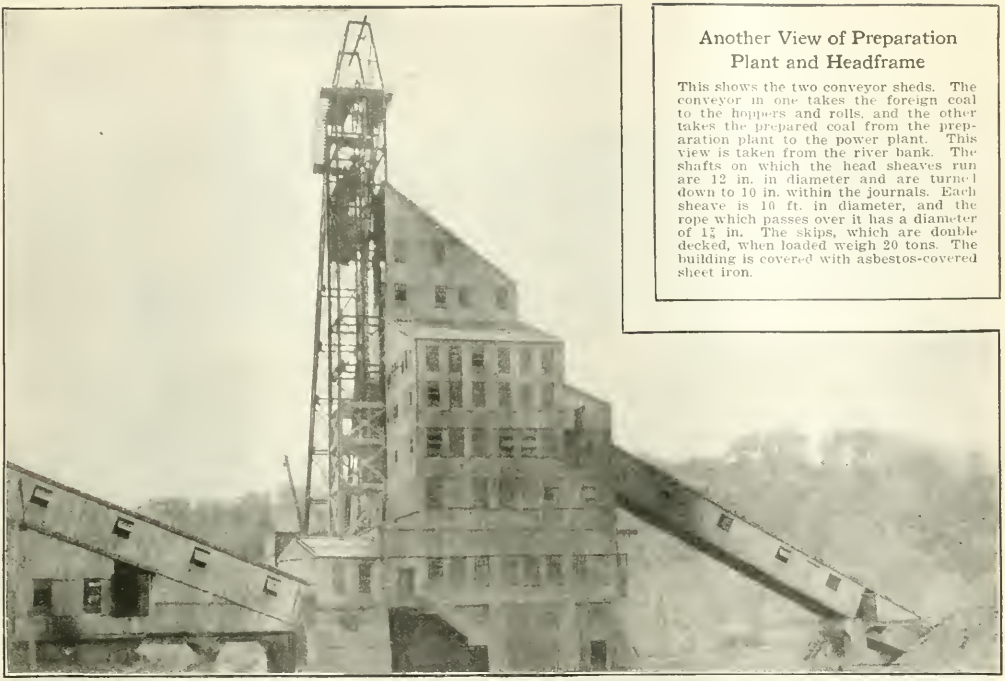
Each Coal Car Can Be Picked Separately

It will be recalled that the preparator has a capacity of 500 tons per hour. The coal is delivered to the screens at a higher rate in order that there may be a vacant space on the tables between all skiploads. Thus each car sent out may be picked separately.

The feeding apparatus in each instance is driven from the tail shaft of the lump or nut table that it serves, transmission being made through a roller chain. The driving sprocket is equipped with a jaw clutch, so that the feeding mechanism may be stopped independently of the picking tables. Each feeder is self-contained on a rigid structural-steel frame having steel-angle tracks and ¼-in. side plates to prevent spillage.

From the feeder the coal is delivered to the screening rig, which also is in duplicate. This is of the gravity bar type. Here the product is separated into what may be termed lump and undersize, the division being made at about 3 in. in diameter. Each separator is 6 ft. long and 4 ft. wide and is built up of ¼-in. side and bottom plates, the sides being raised to a height of 18 in.

At times it is desirable to deliver the mine product direct to the picking tables in order that it may be cleaned and weighed before being loaded into railroad cars for



Another View of Preparation Plant and Headframe

This shows the two conveyor sheds. The conveyor in one takes the foreign coal to the hoppers and rolls, and the other takes the prepared coal from the preparation plant to the power plant. This view is taken from the river bank. The shafts on which the head sheaves run are 12 in. in diameter and are turned down to 10 in. within the journals. Each sheave is 10 ft. in diameter, and the rope which passes over it has a diameter of 1⅝ in. The skips, which are double decked, when loaded weigh 20 tons. The building is covered with asbestos-covered sheet iron.

placing in storage. Accordingly, veil plates that readily may be lowered into place are hinged to the side of the screens. Each screen section is constructed of standard tapered bars with the lower ends turned backward so as to form steps, thus making the surface self-cleaning. The upper ends and centers of the screen bars are supported in notched bearers and their lower ends are spaced on a rod by means of pipe separators, so as to provide an interval of about 3 in. between adjacent bars.

Undersize, or material going through the screen, drops onto the nut screen below. The smaller coal is thus separated into nut and slack before the product reaches the picking table. The lower screen is of the same dimensions as the one above it, but is of a different type of construction, being built up of double-notch bearers spaced on 30-in. centers carrying standard steel tapered bars held in position by a dead plate. These bars are given a 1¾-in. spacing. Coal passing them is termed slack. From both lump and nut screens the coal is fed to the picking tables by gravity, the contents of alternate skip compartments being delivered to each table.

A special picking table has been installed for the lump coal with provision for a duplicate unit to be installed later. The table is 29 ft. long and 5 ft. wide. It was assumed in designing the plant that roughly 50 per cent of the run-of-mine product would bear separation into lump and a similar amount into nut and slack. Thus when the lump product is distributed on the tables, having a speed of 50 ft. per minute, this size is carried to a depth of 5 in. The lump from each mine car is picked separately, as has been already mentioned. A vacant space is formed on each table due to alternate skiploads being distributed to both conveyors. In this way each table can handle 155 tons of lump per hour.

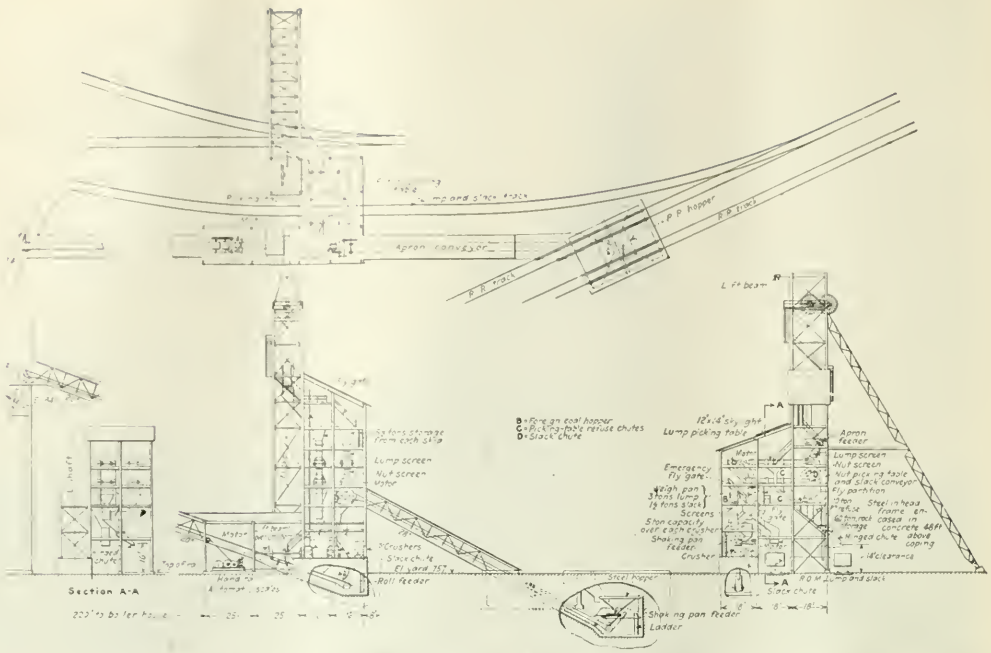
Each picking table is constructed of two strands of 12-in. pitch steel-link roller chain running on 5-in. diameter rollers. Quarter-inch steel pans 5 ft. in length are attached to this chain, so as to form a continuous conveyor. The chain is made up of 3 x ⅜-in. bars set two and two and connected by 1-in. diameter steel pins which extend across the conveyor beneath the pans, coupling the two strands of chain together. Steel-tube bushings are attached to the pins so as to form an easy bearing surface for the rollers and links.

Each table is driven by a 15-hp. motor through a silent-chain transmission, one cut-steel gear reduction and a thimble-roller chain. Both tables are self-contained on a rigid structural-steel frame and operate over 20-lb. steel rail tracks. Each also is equipped with ¼-in. stationary side-guard plates, preventing spillage.

From the nut screens and slack pans the smaller sizes are delivered by chute to a combined nut-coal picking table and slack conveyor located on a lower floor directly under the lump picking table. This table is of the same design as the lump tables, except that partitions divide the conveying surface into three compartments. The two outer compartments are 24 in. wide and carry the nut, while the inner one of the same width contains the slack. The table is driven by a countershaft from the nearby lump table through chain transmission.

Discharge chutes at the lower end of each lump and nut-and-slack table deliver these sizes into a two-compartment weigh pan, the lump going into one hopper and the cleaned nut and slack into another. A flygate is installed where the tables approach each other at the weigh pan so that all the coal may be delivered to the lump compartment when, in emergency, the screens are not utilized and the picking tables are transporting nothing but run-of-mine.

Each weigh pan has an individual capacity of 5 tons.



PLAN AND ELEVATION OF HEADFRAME AND PREPARATION PLANT

The plan shows the unusually large railroad hopper over which two tracks, well separated, pass. From the elevation can be seen the height of the headframe, which has to be excessively high to take care of both decks of the skip hoist. The shaft is relatively shallow but the headframe makes up in part for the shortness of the underground lift. The plant is built solely for preparing stoker fuel. The concrete foundations are set high so that in places 30 ft. of fill can be provided.

Each is built with two compartments, one container holding the lump and having a capacity of 2½ tons, and the other, of 2½-ton capacity, receiving the nut and slack. Here the two sizes are weighed together on scales equipped with a quick-weighing dial.

As will be noted, only one unit of picking table and weigh pans is installed. Space is provided in the tipple structure for a duplicate installation to be erected when needed for full capacity.

From the lump compartment of the weigh pans, after weighing, the coal enters a double-forked chute. One branch may be utilized—as is usually the case—to deliver this size to a hopper located over the crushers, or the other chute may be employed when it is desired to load the coal into railroad cars beneath the building for placing in storage. The chute from the nut and slack compartment of each weigh pan is similar in shape and purpose to the lump chutes, in that one branch may be used to deliver the finer sizes to a roll feeder over a belt conveyor, while the other fork permits the product to be loaded into railroad cars and thence placed in storage. A flygate is employed to direct the coal into the proper branch of the chute.

Both pairs of chutes are built up of ¼-in. steel plate and angles with sides 18 in. high. A gate of chop type is installed in the railway delivery lump chute, so that cars may be changed on the tracks without hindering steady operation on the tipple. These gates are operated through suitable mechanism from the track level. The discharge ends of both slack and lump chutes are hinged and counterweighted, thereby permitting them to be raised out of the way when not in use. A clearance of 22 ft. is made possible by this arrangement.

If the coal in the lump compartment of the weigh pan is not intended to be loaded out for storage, it is directed by the flygate, already referred to, to one of two crusher hoppers, each of which has a capacity of five tons. The bottom of each hopper is equipped with a reciprocating feeder.

The feeding pans are 42 in. wide and 5 ft. 8 in. long. Each is supported as an individual unit on four 8-in. diameter single-flange bronze-bushed cast-iron rollers. Each is driven through a countershaft from its crusher by means of a belt, a spur-gear reduction, adjustable cranks and connecting rods. The design of the cranks is such that any length of feeder stroke up to 6 in. may be obtained. The maximum capacity of the feeders is about 175 tons per hour.

From the feeders the coal may be directed into either of the crushers. Provision has been made for the installation of a third crusher, which will be held as a spare, except when coal is being reclaimed from storage while the preparator apparatus is operating to capacity. The crushers are of Heyl & Patterson manufacture and each has a capacity of 175 tons per hour. Each is composed of four 30 x 42-in. rolls, self-contained within a heavy cast-iron frame. The upper pair of rolls is fitted with Cornish teeth, while the lower pair has corrugated faces. Both are made of white charcoal iron.

One set of rolls is fixed while the others are given an adjustable mounting. This is accomplished by securely fastening the pedestals of the fixed rolls to the frame. The pedestals of the adjustable rolls are mounted in finished grooves and are held to their duty by heavy steel springs placed behind them. The tension springs

Part of Storage Yard

Both coal from the Springdale mine and that which comes in by railroad and boat can be stored. It is to be reclaimed by stationary and locomotive cranes discharging into the hopper of the 28-deg. conveyor to be seen on the left.

are so mounted as to provide for the rolls being adjusted as desired. Any adjustment throughout a range of 6 in. may thus be made.

Bearings for the adjustable rolls are of the ball-and-socket type and either one can move backward independently of the others so as to pass unbreakable foreign materials. Both adjustable rolls are driven by a belt equipment with a counterweighted tension pulley. In this manner the roll adjustment can be varied at will and yet permit the rolls to move backward to the full depth of their spring compressions in the event that material that cannot be crushed find its way into the machine. When the rolls are set to deliver a 1½-in. crushed product the springs will allow an emergency separation of 4⅜ in. Each crusher is geared to and driven by a 75-hp. motor.

Another feeder handles material from the slack-and-nut compartment of the weigh pan to a belt conveyor leading to the power house, where the finer sizes not requiring crushing unite with the crushed coal and make up the stoker fuel. The feeder in question is of the roll type, 16 in. in diameter and 24 in. in length. It is built up of 2⅞-in. shafting on which is fitted three sectional cast-iron rolls, each 8 in. wide and having a corrugated face. The rolls are mounted in a steel-plate casing. Over them a gate is installed to control the depth of coal being fed to the conveyor. This is fitted with a hand wheel and feed-bar operating mechanism, so that its position may be varied and fixed as occasion demands. The feeder is driven from the tail shaft of the belt conveyor leading to the power house through a steel-thimble roller-chain transmission.

Refuse Is Distributed by Railroad Cars

It might be well at this point to note what arrangements have been provided for handling rock and refuse coming from the mine. After passing the flygates at the head of the receiving pans on the tipple, these being thrown from the foot of the shaft, as has already been described, this material gravitates by way of a chute to a rock-and-refuse bin having a capacity of seventy tons. Of the total capacity of this container a space accommodating ten tons is always available for picking-table refuse. This section of the bin cannot be filled with rock from underground.

This bin is constructed of a steel frame and lined with ¼-in. plate, the bottom having a covering of ⅜-in. renewable wearing plate. For the purpose of delivering the rock and refuse to a railroad car for disposal as fill around the surface plant, the bottom of the bin is equipped with two gates and chutes. The former are of the undercut type and are operated through chain, chain wheels, pinions and segments. The chutes are hinged and connected by rope to a hand wheel and gear-drive winding rig, so that they may be raised in the clear when not in use.

As is necessary at a coal-mining plant built expressly for supplying fuel to power-house bunkers, a suitable apparatus must be provided for receiving foreign coal into the station when the mine is down and the bunker supply is low. The West Penn Power Co. has amply provided for this contingency at Springdale.

Cars of foreign coal may be discharged over a concrete hopper built in the yard adjacent to the tipple and away from the power house. This container is lined with steel plate, and the top dimensions are 32 x 40 ft. A feeder is placed in the bottom to control the delivery of coal to an apron conveyor leading to the tipple.

Concrete Hopper Provided With False Bottom

A false bottom is constructed in this bin in order that drainage water may be led to a pit and thus kept from corroding the feeder mechanism and lower conveyor parts. If more cars are to be unloaded than the hopper can accommodate, any or all of them may be run out to the storage piles and discharged there. Later this coal is reclaimed and placed in the receiving hopper by a locomotive crane which is employed also in transferring fuel that may be received by river barge and unloaded by a gantry crane.

The feeder in the bottom of the receiving hopper has the same capacity as the other preparation units, namely, 500 tons per hour. It is of the same type of construction as the one utilized in delivering the run-of-mine product to the lump screen on the tipple and is driven from the tail shaft of the conveyor through a chain transmission, adjustable cranks and connecting rods.

From the feeder the foreign coal or the fuel reclaimed from storage enters an apron conveyor, to be elevated into the preparator and discharged into one of the three hoppers feeding the crushers. As domestic coal is cleaned before being placed in storage and the foreign product receives similar treatment before being shipped, there is no necessity for running this material over picking tables a second time.

The foreign-coal conveyor is 148 ft. in length and consists of two strands of roller chain of 18-in. pitch to which are attached 48 in. double-beaded pressed-steel pans. Steel retarding angles are riveted to the face of the pans on 3-ft. centers, thus preventing the coal from slipping backward down the slope. This con-

A Lump Picking Table

The coal is sized into lump, nut and slack over gravity bar screens. It then passes to duplicate picking tables for each size. This table is of the apron type and has raised side-guard plates. What impurities are found are dropped into the vertical chutes shown at the side of the table.

veyor is driven by a 40-hp. motor through a silent-chain transmission and two spur-gear reductions. It has a speed of about 62½ ft. per minute. A half-torque magnet brake is installed on the armature shaft of the motor as well as a self-setting brake of the band type on the first countershaft to prevent a backward movement of the conveyor if stopped when loaded.

This conveyor is carried on a rigid structural-steel frame. It is provided with 30-lb. steel-rail chain tracks and side guards 12 in. high. It is housed in a gallery, as shown in the accompanying illustrations. This is provided with a concrete stairway along each side of the moving pans, each fitted with a handrail.

At the head of the conveyor the coal is delivered to a chute, thence passing over bar screens, where the slack is removed, to be bypassed to the slack coming from the weigh pans. The lump sizes are directed to one of the three hoppers serving the crushers. After crushing the product mingles with that prepared in the tipple and is fed by an oscillating feeder to the belt conveyor leading to the bunkers in the power plant.

Power-House Bunkers Hold Five Days' Fuel

Sufficient coal may be stored in the power-house bunkers to keep the boilers under full steam for five days. The delivery conveyor consists of an 8-ply belt having a ⅛-in. coating of rubber on the carrying side. This conveyor is 316 ft. long, 42 in. wide, and travels at a speed of 400 ft. per minute. This movement allows the handling of 500 tons per hour. The concentrators of this belt are spaced on 4-ft. centers and are of the five-pulley type. Concentrator shafts are made of cold-drawn steel tubing and form a continuous grease reservoir, the lubricant being supplied by two compression cups, one at either end. The tubular shafts are supported from steel-channel bases by cast-iron brackets.

To carry the return strand from the power house 6-in. idlers spaced on 10-ft. centers are employed. A rotary cleaning brush has been installed at the head of the conveyor, power for its operation being supplied through an idler pulley. The conveyor is driven by a 75-hp. motor through a silent-chain transmission and spur-gear reduction. The driving pulleys are lagged. Like the reclaiming conveyor at the other end of the structure, a half-torque magnet brake is installed on the armature shaft of the motor. This arrangement prevents the belt from running backward when loaded if the power is shut off. All gears, the driving shaft and the motor are mounted on a common heavy structural-steel bedplate, thus reducing vibration to a minimum.

The conveyor leading from the tipple to the power house is housed in a gallery, as shown in the illustrations. The floor of this gallery is built of steel supporting members and reinforced concrete 3 in. thick. Steel channel cleats are set in the walkways upon either side of the belt so as to provide a firm footing up the slope. A hand railing also is built along each walkway. Thus this conveyor may be easily inspected or repaired. The conveyor itself is supported by two channel stringers raised about 24 in. above the floor, thus providing room for the return strand. Near the foot of the conveyor a 42-in. weightometer is installed to record automatically the amount of coal going into the bunkers.

Coal Samples Taken at Regular Intervals

At the head of the conveyor within the power house a three-way chute is built, wherein flygates have been installed to control the delivery of the coal to the various sections of the concrete bunkers. At predetermined time intervals a "handful" of coal is removed from the head end of the belt by a mechanical device. Coal thus taken is chuted to a small crusher where it is crushed for sampling purposes. The product being received into the bunkers is tested at regular periods to insure the boilers receiving good coal.

For distributing the coal at the head end of the belt conveyor reaching to the power house, five other belt conveyors are employed. Three of these are equipped with tripping mechanisms to discharge the belts at suitable points and at predetermined intervals, thereby effecting an even distribution of coal in the bunkers. Two cross conveyors receive the coal from hoppers where it has been deposited by the belt from the tipple. The cross belts direct the crushed product to the two outside longitudinal conveyors, which distribute it to the bins above the boilers; the belt for the central bunker receives its coal direct from the main conveyor. The conveyors have a capacity equal to that of the preparation equipment on the tipple, which, as stated, will handle 500 tons hourly.

Both cross conveyors are of the same type of construction, each being 44 ft. long, 30 in. wide, and

employing a five-ply belt having a ⅛-in. rubber coating on the carrying side. Each is driven through a silent-chain transmission and a spur-gear reduction, the speed of travel being about 400 ft. per minute. At the head of each a chute is provided for delivering the coal to the three belts running at right angles to them.

All the longitudinal belts are identical in construction. They are 120 ft. long, 30 in. wide, and have a speed of 400 ft. per min. Each is driven by a 15-hp. motor and is equipped with a self-propelling continuous-running automatic tripper that evenly distributes the coal to the bins. These latter machines run on 20-lb. steel rail laid on the conveyor decking. They operate without attention. From the bunkers the coal is conveyed to the stokers through downcomer pipes. The boilers are of large size and are stoker-fired from both ends.

Construction of the tunnels 65 ft. under the river as well as that of the tipple and the power house proceeded at a higher speed than the construction of the remaining surface buildings. This was done in order that fuel might be available as soon as possible for conversion into electrical energy. As a result the other mine buildings, all of which are interesting in design and equipment, have not yet been completed.

I wish to take this opportunity to thank R. C. Beerbower, general superintendent of mines of the West Penn Power Co., for the many courtesies extended to me in obtaining data covering this plant and mine. His kindly co-operation has made the writing of this article a pleasurable task and illustrates as possibly nothing else could the progressive spirit actuating the officials of this great public utility company.

Shaft-Sinking Methods, Mine Layout, Trip Handling and Two-Compartment Skip Hoist at Springdale

Shaft Sunk to Bedrock by Use of Caisson—Seven-Entry System —Pillars May Be Mined on the Advance—All Trips Pass Under River—Two Cars Will Be Dumped at One Time

By Alphonse F. Brosky*

Soon after the decision had been reached to connect the Logans Ferry mine with the central power station of the West Penn Power Co., across the Allegheny River, active construction began. In the summer of 1920 work was started on the sinking of the hoisting shaft at a point a little north of the central station. The usual method of excavating shafts was adopted. As the sandstone strata above the coal are overlaid with a thick cover of glacial drift and alluvium, however, it was found necessary to change these methods in consequence of the large quantities of water to be handled.

The elevation of the surface at the shaft site is 744 ft. above sea level, and the existing water line and pool height are 736 ft. and 733 ft. respectively. It was believed that the best course to pursue in sinking through the loose material would be to drive sheet piles around the excavation. It was hoped that the rapidity with which pile driving and excavation would proceed might far outweigh the expense of driving the piling. The distance from the surface to bedrock is about 63 ft. Experience shows that the maximum depth to which pile driving may be carried varies from 75 to 100 ft., depending on the nature of the material penetrated. When, therefore, the decision was made to sink the shaft by piling, this procedure was thought to be well within the bounds of engineering possibility.

Vertical sheet-steel piles were used, the intention

*Bituminous editor, *Coal Age*.

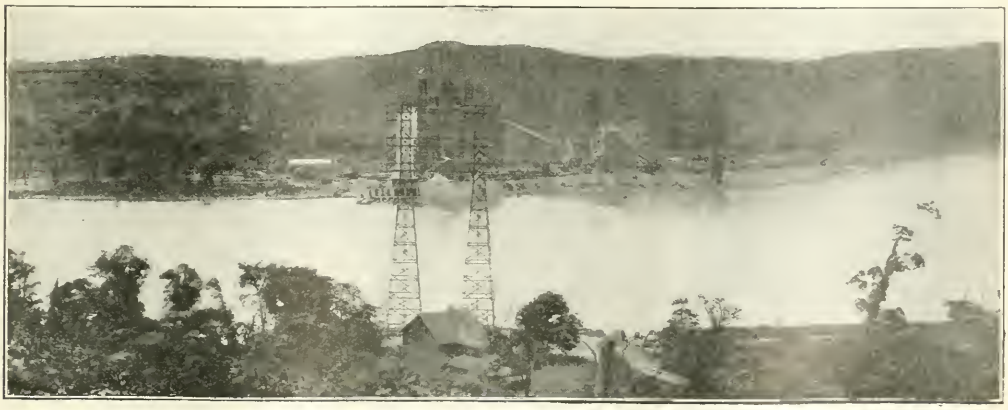


FIG. 1. SPRINGDALE PLANT AND TRANSMISSION TOWERS SEEN FROM LOGANS FERRY SIDE OF RIVER
This gives a good idea of the level area on which the plant is located. In a few years this land will be filled up some 30 ft. higher with ashes from the boiler furnaces, rock from the mine and refuse from the picking tables. The power plant cost $6,000,000

being to drive several courses in order to attain the desired depth. The rectangular area enclosed by the pile line was approximately 25 x 29 ft. Sump and pumping provisions appeared to be ample for the removal of all water that might enter the shaft as excavation progressed. Indeed little trouble was experienced in sinking the shaft by this method until an elevation of 709 ft., or a depth of 35 ft. below the surface, had been reached, but below this level the pumps were entirely unable to cope with the rapid influx of water.

By the time the excavation had reached an elevation of 704 ft., conditions were such that the largest possible pump installation was just able to hold its own. Furthermore the driving of piles had become difficult, for their cutting edges began at this level to strike boulders.

Any further attempt at pile driving would have resulted in the spreading and distortion of the sheets because of the boulders. To overcome the difficulties at hand, the pneumatic or closed-caisson method was resorted to, the work being carried on by the Foundation Co.

As the shaft had been sunk to a depth of 33 ft. by the piling method, the caisson plan had to be modified to meet the conditions encountered. The first step was to refill 5 ft. of the excavation so as to raise the bottom from the point where pumping was found inadequate to an elevation at which all the water entering could be voided. The pump installation was kept intact, temporarily. By referring to Fig. 2 and to the vertical section C-C of the shaft during sinking, an idea may be gained of the conditions that prevailed. The cutting edge of the caisson was placed at the level attained by backfilling, and the oval walls (section D-D) were built up in 5-ft. lengths.

The reinforced-concrete deck shown was built in such a way that, after the completion of the shaft, it could readily be removed by blasting. This is indicated by section A-A. For this purpose 2-in. blasting pipes were set in the concrete at fixed intervals. As the lining walls were built up, the pile braces were removed and the intervening space filled. Upon passing the ground level with the lining-wall construction, the caisson method proper was followed, this procedure being maintained until bedrock was reached.

In this work the Moran type of air lock was employed under an average air pressure of 23 lb. The lining was sunk through 10 ft. of seamy rock to a solid footing. Here it was sealed to the solid with concrete, which was kept under air pressure for a period of three days, after which the air lock, shafting and deck were removed. The water was completely sealed from the shaft as far as bedrock.

The rest of the shaft below this point was then completed by the owners, its total depth being 162 ft. Sections of the hoisting shaft are shown in Fig. 3. This shows the man compartment with its zigzag steel stairway. No pipes or other obstructions of any kind are to be found in this compartment and a safe traveling way for men is thus provided against the time of need.

Simultaneous with shaft sinking on the Springdale side, a double-deck slope was being driven on the Logans

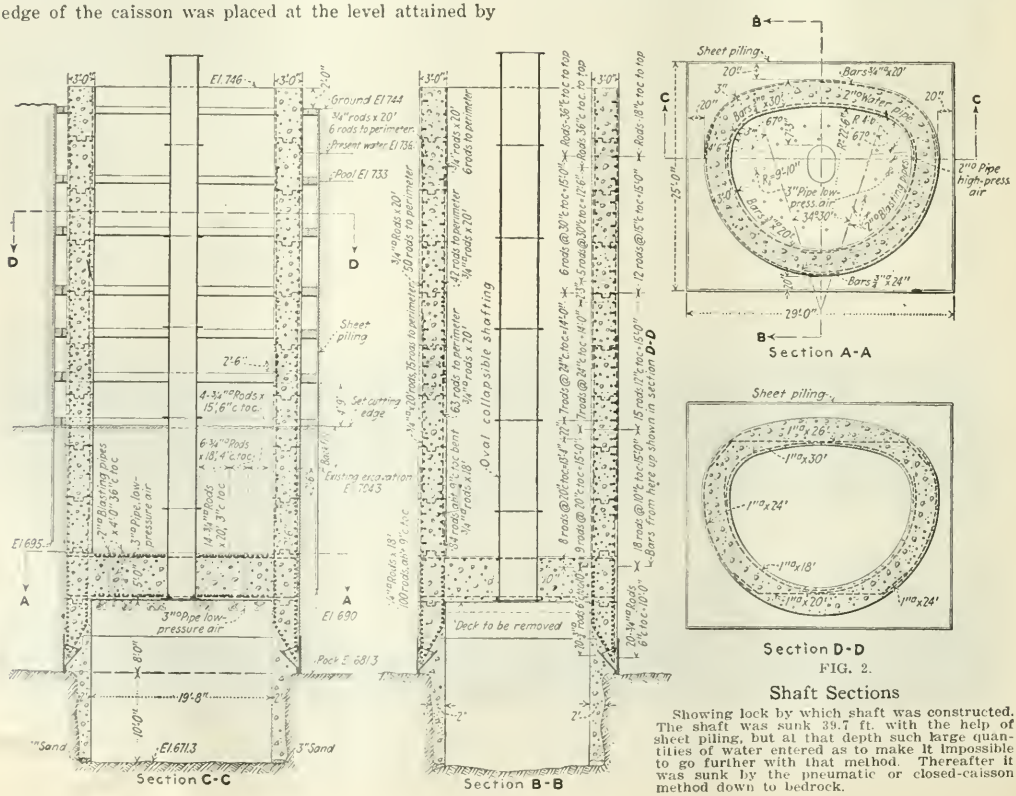


FIG. 2.

Shaft Sections

Showing lock by which shaft was constructed. The shaft was sunk 39.7 ft. with the help of sheet piling, but at that depth such large quantities of water entered as to make it impossible to go further with that method. Thereafter it was sunk by the pneumatic or closed-caisson method down to bedrock.

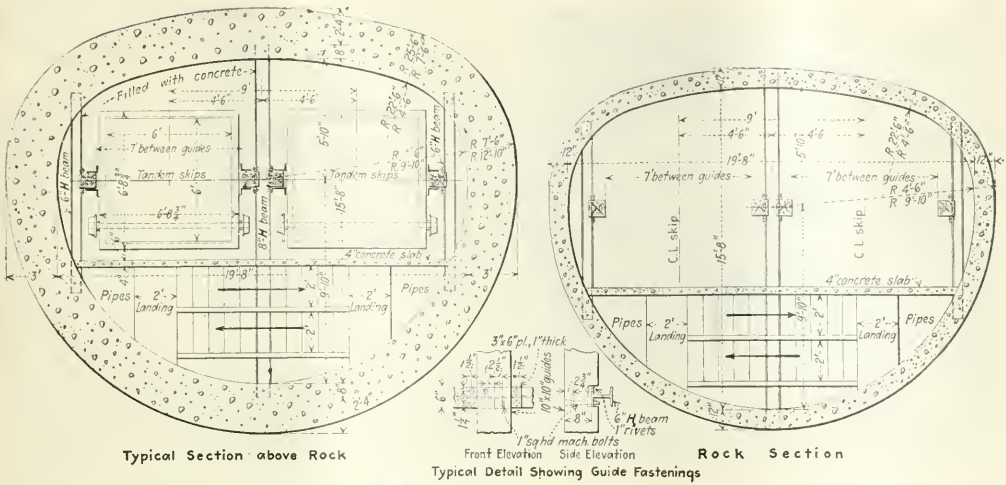


FIG. 3. CROSS-SECTIONS OF MAIN HOISTING SHAFT IN SAND AND IN SOLID ROCK
The shafts are of an unusual shape with a stairway adjacent to the two skip compartments but separated by a 4-in. concrete slab. Pipeways are provided on either side of the stairway compartment

Ferry side. The R. G. Johnson Co., of Pittsburgh, Pa., was the contractor for this work. The considerations which prompted this type of slope are: (1) The construction cost of the double-deck slope is only slightly greater than the cost of a double-width slope; (2) by placing the manway on the upper deck and the haulageway in the lower compartment, safety is assured, whereas in a double-width slope the curtain wall separating the manway from the haulage compartment might be damaged or broken by a wreck, thus imperilling the lives of the men; (3) the arrangement adopted keeps the men away from the haulage road at the slope bottom; (4) all pipe and electric-transmission lines are located in the upper passage, where they are safe from injury that might result from car wrecks.

The upper and lower decks are not of the same length. The former is 542 ft. and the latter 464 ft. long, the grade being 33⅓ per cent. At the lower end of the upper deck a roadway turns to the left and, crossing over the top of the haulage road, connects the slope with the

FIG. 4

Cross-Sections of Airshaft

This shaft is truly circular and 15 ft. in diameter. At the bottom it turns from a circular to a rectangular cross-section. Being round, smooth, unobstructed and of generous proportions, it will pass a large quantity of air with minimum resistance, which indeed will be needed, as seven main entries will be driven out into the field, and of these four will be airways.

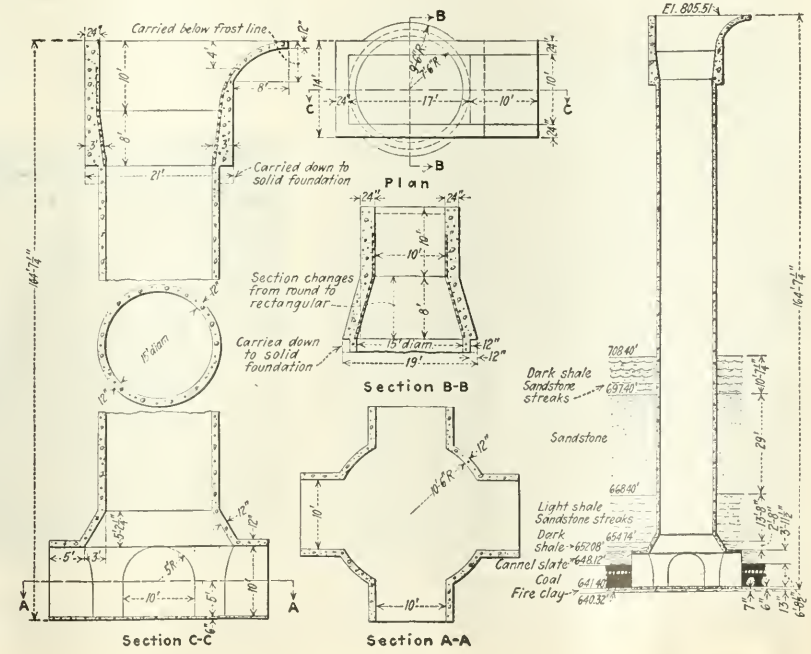


FIG. 5. SLOPE FOR HOISTING AND LOWERING MATERIAL.

This slope is on a 33½-per cent grade. The men also use this slope, traveling on the upper deck. They are thus protected from accident.

manway of the main entries. Sections of the slope, Figs. 10 and 11, afford a very much better idea of the construction than could a detailed description. However, the sequence followed in the roof, floor and wall construction should be of interest. The lower concrete floor was laid first, keeping in advance of the side walls. The walls of the lower compartment in turn were kept ahead of the upper deck floor, which latter was itself followed by the upper arch.

As yet the mine is still in the development stage, entry coal only being produced. The contract awarded the Foundation Co. in connection with the driving of the river tunnel included development work on both sides of the stream necessary to complete a limited haulage system preparatory to the opening up of the mine. To this end the company drove headings aggregating 1,100 ft. in length on the Springdale side and 5,200 ft. in length on the Logans Ferry side. These distances include main entries and branches. When the tunnel was completed the mine was producing approximately 350 tons of entry coal daily. Today, seven months after the tunnel was finished, the output has increased to 800 tons. The production curve is rising rapidly, even though rooms are not being driven.

The proposed layout of the mine involves many interesting details. Seven main entries will extend into the field. Their dimensions will be 11 x 7 ft., the latter being the average height of the coal. One of these entries is the manway, while two others are the loaded and empty haulageways. The remaining four are air courses. The loaded and empty haulageways are continuations of the river tunnel headings. The main entries are on the butt, extend east and west, and continue until they reach a point approximately 900 ft. from the slope bottom, where four of them turn south into the main coal body, thus becoming face entries.

All main entries will be protected by 200-ft. pillars on either side. Other face entries will be turned off at intervals of approximately 800 ft. Pairs of butt entries at intervals of 300 ft. will be driven off the face entries. The development near the slope bottom will be protected by a 250-ft. pillar on the north and a 300-ft. pillar on the south. The manway adjoins and lies north of the loaded track. Provisions will be made to keep the men off the haulage roads as much as possible. Where it becomes necessary for the men to cross the haulage roads, crossover bridges will be erected. All main haulage track will be laid with 60-lb. rail and the butts will be equipped with 40-lb. rail.

The coal bed dips to the northward and advantage will be taken of this fact in solving the problem of underground drainage. As the main body of coal lies southeast of the slope bottom, part of the limited area to the north of it will be arranged as a sump for water storage. It is believed that most of the mine water will run down the dip to the sump prepared for its reception. The sump will comprise two face entries with as many butt rooms as may be required to accommodate the water. Only one central pumping station will be required in this mine, but auxiliary pumps will be necessary.

The system to be followed in room driving has not been definitely decided. However, the company contemplates using the advance system of pillar robbing, relying on the unusually good roof to aid it in maintaining its pillar line. The overlying sandstone is only a few feet above the roof and possesses a good vertical cleavage running northeast and southwest. By amply protecting the haulageways and driving rooms in the respective panels in one direction only, it is hoped that a well-defined gob line can be obtained when the pillars are being drawn, which will, of course, parallel the line of cleavage of the overlying sandstone. This system has met with success in a nearby mine.

Ultimate haulage arrangements will permit of an uninterrupted flow of one-way mine-car traffic. Loaded trips will cross under the river in the north heading and, on passing to the west of the shaft-bottom, will be switched into the south entry and backed into either one of two loaded-car storage tracks. These tracks are on a slight downgrade toward the shaft. The loaded cars after passing through a rotary dump will be returned empty through the south river tunnel to the Logans Ferry side of the river. A third entry is contemplated on the Springdale side; it will be placed to the south of the empty track, to which it will be connected by roadways, permitting a motor to switch from one passage

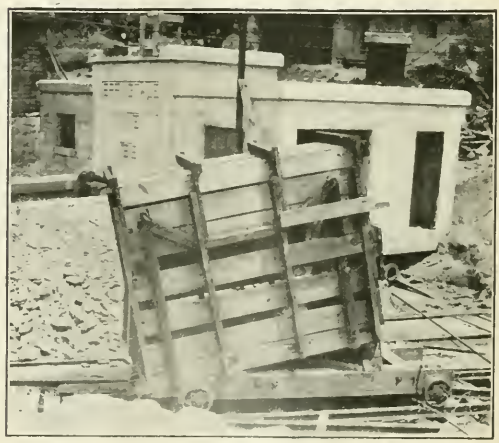


FIG. 6. ANOTHER VIEW OF THE SLOPE WITH ANIMAL CAR IN FOREGROUND.

To lower mules down into the mine while the tunnels were under construction it was found best to use a special car which would not tilt them too much out of the perpendicular.

FIG. 7
Slope Head During Construction

Note the temporary tipple in the right rearground and the slope head on the right in the foreground. A fenced-in transformer station may be seen on the left.

to the other without interfering with traffic in the main entries. Locomotives will thus travel from the rear end of a trip of loads on the west of the rotary dump to the head of a trip of outgoing empties on the east of the rotary dump.

At the present time, however, with a limited daily output, only the south heading of the river tunnel is used for haulage. The incoming loads when at a point about 400 ft. east of the shaft bottom switch through a shoofly to the north entry. At a place several hundred feet west of the bottom the trip swings back into the loaded storage tracks occupying the south entry. The motor then returns and picks up a trip of empties that have accumulated on the empty side of the shaft bottom.

The mine cars now in use are of the 100-cu.ft. or 3½-ton solid body type. They have a steel top and wood bottom and are fitted with swivel couplings. This coupling, together with the car haul and control, permits these cars to be dumped while coupled together. A double pneumatic car haul is designed to move a trip through a distance equal to two car lengths after each operation of the rotary dump. This machine is now adjusted to move a trip one car length at a time, as only one loaded car is being discharged at each operation of the dump.

The cars are engaged by two "duck-hook" carriages attached to the piston rods of air cylinders, one being placed at each end of the rotary dump and below the track level. The hooks, which travel in steel guides, engage lugs placed on the bottoms of the cars. The double pneumatic piston arrangement permits each trip to be fed completely through the dump to the empty track. The cylinders are so connected mechanically as to make the pulling stroke of each the return stroke of the other, so that compressed air will be used only for the direct pull necessary to move the cars. This car haul was designed to handle a trip of eighty loaded cars on a grade of 0.75 per cent in favor of the loads. With this grade the entire trip may be started from rest at each operation and in 10 seconds automatically moved ahead two car lengths, thus spotting two loaded cars in the dump.

As was mentioned before, the cars are discharged without uncoupling. An automatic car-control device governs the movement of the cars in the dump and also that of the approaching trip. This is accomplished by means of automatically-operated shoes that arrest the movement of the two nearest cars on each side of the rotary dump. After each operation of the dump the shoes drop below the rail under the weight of the cars which pass over them, and are elevated and held secure after the car haul has reached the end of its travel. The car haul and control are mechanically connected, so that the former in conjunction with the rotary dump regulates the latter.

The dump rotates in a counter-clockwise direction. It is 8 ft. in diameter and will discharge 150 cars per hour. The revolution of the cage is at all times under

FIG. 8. LOOKING DOWN THE HAULAGE SLOPE
Almost 12 ft. wide and 9 ft. 6 in. high to the springing line, this slope furnishes ample room and headway for hoisting purposes.

the direct control of the operator and he may increase or decrease the speed of dumping. The actual time necessary to discharge the loads and return the empties to an upright position is never more than 15 seconds.

While being discharged the cars are held in place by angles engaging the projecting car axles. The supporting wheels have adjustable boxes which are provided with roller bearings. These wheels can be so adjusted that the alignment of the revolving cage can be accurately and easily maintained. This arrangement also assures an even distribution of the weight. The operating mechanism consists of a gear train giving the desired speed reduction between the motor and the cage. A flywheel attachment on the secondary drive shaft reduces the variation of the applied power to approximately 10 per cent. Rotation is transmitted from the gear train to the wheel path on the cage through friction wheels. After each operation an automatically cushioned stop at the proper point arrests, with a minimum impact, the rotation of the cage, simultaneously releasing the friction-wheel clutches. The rotary dump is actuated by a 10-hp. General Electric induction motor.

Coal is hoisted from the shaft bottom to the surface in Lepley tandem skips, furnished by the Connellsville Manufacturing & Mine Supply Co. Each skip compartment has a capacity of four and one-half tons. The purpose of using a tandem skip is to keep separate the contents of the two cars dumped at one operation.

To enable two cars to be dumped simultaneously, keeping their contents separate, and to be discharged into the upper and lower compartments of the tandem skip at one operation, requires a rather complicated pocket, chute and gate construction. In actual operation, however, this is really quite simple. No attempt will be made to give a detailed description of the construction here, but only a general one covering the path taken by the coal after leaving the dump.

Section B-B, p. 1007, shows the center line of the rotary dump to be askew to the center line of the shaft compartment. This was done for mechanical reasons, involving chute and pocket locations for the upper and

FIG. 9. WAY PROVIDED FOR MINE EMPLOYEES
A well-lighted easily traversed slope with easy stairway. Steel nosing strips on each stair reflect the light and prevent stumbling. They also protect the concrete.

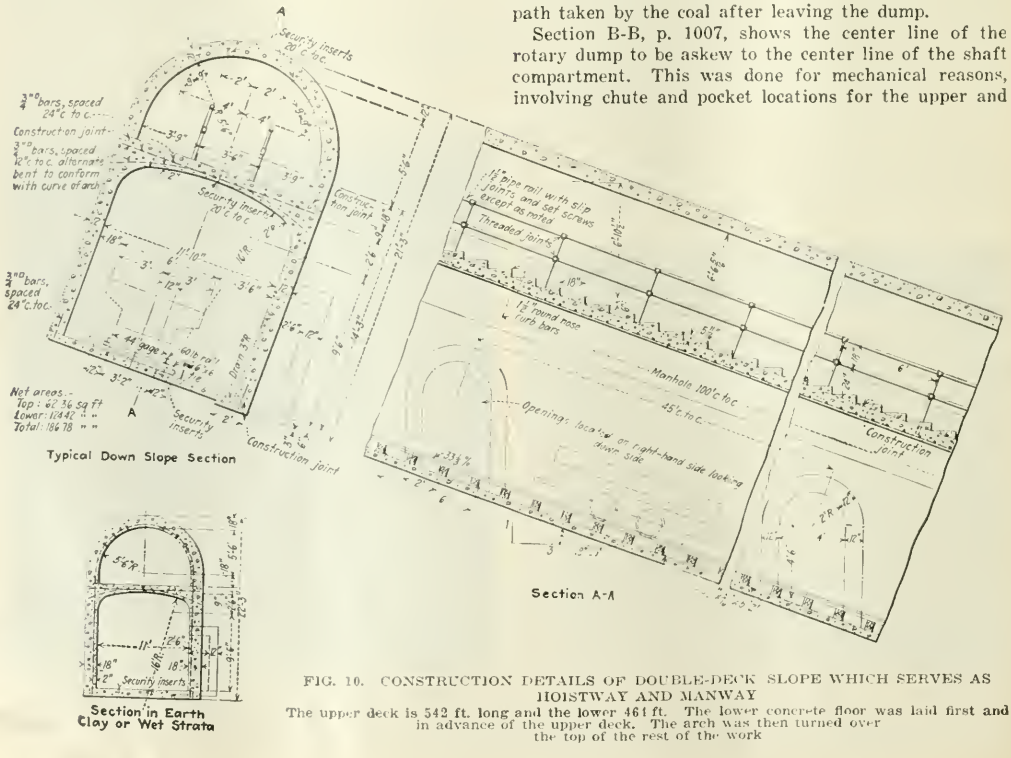

Typical Down Slope Section
Section A-A
Section in Earth Clay or Wet Strata
Construction joint
Manhole 100 c. to c.
Opening; location on right-hand side looking down slope
Threaded joints
Net areas.-
Top: 62.36 sq. ft
Lower: 16.42 " "
Total: 186.78 " "

FIG. 10. CONSTRUCTION DETAILS OF DOUBLE-DECK SLOPE WHICH SERVES AS HOISTWAY AND MANWAY
The upper deck is 542 ft. long and the lower 461 ft. The lower concrete floor was laid first and in advance of the upper deck. The arch was then turned over the top of the rest of the work

lower compartments of the tandem skips. The center line of the shaft compartments extends east and west. Thus the compartment on the right in this section may be designated as the east and the one on the left as the west compartment. The cars on the rotary dump may be designated in a similar manner. In section F-F, which is taken across the shaft looking from east to west, the car section shown is that of the east car. As far as this section is concerned it might be clearer to designate the cars as "near" and "far," respectively. The east, or near, car may be dumped into either one of the upper skip compartments only. The west, or far, car may be discharged only into one or the other of the lower skip compartments, depending upon which is being loaded. This limitation is invariable and must be kept carefully in mind.

Movement of the coal into the upper compartment of the skip will be followed first. Referring to section F-F, the coal upon leaving the east car passes down an inclined chute and is discharged directly to the east or west upper skip compartment by the manipulation of a wing gate. In this section this gate is designated as the upper one and is pivoted at the bottom. If the wing gate is swung away from the reader, a bypass leading to the west upper compartment is closed. This allows the coal to proceed into the east bypass pocket, which remains open.

If the wing gate is swung toward the reader, the east bypass is closed, and the coal moves through the west bypass pocket to the west upper compartment. On leaving the car the coal falls upon a dumping shield that extends down to the top of the concrete chute leading to the pockets. This protects the coal from any great fall when being dumped. The upper chute proper, starting from the top, narrows down from one car length to a double pocket width at its junction with the wing gate. The chutes and pockets leading to the upper skip compartments are naturally on a higher level than those leading to the lower compartments.

Proceeding to the west car and the lower skip compartments and referring to section B-B, it will be seen that the coal on leaving the car moves down a chute toward the east. It descends beneath the upper chute and pockets to a wing gate, where it swerves north toward the lower skip compartments. Here it enters either the east or west pocket, depending upon which way the wing gate is set. Referring to section F-F, if the lower wing gate lies in the plane of the section, it

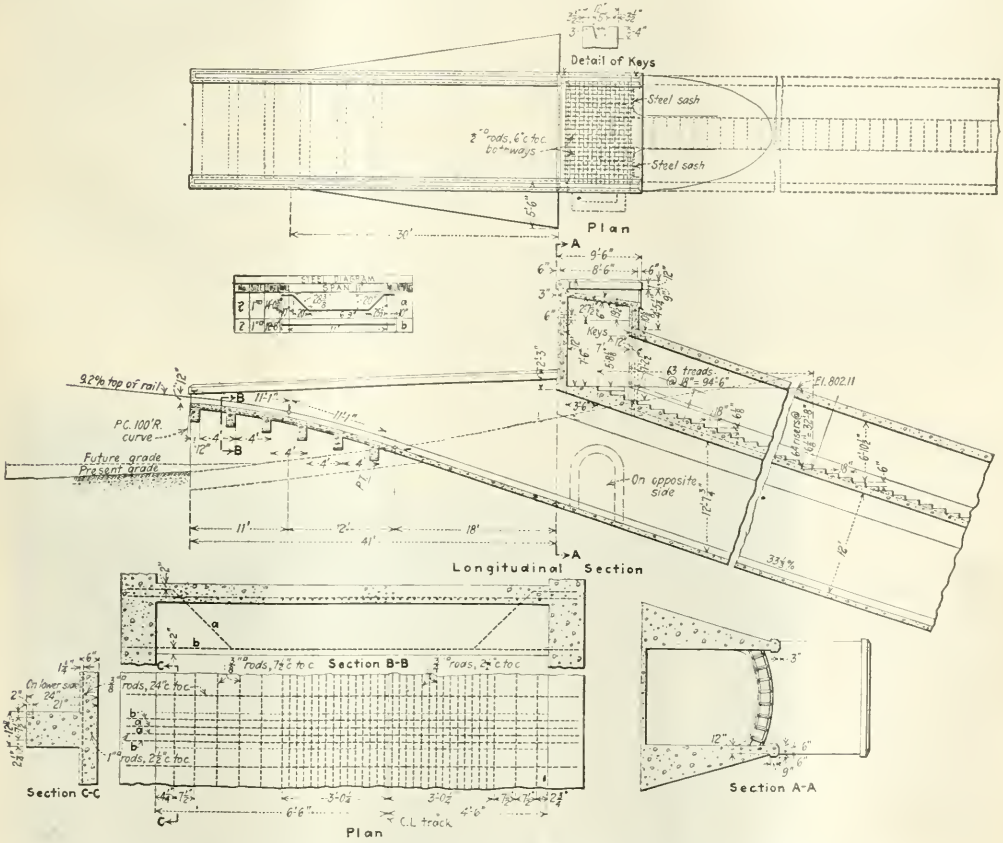


FIG. 11. WHERE DOUBLE-DECK SLOPE EMERGES FROM THE GROUND

Note the care with which the top of the slope is curved off so as to prevent a locking of bumpers and the detracking of cars. The tracks on the slope are completely removed from the manway, so that the dangers too often experienced are entirely avoided. The men do not cross the slope at grade at any point along its course

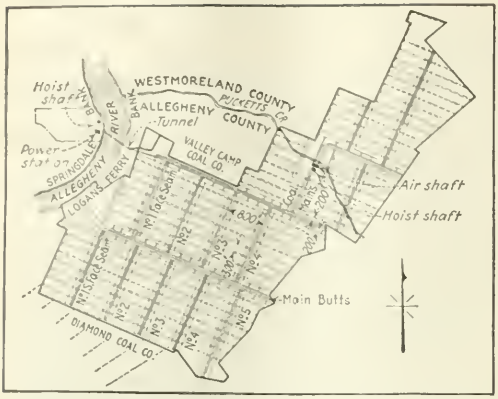


FIG. 12. PROPOSED LAYOUT OF SPRINGDALE MINE
An area of 4,000 acres of Thick Freeport coal will be worked from the Springdale shaft. The advance system of pillar drawing will probably be used. Care will be taken to keep a straight pillar line so that the weight on the ends of the pillars will be evenly distributed.

closes the east pocket and leaves open the west one. The coal therefore proceeds to this compartment. If the lower gate is swung on its hinges away from the reader, it covers the west bypass pocket, and the coal moves toward the observer, swerves to the right and enters the lower east skip compartment.

At present only the lower skip compartments are being loaded. As stated previously, the car haul is adjusted to feed the trip forward one car length for each rotation of the dump, so that each dumping operation turns over a loaded car on the west (the contents of which goes to a lower skip compartment) and an empty car on the east. On the tipple only one coal-handling unit has been installed. This receives the contents of the lower skip compartments. When the mine output increases to a point where the single unit becomes inadequate, another will be installed on the tipple. Space has been provided for the additional unit in the present tipple structure.

As shown in Fig. 14, the chute and pocket construction proper is of reinforced concrete lined with ⅜-in. high-carbon steel wearing plates. Countersunk flat screwhead bolts are used for the attachment of chute hung plates. In general through bolts are used. When this arrangement is not feasible cast-iron inserts are embedded in the concrete for the reception of bolts.

All gates are operated by air cylinders and are counterweighted. The wing gates are built double of ⅜-in. steel plate, reinforced by angle irons and mounted on heavy shafts and bearings. They are controlled by the dump operator by means of four-way valves. Automatic skiploading gates are installed at the mouths of the four pockets. These are provided in order to prevent spillage into the sump.

When a skip lands, the gates leading to it open, allowing the coal to discharge into it. The gates are of the hinged type, so that when open they form a chute from the pocket to the skip. They operate in sliding frames which control the movement of the gates when opening and closing. When in the closed position the gates are locked so that no pressure against them can cause them to open. The air cylinders are operated automatically by the skip, which thus opens the gates when landing at the bottom and closes them as soon as the skip departs on its upward journey. They are arranged at the present time so that only the lower gates open and close. The shaft bottom equipment was furnished by the Car Dumper Equipment Co., of Chicago.

Four men are required at the shaft bottom. The rotary-dump operator has complete control of the discharge of coal from the cars as well as of the manipulation of the wing gates to alternate the coal between the two skips. The rock goes through the same underground loading process as does the coal. One man removes the car checks, dropping them into a tube that discharges them into a check taker on the allotted skip

FIG. 13

Supply Yard

This yard is one of the best in the country for the services it is designed to supply. It is amply drained and covered with granulated slag, making a pleasant footing at all times. The first and third track from the left are for railroad cars and the second, which lies between them, is a mine-gage industrial track. That on the extreme right will be used for the storage of damaged cars preparatory to their removal to the shop.

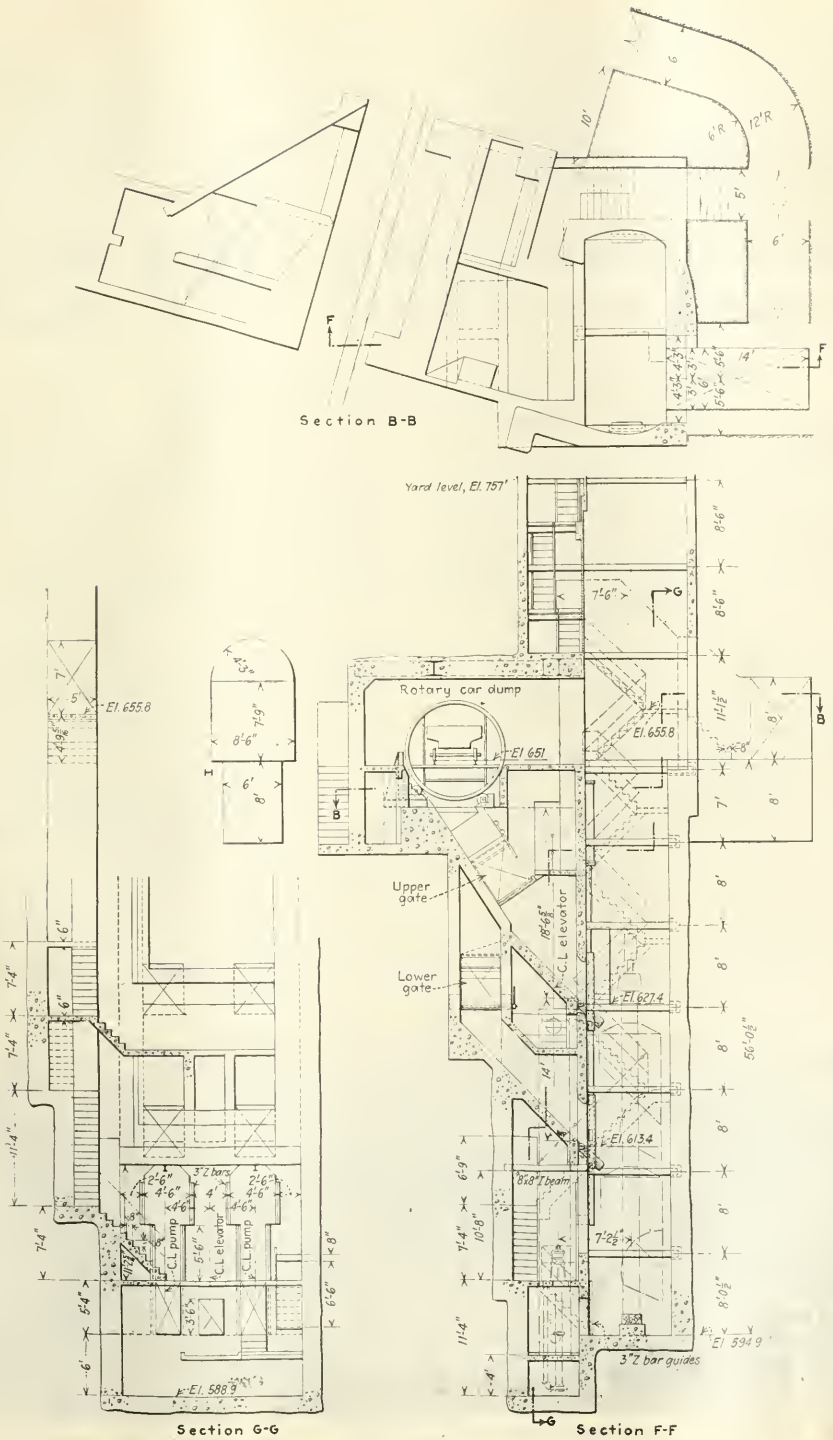


FIG. 14. SECTIONS OF SHAFT BOTTOM SHOWING ROTARY CAR DUMP AND SKIP-LOADING PROVISIONS

and from which they are automatically discharged into a tube on the tipple which delivers the check direct to the weigh house. One man brakes and in general takes care of the trips, and the fourth greases the cars.

Section F-F, p. 1007, shows that the skip-compartment bottom is elevated 6 ft. above the sump bottom, shown on the left. Water and coal spillage reach the elevated bottom from which the water drains into the sump through an intervening wooden grating. The water is pumped from the shaft to the pumping station on the Springdale side of the river by two vertical electrically-driven centrifugal pumps. Periodically the spillage is shovelled from the elevated shaft bottom into an electrically operated vertical bucket elevator, which deposits it into one of the coal chutes above the loading gates of the skip.

By Means of Bulkheads and the Grouting of Crevices Two Haulageways Are Driven Under the Allegheny

Tunnel Fills with Water Twice During Driving — Air Used to Drive It Out—Tunnels Will Not Be Lined—Bulkheads Left in Case of Future Trouble

IN CHOOSING the site for a large central station the many conditions necessary for successful operation must be kept carefully in mind. These include a good water supply, a ready source of fuel and good ash-dumping facilities. When the Springdale power project first took form the West Penn Power Co., with its central station and the Allegheny-Pittsburgh Coal Co., with its mine, were jointly confronted with the problem of connecting the two operations.

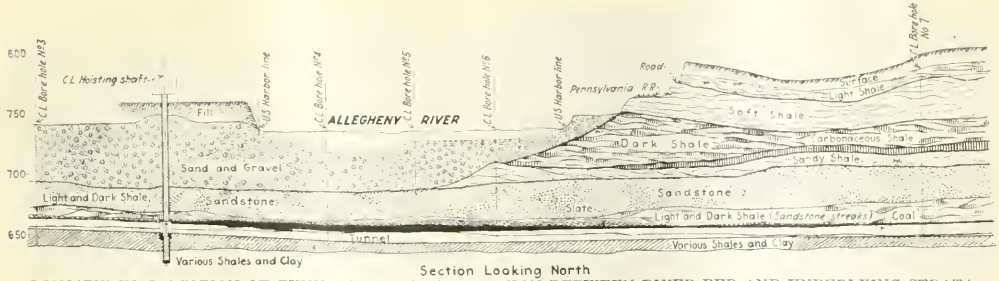
The latter company had acquired 4,000 acres of the 7-ft. Thick Freeport bed on the east side of the Allegheny River at Logans Ferry. This acreage contained approximately 40,000,000 tons of coal. On the side of the river where the mine is located the topography is unsuited to the location of a central station. The country is hilly, little space is available for the dumping of ashes and what level area is to be found would be required for mine refuse. Furthermore the Conemaugh Division of the Pennsylvania R.R. is already located on that bank of the river, occupying much of the land suited to the erection of a plant. The lack of space seriously hampers the operation of a big power plant because of the large water-cooling requirements of such an installation. On the Springdale side of the river, however, conditions are almost ideal. Here the river has built a large flood plain of alluvium. On this side as on the other, a branch of the Conemaugh Division of the Pennsylvania R.R. parallels the river, but at a distance of several hundred feet from its banks. Yet, as is natural to a flood plain, the land is low and in many places swampy.

Above Springdale the river runs south, but at this point it makes a pronounced turn to the west. The site chosen for the central station lies on the lower side of the point formed by the river bend. Here the water is comparatively free from suspended silt, which in the spring is accompanied by sand and débris. The current above Springdale in moving southward is directed, upon reaching the turn, away from the power plant, carrying with it most of the suspended matter.

The mine and central-station locations having been chosen, means of transporting coal from one to the other was sought. Bridging the river between the two plants, in addition to being prohibitively expensive, would complicate handling of the coal. Another expedient would have been to construct an aerial tramway. Such an installation might to a certain extent have met the needs of the present, but would have been entirely inadequate for future needs when the central station reached its ultimate capacity of 300,000 kw., at which time the consumption of fuel would approach 4,000 tons daily. There remained only one other plan, that of driving haulageways under the river.

Before driving these tunnels an investigation was

A. M. LYNN, PRESIDENT OF THE WEST PENN POWER CO., FIRING SHOT THAT OPENED SPRINGDALE TUNNEL

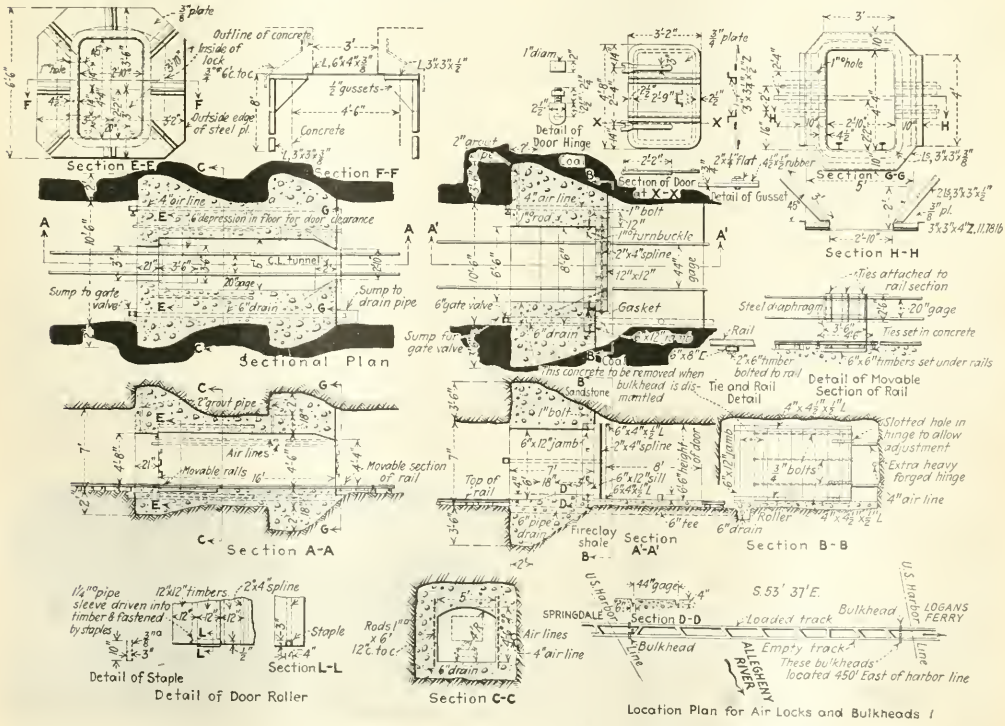


LONGITUDINAL SECTION OF TUNNELS SHOWING RELATION BETWEEN RIVER BED AND UNDERLYING STRATA

It was hoped that as there was 65 ft. of cover in midstream the tunnel could be driven like any ordinary heading, the coal recovered paying a large part, if not all, the costs of construction. Not so, however; crevices in the roof admitted quantities of water which the pumps could hardly handle. For this reason bulkheads were built at either end of the tunnel, and grout under heavy pressure was used to block the inflow of water.

made of those that had been driven under the Ohio River at Steubenville, Ohio, as well as of a pair of tunnels constructed by the H. C. Frick Coke Co. through the Pittsburgh coal bed under the Youghiogheny River near Connellsville. No unusual construction difficulties were encountered in driving either of these roadways. It was found, however, that experience derived from tunnels driven in other seams under other rivers was of little value. Because of its experience and proven ability to perform this class of work, the Foundation Co. was engaged to drive these tunnels.

Preliminary to tunneling, the depth and character of the strata to be penetrated on each side of the river were ascertained by diamond drilling, and a barge outfit was employed to put down three holes through the bed of the stream. The Pennsylvania Drilling Co., of Pittsburgh, Pa., had charge of the diamond drilling. Luckily the coal measure lies at sufficient depth to provide ample support for the roofs of the tunnels. Furthermore, the overlying strata are of such a nature as to render it unnecessary to line the tunnel with concrete. A stratigraphic section through one of the tunnels is shown above. For the most part the two passages split the coal bed, leaving the upper bench of



DETAILS OF BULKHEADS USED TO PROTECT TUNNELS UNDER ALLEGHENY RIVER

Though it was not necessary to construct the tunnels under pressure, air had to be used twice during their driving to force the water back in the crevices. The bulkheads will remain in place for use should a quantity of water enter beyond the power of the pumps to handle, thus threatening the drowning out of the mine.

INDUCTION MOTOR USED AS SPARE TO DRIVE FAN

A 100-hp. General Electric motor will be used to drive the 300,000-cu.ft. Lcpley fan should anything happen to the other. At present, as not so much air is required, the fan is driven by a direct-connected 50-hp. motor of the same make. The fan now delivers 154,000 cu.ft. of air per minute at 4 in. water gage, the fan running at 100 r.p.m.

the coal in the roof. In addition, an overlying stratum of slate and certain underlying strata of shales and fireclay were pierced in order to provide the required height of 7 ft. Faults and rolls were encountered in the coal measure, causing much of the tunnel to be driven in rock as it was necessary to maintain uniform grade irrespective of the location of the coal. The sections penetrated were extremely heterogeneous.

On the Springdale side the tunnels do not follow the coal bed but go under it, the coal acting as a roof. A sandstone stratum 28 ft. in thickness forms the chief support for the roof and, together with the shales and clays, excludes the river water, though, of course, some water enters, by percolation or through small local fractures. There were several places where the standstone was extremely porous.

The coal-hoisting shaft had been sunk on the Springdale side, the slope and airshaft completed on the Logans Ferry side, and the main haulage entries were advanced in the coal measure to within 400 ft. of the east bank of the river before a start was made on the tunnels or the work preliminary to their driving. A temporary cage and a hoist were installed at the shaft and tracks laid on the slope, the loads being raised by temporary hoists at each place. In order to expedite the work the company decided that the tunnels should be driven from both sides of the river.

Work was started eastward from the foot of the hoisting shaft on the power station property on Oct. 1, 1920, and westward from the mine side of the river on Nov. 8 of the same year. Actual tunneling under the west side of the river started on Dec. 10, and under the east side on Jan. 15, 1921. Both tunnels were connected near the middle of the river on April 27, 1921.

The tunnels are rectangular in cross-section, 10 ft. 6 in. wide and 7 ft. high. The roof is generally flat except at occasional points where a weak spot, causing a fall, has created a natural arch. The tunnels run parallel and 50 ft. apart from center to center with crosscuts at approximately 100-ft. intervals. These were driven to aid ventilation at the face and to facilitate the handling of cars during the tunnel driving. Starting at the Springdale shaft, the first 600 ft. of the tunnels extends downgrade at an average inclination of 1½ per cent, then level for 1,000 ft., after which the remaining distance rises on a 1-per cent grade into the mine at Logans Ferry. The greatest depth below full pool is about 90 ft.

On account of the small size of the tunnels, practically no bench was carried, the whole section being advanced with a straight face. Jackhamers were used for drilling, the component of the hole depth along the axes of the tunnels averaging 6 ft. Because of the diversity of the strata at the face, no fixed method of placing the shots could be maintained. Where sufficient coal was being penetrated it was undercut by a Sullivan puncher. This machine worked alternately between the two tunnels. Undercutting eliminated much smoke, saved explosives and reduced the concussion due to shooting. It also speeded up the work. Whenever conditions permitted, drilling and undercutting were carried on simultaneously.

The muck was loaded into the standard 3½-ton mine cars and hauled to the shaft or slope by mules or horses, nine of which were stabled underground. The north tunnel at each end was used for empties and the south tunnel for loads. Thus one-way haulage was maintained, and ample storage room was afforded for both empties and loads on their respective haulageways beyond the crosscut nearest to the face. Consequently the haul from the face to the clear never exceeded 150 ft.

Tunnel Ventilation Aided by Canvas Pipes

Ventilation was provided by force fans placed on the surface at the slope and shaft mouths. As previously mentioned, the crosscuts were driven primarily to facilitate ventilation. One tunnel was used as an intake and the other as a return, all crosscuts except the last one driven being closed. As the tunnels advanced from the last crosscut brattice cloth was hung from the roof to the floor, conducting the air from the crosscut to the face and back again to the surface. As a further assistance to ventilation, Buffalo blowers and 10-in. canvas pipes were used to force air direct to the face. These quickly cleared away smoke after shooting.

When work first started, water was voided by several air-driven Gould and Cameron pumps; Worthington, Ingersoll-Rand, Sullivan and Hall compressors delivered compressed air at 80-lb. pressure to these machines as well as to the rock drills and the coal punchers. After the driving had progressed to a point where additional pumping facilities were required, chambers were built on both sides of the river and equipped with Harris 1,400-gallon electrically-driven centrifugal pumps. Many water-bearing crevices were encountered; at times the influx of water was sufficient to flood the tunnels, seriously interfering with the progress of the work.

Although large quantities of water were frequently met with, it was not deemed necessary to line the tun-

MINE CAR USED BY ALLEGHENY PITTSBURGH COAL CO.

A car of unusual type, made with protruding axles by which it will be held rigidly while in the rotary dump. One side of the car drops down, thereby making it easier for the miner to load coal at the face.

Domestic Coal Chute

This trestle, which is handy to the double-deck slope on the Logans Ferry side, a half mile distant, delivers coal to trucksters. The combination of steel derrick and steel bent is interesting.

nels with concrete, the water being kept back by grouting. Two diamond drills kept test holes well in advance of the faces. Wherever deep holes had to be driven for grouting, these machines were used for that purpose. It was necessary to install grouting machines and conduct grouting operations almost continuously throughout the progress of the tunnels.

Upon reaching a crevice that produced any undue quantity of water, holes 20 to 30 ft. long were drilled in roof and ribs in advance of the work. Cement was then forced into the strata under a pressure of from 80 to 160 lb. per square inch, depending upon the conditions. Some of the crevices encountered required as many as 15 to 20 holes drilled in the roof into which from 400 to 600 bags of cement were forced before the water was finally shut off. Only large streams of water were sealed off, as the grouting work necessarily interfered with progress.

However, grouting operations have been carried on continuously since the tunnels were connected and highly favorable results have been obtained. One large crevice encountered in the second crosscut from the east side of the river, 250 ft. from the harbor line, could not be sealed off by this method alone on account of a pronounced fault in the coal measure and the overlying strata. This crevice has since been entirely closed by sealing the crosscut with mass concrete and by subsequent grouting of the crevice in the usual manner.

The tunnels will have to be reasonably dry to permit of the satisfactory operation of the electric haulage locomotives as on the fitness of this part of the roadway the success of the mine must depend, for all the coal must be hauled through the tunnels to the shaft bottom. In places where bad roof was encountered it was found necessary to use 10 x 10-in. oak caps and legs, placed on 2- to 4-ft. centers. In this part of the work blasting had to be light in order to avoid shattering the roof.

In driving the north tunnel an abandoned 8-in. salt well was encountered about 150 ft. from the west bank of the river. This caused a sudden inrush of water. The upper and lower sections of the hole were finally closed by jacking wooden plugs into both the openings. This work was supplemented by drilling holes and grouting.

Emergency concrete bulkheads were built at the harbor lines in each tunnel on both sides of the river. These are provided with doors built of 12 x 12-in. oak supported on rollers at the bottom, enabling them to be closed quickly in case of flood. It was necessary to close them twice during the driving of the tunnels. In both instances compressed air was used to blow out the water. These doors will remain as part of the permanent installation.

Thirteen Men in Each Working Place

Driving operations were carried on in two 10-hour shifts. At each of the four working faces a crew of thirteen men was maintained. This was composed of one shift boss, two drillers, two drillers' helpers, six muckers, one mule driver and one blaster. Edison storage battery safety lamps were used in the work. Because of the possibility that gas would be emitted by the coal seam, permissible dynamites furnished by the Aetna Explosives Co., were employed in blasting. Working places were examined daily by fire bosses and examinations also were made both before and after shooting the faces.

Due credit should be given to the engineers for the accuracy maintained in driving the tunnels, which met exactly on the lines predetermined. The results attained are worthy of commendation inasmuch as the engineers had to work from a 7-ft. baseline. As with the tunnel lines, no change in the grades as originally planned was necessary. During the entire operation no serious accident occurred. The work was brought to a successful completion when on April 27, 1921, both headings were simultaneously connected by a blast fired at the surface by A. M. Lynn, president of the West Penn Power Co.

Logans Ferry Has Front Lawns, Street Lights, Open Fires, Lined Flues, Roomy Cellars and Other Conveniences

Location on Plateau Overlooking Allegheny—Chimneys Set on Base Below Cellar Floor Will Accommodate Laundry Stove—Cellar Serves for Storage, Laundry and Washroom—Main Streets to Be Paved

THROUGHOUT the construction of the Springdale power station of the West Penn Power Co., development was simultaneously prosecuted on the Springdale mine of the Allegheny Pittsburgh Coal Co. When preliminary operations had been brought to the stage where actual development began, more miners were required. It devolved upon the company, therefore, to provide suitable quarters for its employees. The labor camp thus gave way to a community, and the village of Logans Ferry sprang into existence. The laying out and building of this village began in the autumn of 1920.

This community is readily accessible. Located across the Allegheny River from the central power station and just north of the mine, it lies within a short distance of the towns of Parnassus and New Kensington, both of which are fairly populous.

On the river bank the Alleghany Valley division of the Pennsylvania R.R. is within a stone's throw of the village of Logans Ferry. This furnishes excellent transportation facilities, as fifteen passenger trains en route to and from Pittsburgh make daily stops at this point. The Pittsburgh-New Kensington macadamized county road passes the village, paralleling the railroad. A few miles to the north and east this highway connects with a network of other good roads leading in all directions.

Village Site Has Been Carefully Chosen

The location of the village is no more remarkable than the natural advantages of its site. A road branching from the county highway runs east a short distance past the mine plant, and then rises by a sharp reverse bend to the southern end of a 22-acre plateau upon which the village has been built. A made-to-order site could possess no better attributes than does this one. If one imagines a conical hill with a large, somewhat elongated base to be truncated approximately 100 ft. from its bottom, a good conception of the topography of the village may be obtained. The ground on which the town is built required practically no leveling.

The west slope, bordering on the river, as well as that on the southern side, is steep. It is covered with a growth of young timber that shelters the village from the winds which sweep the valley in the winter time. If this timber were cut down an unobstructed view of the river could be had for miles. This would show not only the central power station with its transmission lines and towers, but also scattered industrial plants and factories. These are, however, well hidden; and the view in another direction discloses distant rolling hills, dotted by a few small towns and variegated by farm lands.

Although the village adjoins the mine plant it is completely isolated from it by reason of its high elevation and the step-off slope. Tablelands of this medium elevation and regular shape are rare in the hilly sections of Pennsylvania and especially in regions adjacent to mines. The advantages of the townsite will have an important bearing on problems involving the procurement and retention of efficient workers. Work will be steady as the demand of the central power station for coal will be constant. The mine workers will be able to forget about the mine during their free hours and will be confronted with beautiful scenery rather than a view of the waste land, unsightly buildings and desolation not infrequently found about mines. The resulting psychological effect ought to manifest itself in greater contentment and efficiency.

Elongated north and south, parallel with the river, a spur extends outward from the village on its eastern end. The land falls away gently to the east of the present site, so that plenty of room is available for future expansion. The village is laid out in regular blocks. Four main streets extend in the direction of the town's greatest linear dimension, and two side streets cross these at right angles. The houses are built upon lots with 60 x 100 ft. as approximate dimensions. They are not placed on the sidewalk line, but are set back 10 or 15 ft. from it, leaving room for a front lawn and sidewalks.

Ninety-nine houses have thus far been built. These include five general types for miners and two types for foremen and other bosses. No double houses have been built. All the dwellings are electrically lighted. Sundry details affecting the shapes of the houses and porch roofs have been varied, without, however, affecting the interior arrangements of the respective types. No two houses of the same character have been placed in proximity to each other, so that, with the alterations indicated above, one has difficulty in discovering two dwellings having the same floor plan.

Various paint schemes also have been employed to

EIGHT-ROOM FOREMAN'S HOUSE

The finish of this house is in many ways superior to that found in frame houses in the city. It has modern conveniences and hardwood floors.

INTERIOR FLORENCE TYPE OF BUNGALOW

This is a view seen when looking from the dining room through the large doorless archway into the living room, which might be regarded as a sort of reception hall. The rooms are neatly wainscoted and the door is panelled and has lattice lights.

further diversify houses of the same type. Twenty different color combinations have been resorted to. The tints employed include white and various shades of brown, gray, green and yellow. Green, red or gray slate-surfaced asphalt shingles are used for roof covering.

Coal companies are fast forsaking the old stereotyped variety of miners' dwellings with uniform design and color scheme. This trend is undoubtedly beneficial. Diversity in the construction of dwellings exerts a good influence on their occupants. Where some degree of choice is possible each tenant believes that his selection is the best. He accordingly takes pride in his premises and will try to maintain or even improve their appearance in one way or another.

Every house in this village has a cellar under its entire floor area. The 8-in. solid foundation walls are of concrete with four window openings and one doorway, this furnishing the only means of access to the cellar. The basements are 6½ ft. high in the clear, and the tops of the foundations rise approximately 3 ft. above the ground level. Most of the cellars have only a single compartment, but a few contain two. The brick chimneys rest on a concrete base below the level of the cellar floors. One chimney flue extends down into the basement with an opening for a laundry stove.

Two concrete pillars have been built in each basement for the intermediate support of the joist load. The cellar adds much to the roominess of the house. It may serve the purposes of storage for vegetables and other edibles, yet at the same time it may be used as a laundry. The importance of a good cellar under miners' dwellings should never be overlooked. The miner's family will find innumerable uses for it. Where a washhouse, for instance, is not available at the mine, the miner may conveniently use his cellar as a change quarters.

Chimney construction is practically the same in every house, with only slight variation in the arrangements in the different types. Realizing that approximately 90 per cent of all fires in miners' dwellings are the result of defective chimneys, the company decided to minimize the fire risk by good chimney construction. The inner faces of the usual brick construction are lined with a special flue of fireclay tile. Most of the houses are provided with one or two open-grate fireplaces in addition to the usual flues for the accommodation of stoves.

Plaster Board Used on Interior of House

The company first purchased seven houses of the ready-cut six-room Florence type from the government. These were erected during the summer of 1920 to meet the first housing requirements. In this bungalow type 2 x 8 in. joists were used in the floor, 2 x 6 in. joists for the ceiling and roof, and 2 x 4 in. material for studding. The floors are double 1 x 4-in. tongued and grooved flooring boards, being placed upon 1 x 8-in. sheeting, laid diagonally. The outside walls consist of 1-in. sheeting, over which weather boards are laid with paper between.

On the interior of the shelter walls plaster board is nailed to the studding from floor to ceiling, but on the partition walls only the upper portion of the surface is covered by this material. A wainscoting of light matched boards covers the lower portion of the walls of all rooms. The plaster board is covered with a rough mortar and a finishing plaster coat. The exterior color schemes are dignified and pleasing. Thus one of the houses of this type has, say, a light buff body, a medium brown shade for the doors, white trimmings, and a green asphalt-shingle roof. Painting on the interior is drab gray for the wainscoting, natural color for the plaster, and brown trimmings. This type of house, in addition to being well constructed, is spacious and presents a good appearance both inside and out.

Ninety-two houses were built on contract. The superstructure of these dwellings is of practically the same construction as that of the government type. The outside walls, however, are not covered with sheeting, weather boards only being used, with a lining of heavy building paper. The interior is finished with lath and

Row of Bungalows

Ninety-two houses have been built in addition to the seven ready-cut Florence houses. Every house has a cellar under its entire floor area which is 6½ ft. in the clear. The foundations stand about 3 ft. clear of the ground.

wood-pulp plaster troweled to a smooth surface. The floor consists of a single thickness of 1 x 4-in. matched yellow pine.

The five-room type of dwelling is provided with a small room that will constitute the bathroom at a later date when the proposed sewage and water systems are installed. The bedrooms are provided with clothes presses, the dining room has a built-in china cupboard equipped with drawers in the lower half, and the kitchen has a small utensil cupboard. The living room is provided with an open fireplace finished off with a wood mantelpiece.

Three types of four-room houses have been built, one with and the other two without the unequipped bathroom. The superintendent's and foremen's houses are of two-story type containing six or eight rooms with a finished attic. The floors and interior finish are of oak on the lower floor. Hot-air heaters, running water, a bath, and all inside conveniences are provided, including laundry tubs in the basement. The sewage flows to a battery of five septic tanks located some distance away from the houses. The miners' dwellings have outside coal houses and closets of two compartments, there being one closet for every two dwellings. The fecal matter in each case is deposited in a double-battery concrete septic tank. The R. L. Byrum's Sons Co., of Wheeling, W. Va., erected the contract dwellings. The septic tanks were furnished by the Cement Products Co., of Wilmington, N. C.

It is the intention to install a sewage system later. This will be greatly facilitated by the high elevation of the townsite, which even now effects natural drainage that prevents the accumulation of stagnant pools. Waste water thrown out from the houses is at present removed by temporary surface drains, so that little chance is offered for germ breeding. Even without a sewage system this village is a healthy place.

For the present the streets are being surfaced with broken sandstone and other suitable material. The company proposes to pave the main streets, construct sidewalks and improve the layout in general. Poles are found on all streets of the village, carrying electric lines for the dwellings and also for street lighting. The town is well illuminated at night, for in addition to the street lighting system every porch is provided with a suitable light.

Water is supplied by five wells, two of which are equipped with motor-driven deep-well pumps, while three are hand pumped. A small elevated tank is now being used for water storage and a 10,000-gallon elevated storage tank is in course of construction. Street hydrants are located at convenient intervals throughout the village. Later the company intends to bring its water supply from the filtration plant of the central power station across the river. The water will be pumped through a main laid through the river tunnel and thence to the storage tank. For the time being four small chemical fire-fighting tanks on trucks are stationed at different points in the village. Next spring pipe lines for the purpose of protection in the event of fire will be laid as part of the permanent water system.

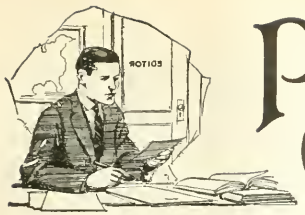
Thus far nothing has been said concerning community life. The village is too young to have had an opportunity to develop in this direction. A three-room temporary school has been started in a frame building. This will meet the needs of the village until the permanent school is erected. The contract has been awarded for a modern brick school house in which provision has been made for eight grades. This building also will include a large assembly room and a gymnasium. There are no churches in the village. Churchgoers need walk only a short distance to reach either of the adjacent towns, where they may attend the divine services of their respective creeds. The big problem at present is to make public improvements in the shape of streets and the like. These must, of necessity, precede the erection of recreation halls and similar edifices.

As a village Logans Ferry is among the best of mining towns; as a community it eventually should rank equally high. This will depend, however, upon the type of people making it their home. Because of the location of the town and its attractiveness and because of the almost certain steady operation of the mine it is believed that only those people will be retained who are good workers and good citizens, capable of putting forth conscientious and effective efforts.

Avoidance of Similarity

With care and judgment the individuality of the houses has been successfully maintained. Adjoining houses are never duplicates either in shape or color. The asphalt shingles may be green, red or gray. The body color and trimmings also are varied. Thus the inherent similarity of design entirely escapes the observer.

The City of Princeton, Ind., is one of a number of municipalities in the United States directly situated over workable coal beds. The problem of extracting the coal with the avoidance of serious damage from surface subsidence has been made the subject of an investigation by the Bureau of Mines.



Problems of Operating Men

Edited by James T. Beard

Zinc Chloride as a Wood Preservative

Claim of Little Resistance to Solvents Yet to Be Proven—Numerous References to Results of Zinc Treatment—Corrosive Effect on Iron Disputed—Manufacture of Zinc a Great Industry

MY ATTENTION was recently called to an interesting article that appeared in *Coal Age*, Nov. 17, p. 793, regarding the use of different preservatives to increase the strength and life of timber, besides rendering it more resistant to fire.

Of special interest was that portion of the last paragraph on page 793, which reads as follows: "It (zinc chloride) does not resist the action of solvents and is decomposed in the presence of lime in the soil. It can be used only in places that are permanently dry."

Allow me to state that, in my opinion, the question of zinc chloride offering but slight resistance to the action of moisture and water is, as yet, wholly a matter of conjecture, as the fact has not been definitely proven. Indeed, a paper prepared by C. H. Teesdale and S. W. Allen, appearing on page 222 of the 1919 Transactions of the American Wood Preservers' Association, describes some tests that prove the contrary of such claim.

Again, we find, in the 1916 Transactions, page 181, that the Committee on Specifications, while suggesting zinc chloride treatment for "arid and semi-arid regions" and deprecating the same "in situations where the treated timber is in permanent or intimate contact with either stagnant or flowing water," adds, "since there are conflicting data regarding the leaching of zinc chloride from timber, and since reliable statistics regarding its value in moist climates are not available, we would strongly recommend that definite service tests be made, by the association, in the Southern and Eastern States to determine the actual life of zinc-treated materials in humid conditions."

Sentiment Veers to Zinc Treatment

More recently, wood-preserving engineers have been slowly swinging around to the opinion that zinc-treated ties should give as good service in wet climates as creosoted ties. Reliable information in this regard, however, will not be available for from three to five years longer.

The paragraph next following the one to which I have referred reads: "Pine ties impregnated with zinc chloride lost from 80 to 85 per cent of the original salt, three years after impregnation; and beech ties, under the same treatment, lost from 90 to 95 per cent."

In my search of literature on this subject, I have not been able to find any reference to such large losses. On the other hand, on page 75 of the 1915 Transactions of the Wood Preservers' Association, there appears a description of tests made by F. J. Angier, under most rigid conditions. It is there stated that he only succeeded in leaching out a maximum of 30 per cent of the original zinc chloride, from the timbers tested.

On pages 77, 78 and 79 of the same Transactions, will be found statements confuting the notions so largely prevailing, in regard to the alleged corrosive effect of zinc chloride on iron. In addition to what is said in those references, we can state, as manufacturers of zinc chloride and accustomed to shipping this solution in tank cars and iron drums, that it is our experience that the only corrosive action occurs when the solution is slightly acid or, in other words, contains minute quantities of zinc chlorate. Solution prepared from fused zinc chloride never contains any chlorate.

Regarding this point, the Forest Products Laboratory remarks: "The consensus of opinion, among those who claim experience, seems to be that if the zinc ties are properly seasoned before being placed on the track, the corrosion is of no appreciable consequence."

Vegetable Fiber Uninjured

In reference to the damage to vegetable fiber caused by zinc chloride, Dr. H. B. Luther, Massachusetts Institute of Technology, has proven that specimens stored at ordinary temperatures "show no appreciable difference in strength, between treated and untreated timbers."

In view of this and other testimony, I feel that the observations made in the article to which I have referred, are of undue breadth. As a representative of an industry that provides 35,000,000 lb. of zinc chloride, per annum, to the wood-preserving industry, I regard it as a matter of fairness that these statements should be corrected or at least qualified.

Frank G. Breyer,
Chief of Research Division,
The New Jersey Zinc Co.
Palmerton, Pa.

Slab Mining in Room-and-Pillar Work

Greater Efficiency in Mining and Loading Coal from a Continuous Face—Better Facilities for Ventilating, Haulage and Concentration of Work—Cost of Timber Increased

ATTENTION is again drawn to the need of providing a greater length of coal face where coal loaders are employed, in the description of the American system of mining given by M. Martin in *Coal Age*, Oct. 13, p. 589.

The system described by Mr. Martin, however, is essentially the same as that formerly described by Carl Scholz in *Coal Age*, Vol. 19, p. 261. Both of these systems come under the general head of slab mining.

Briefly described, they consist in driving pairs of entries across a block of coal between two pairs of cross-headings and separated by a solid pillar of coal. In the American system described by Mr. Martin these pillars have a thickness of 50 yds. The distance between the cross-headings is 500 ft. This leaving a 50-ft. pillar for the protection of the heading gives a coal face 400 ft. in length.

In general, it can be remarked that this system of working out the coal by slabbing presents features that promise greater efficiency both in the mining and the loading of the coal. A mining machine is used to undercut the coal and this is followed by a coal loader capable of loading 150 tons of coal per day, in a 6-ft. bed. Certain types of these loaders are designed to work in seams less than 30 in. in thickness.

Without a doubt, as long as this method could be maintained, good results would be accomplished in ventilation, haulage and concentration of work. In working out a width of 75 ft. on each side of a pair of entries, as in this case, where the coal pillars are 150 ft. wide, it would seem that the cost of timber would be greatly increased. As each cut is made, the track is moved forward to be in readiness for the following cut.

In a previous letter appearing in *Coal Age*, Aug. 25, p. 301, I have offered, a

few comments on the method suggested by Mr. Scholz, which apply equally well to the method now described by Mr. Martin. It will not be necessary to repeat here what was said in that letter, further than to say, that, in the method I advocated, I would use a double-track system, one track being between the coal face and the chocks, and the other between the first two rows of chocks, which should have been shown in my drawing.

This will give ample opportunity for handling the loaded and empty cars and the conditions would, I believe, be more favorable for maintaining a constant car supply and causing less delay in the work of loading the cars, than in either the method of Mr. Scholz or Mr. Martin.

Linton, Ind. W. H. LUXTON.

Is a Loose-End Shot a Shot Off the Solid?

Loose-End Shot Not a Shot Off the Solid — Many Regard It So in the Literal Meaning of the Pennsylvania Law—Mining a Shot or Shearing the Same Only Creates a Loose End

REFERENCES to solid shooting, recently made in *Coal Age*, recall to my mind the previous discussion of the question, whether a loose-end shot was a shot off the solid, in the meaning of the Pennsylvania Bituminous Mine Law. I am in entire accord with all the reason and logic contained in the argument presented by I. C. Parfitt, in his excellent letter, *Coal Age*, July 28, p. 142.

A strict literal interpretation of the Pennsylvania bituminous law will not, I believe, support the view taken by Mr. Parfitt and which I believe is correct. Unfortunately, moreover, at least a few of the mine inspectors of the state and most of the insurance inspectors in that region hold to this strict literal interpretation of the law, and consider that a loose-end pillar shot is a shot off the solid.

LAW DEFINES "PROPERLY MINED"

As the law reads, it requires that the coal shall be "properly mined before it is blasted," and defines the words "properly mined" to mean that the coal shall be "undercut, centercut, topcut or sheared by pick or machine."

As it is not customary to mine a loose-end shot, it is argued by some that such a shot does not conform to the requirement of the law and is, therefore, a shot off the solid, which the law is aimed to prohibit, believing the practice to be dangerous, in the mining of bituminous coal.

Practical mining men well know that a loose-end pillar shot has at least as much show to perform its work as a shot in a solid face of coal after being undercut, centercut, topcut or sheared in the manner prescribed by law. In other words, a loose-end shot is in the same category with a shot that has been "properly mined."

Mr. Parfitt has argued further that, after a room or breast of coal has been sheared or sidecut and one shot has been fired and loaded out, there is formed a loose end for the next shot, which then really has a better chance than the first shot to perform its required work. These are thoughts worthy of consideration.

In a more recent letter, Oct. 20, p. 645, one who signs himself "Safety First" takes exception to the argument presented by Mr. Parfitt and embraces the idea that a loose-end shot must be mined to conform with the requirements of the Pennsylvania law.

Now, let us be reasonable. The only thing that the mining or sidecutting of a shot accomplishes is to create a loose end. That being the case, I ask, why is not a loose-end shot, having all the requisites accomplished by mining and sidecutting, equally as safe? Let someone tell us.

In conclusion, let me say that I agree with the statement, already made by my friend, that the way out of the difficulty is to amend the Pennsylvania law, in this respect, and make it read as he has suggested: "No blast shall be fired without the coal is first mined or sidecut, or there exists a loose end that will give the charge an opportunity to perform its work."

Solid shooting, as such, should be condemned and not permitted in the mining of soft coal. If the bituminous law was revised in the manner suggested, there could be but one interpretation given to its meaning and the present confusion would not exist.

EDWARD H. COXE.

Brownsville, Pa.

Difficulties of Uncertified Men

Decries Calling Certification of Mine Officials "Harmful" — Work of Examining Boards Upheld — When a Man Ceases to Study, Who Is to Blame? — Certificate Is Competent Man's Passport.

IT WAS with much surprise that I read the letter of former District Mine Inspector John Rose, *Coal Age*, Oct. 27, p. 684, in which he states he sees "no need of certifying the mine superintendent" and, further, regards the present system of granting certificates, in his state, (Tennessee) as "far from beneficial."

Not knowing Mr. Rose personally, I am forced to conclude that, either the manner of conducting the examination of mine officials in Tennessee is very different from that pursued in the bituminous fields of Pennsylvania; or our friend is manifesting poor judgment in making some of the statements contained in his letter.

In describing conditions in Tennessee, Mr. Rose states there are many certified men acting as mine foremen and firebosses in that state "who have never looked inside of a mining textbook or read any mining journals since receiving their certificates." I surely agree with him when he says that "the mere possession of a certificate does not prove that the holder is competent to take charge of a mine and operate the same safely and efficiently," which is the truth.

We must also admit that many men on securing their certificates cease to study and to read mining literature to keep themselves abreast of the times. That is the case, to a greater or less extent, everywhere. Therefore, let me ask, who is to blame? Certainly not the examining boards who granted them their certificates after due examination.

In justice to our examining boards in this bituminous region, I will say they are almost without exception reliable, practical men, and wholly unworthy of most of the unjust criticisms made of their work, by some writers. Speaking of the examinations held in his own state, our friend says they are "seldom calculated to determine the practical fitness of the candidate." The same is not the case in Pennsylvania.

DEMAND FOR CERTIFIED MEN GROWS

Although the present bituminous law permits a man to act, in an official capacity underground, without a certificate, the fact remains that the first week in April, each year, sees notices posted at all the mines, stating the time and places where the examinations will be held. This is not because of a scarcity of uncertified men, as some would claim; but because of the growing demand for mine officials who hold certificates.

Notwithstanding the fact that the Pennsylvania law makes uncertified men eligible for appointment to positions of trust underground, the difficulties of uncertified men who aspire to such positions are daily growing greater. In all my travels over the best coal-mining fields in this state, I can truthfully say that I have never seen a successful uncertified mine official, from the company inspector down to the youngest fireboss in the mine.

In closing, let me say that there is one feature of the certification law that should not be overlooked. When a man leaves his company where he has worked a long period and where his qualifications are known, and seeks work elsewhere, perhaps in another state, the certificates he holds are his passports. Without these, it would be useless for him to tell strangers of his success in managing and operating mines.

In most cases, the certificate granted by an examining board, in the same or another state, will prove a stronger endorsement even than a letter of recommendation from a man's former employer. The certificate is generally regarded as devoid of the personal element that attaches to a letter of recommendation from an employer.

Consider, for a moment, an uncertified man applying to a strange company

for a position as mine foreman or fireboss. The first question put to him is, "What certificates do you hold?" As might be expected, the general manager or superintendent, after asking a few ordinary questions, turns again to his desk with the remark, "No, we have enough bosses just now."

No one claims that the certificate makes a man better; but few will deny that the study necessary to acquire a certificate honestly, makes the holder a more efficient worker. It is clear to the observer that, while the lawmakers in Pennsylvania may have made a mistake in revising the certification law, our operators are not making the mistake of availing themselves of the privilege granted them in the law.

Mayport, Pa. JAMES THOMPSON.

Clearing Gas from Headings

To avoid withdrawing men working on return side of headings filled with gas, overcast the air into the main return air-course whenever practicable.

REFERRING to the inquiry of "Bratticeman," regarding the best method of clearing a pair of headings when filled with gas, *Coal Age*, Oct. 13, p. 587, allow me to suggest a case where it would be practicable to remove this gas from the heading, without first notifying and withdrawing the men working on the return side.

In reply to this inquiry, the editor has given the only safe method that could be employed in the case there described. In that instance, the two headings are driven to the rise of the gangway, which is the return aircourse, and it was necessary, as stated, to notify and withdraw all the men working on the return side of the headings, before taking any steps to remove the gas.

My purpose in writing, however, is to draw attention to a plan that is often adopted of overcasting the gas-charged air and conducting it at once into the main return airway. Of course, such a plan can only be adopted where the headings are driven off the intake.

In that case, however, it is evident there would be a great advantage in constructing a temporary overcast at the mouth of one of the headings and carrying the air through a crosscut into the main return, instead of permitting it to course through the mine and being obliged to withdraw the men before so doing.

Such an overcast is readily constructed with canvas, by any expert bratticeman. At the same time, it will be necessary to hang a canvas across the air-course, just beyond the heading, so as to deflect all the air, or the major portion of it, into the heading, until the gas has been removed.

A good plan is to perform this work gradually, removing the gas by degrees from the headings, instead of bringing the entire current to bear on the gas at once. BRATTICEMAN.

———, Tenn.

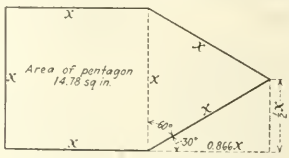
Inquiries Of General Interest

Mensuration

PLEASE show the solution of the following problem: A pentagon is formed by an equilateral triangle joined to a square on one of its sides, as shown in the accompanying figure. If the total area of the square and triangle combined is 14.78 sq.in., what is the length of one of the equal sides of the pentagon? STUDENT.

Knoxville, Ia.

The triangle being equilateral and joining the square on one of its sides, makes the pentagon equilateral. Then,



POLYGON AND ITS DIMENSIONS

calling the length of any one side (x), the area of the square is x^2.

Again, the triangle being equilateral is also equiangular; and, since the sum of the three angles of a triangle is always 180 deg., each angle of an equilatral triangle is 60 deg. The altitude of this triangle, therefore, is found by multiplying one of its sides by the sine of 60 deg., which is 0.866, making the altitude $0.866\ x$.

Now, the area of the triangle is equal to its base (x) multiplied by one-half its altitude ($0.433\ x$), which makes the area, in this case, $0.433x \times x = 0.433\ x^2$. Finally, the sum of the areas of the square and the triangle, which is the area of the pentagon is

$$x^2 + 0.433\ x^2 = (1 + 0.433)x^2 = 1.433\ x^2$$

Therefore, the area of the pentagon being 14.78 sq.in., we have $1.433\ x^2 = 14.78$; and $x^2 = 14.78 \div 1.433 = 10.314$; and $x = \sqrt{10.314} = 3.2$ in. Each of the equal sides of the pentagon is, therefore, 3.2 in. long.

Examination Questions Answered

Miscellaneous Questions

(Answered by Request)

QUESTION—*At firing time, would you slow your fan or keep it running at its normal speed?*

ANSWER—The general belief is that a fan ventilating a mine should not be slowed down at the time of firing shots in the mine. It is almost universal practice to keep the fan running at its normal speed and, in some cases, the speed has been increased just previous to firing. While there may be conditions, in a new mine that has not reached its full development and the ventilating fan is producing more air than is desirable, where it may be thought safer to reduce the velocity of the air current, at the working face, during the time of firing shots, it will generally happen that the large amount of smoke and gases set free at firing time, in a large mine, requires a larger volume of air to be circulated at that time than at any other during the shift.

QUESTION—*What are the advantages of shotfirers in coal mines?*

ANSWER—Where shotfirers are employed, the firing of all shots is done after the men have left the mine. The shotfirers are instructed to fire no shots that, in their judgment, are not safe. In order to obtain the best results, shotfirers should examine, charge and fire all shots themselves. It is not always possible to judge accurately of the safety of a shot that has been charged by another person. Fewer accidents have occurred where shotfirers are employed.

QUESTION—*Which would be easier ventilated, a slope mine or a drift mine?*

ANSWER—A slope mine will quite generally be found easier to ventilate, because of the air columns that are formed in the inclined airways. A drift mine, being level, possesses no such natural advantages that would assist its ventilation.

QUESTION—*Why is the ventilation of a mine necessary? Describe fully.*

ANSWER—Ventilation is necessary in order to render the workings of a mine healthful and safe, through the circulation of an air current, which absorbs and carries away the gases generated in the mine. Also, in deep mines the air current is a means of lowering the temperature of the workings and making them more healthful

on that account. Without the circulation of fresh air in mine workings, the confined air would quickly become dead and be charged with gases issuing from the strata and otherwise produced by the burning of lamps and the breathing of men and animals.

QUESTION—*If you should find an open door at the foot of an entry giving off large quantities of gas, what would you do?*

ANSWER—To close this door would at once cause the air current to sweep the entry and drive the gas out, sending it circulating, perhaps through other portions of the mine. The door should be left standing open, therefore, until it is possible to withdraw all the men at work on the air currrent returning from that place. This being done and all entrances to the return current being guarded by reliable men, steps should be taken to clear the gas from the entry, by closing the door gradually. The method of proceeding must then be governed by the conditions existing in the mine.

QUESTION—*State the different methods of timbering bad roof and soft bottom, and good roof and soft bottom.*

ANSWER—Where the roof is bad and the bottom soft, not only will more timber be required in a working place, but a systematic method of timbering must be employed. Good cap-pieces must be used on the roof and all posts should be stood on footboards, in order to distribute the pressure better over the soft bottom. It may be neccessary to employ crossbars above the posts.

Where the roof is good and the bottom soft, it will generally be necessary to use footboards under the posts. This will usually be considered the worse condition of the two, as the hard roof will force the timbers into the floor when the weight comes on.

QUESTION—*Describe the means used for conducting air to the faces of rooms and entries and regulating the air current in mines.*

ANSWER—The most common means employed for conducting the air forward in rooms and entries is a brattice constructed of boards or canvas nailed to a row of posts set for that purpose.

The air current is regulated or distributed by means of a regulator, which is a partition built in an airway and having a small hole or opening, the size of which may be increased or decreased by a sliding shutter.

Bureau of Mines Broadens Co-operative Arrangements for Coal Study

CO-OPERATIVE agreements between the Bureau of Mines and outside agencies to apply during the new fiscal year are now being signed. While the actual addition to the bureau's appropriations from these sources probably will not exceed $250,000 in actual money the scope of the bureau's research is increased greatly by contributions of the services of technical men and by the payment of general expenses incurred in laboratory and other types of experimental work. The scope of the co-operative agreements of direct interest to the coal industry is as follows:

University of Alabama—To study the problems peculiar to the mineral industry in the Southern states, particularly those relating to coal, coke, byproducts, iron and non-metallic minerals.

University of Illinois and the Illinois Geological Survey—To study the possibility of the utilization of Illinois coals for the production of gas to replace Eastern coals. The study includes matters pertaining to mine ventilation and the washing of coal.

University of Washington—To study problems in washing Alaskan and Washington coals.

American Society of Heating and Ventilating Engineers—To conduct scientific investigations relating to efficient and economical heating and ventilating.

Carnegie Institute of Technology—To interest mine operators, engineers, miners and others affiliated with the coal-mining industry in the better training and education of students in coal mining engineering; to promote better engineering skill in coal mining in order to conserve human life, the coal resources and to prevent waste.

The Davison Chemical Co.—To conduct an investigation to determine whether or not it is possible to obtain a more complete recovery of light oil from coke-oven gas for the production of motor fuels.

Combustion Engineering Corporation—To make a study of the combustion of powdered fuels.

Pennsylvania Geological Survey—To sample and analyze coal in the State of Pennsylvania.

Sewalls Point Coal Exchange, Inc.—To conduct investigations concerning the preparation of coal with a view to increasing efficiency in use and assisting the economic development of the industry by improving the grading and classification of coal shipped to Tidewater pools.

The Steam Corporation—To determine the exact facts regarding the use of liquid fuel for domestic heating in a device sold under the name of "Nokol."

General Boilers Co.—To make a study of the smokeless combustion of bituminous coal.

National Safety Council—To conduct a safety service for the benefit of the coal- and metal-mining companies comprising the mining industry.

Southern Appalachian Coal Operators Association—To obtain and disseminate accurate information concerning the preparation of coal and to aid in its rational classification, with a view to increasing efficiency and conserving resources.

Prescribes X-Ray of Educational Publicity To Set Public Right on Coal Trade

THAT the most pressing need of the coal trade is honest publicity was the opinion expressed by Homer J. Buckley, of Buckley, Dement & Co., in an address at the annual banquet of the Chicago Coal Merchants' Association, Dec. 12, at the Hotel La Salle. Seven hundred coal dealers were present.

"The coal industry of Chicago is suffering from ills of the wartime period that have left it in a very unfortunate position with the public," said Mr. Buckley. "Ask the average business man of intelligence what's wrong with the coal men and he will promptly tell you that they have a disease called 'dollar-itis'; that it is a malignant disease in their industry, and that there's a red sign on their door—so far as the public is concerned—reading 'keep out.'

"Of course, this is all wrong, you will say; 'We are being unjustly and unfairly maligned and our position is grossly misunderstood and misrepresented in the press.'

"If that is true—whose fault is it? No one's but your own. You have allowed a lot of negative publicity to get you in bad with the public, and, as invariably happens, you are discovering too late that poor advertising does not pay.

"You have it within your power to change the public mind. What you need is the searchlight of educational publicity directed to the public. Publicity and well-directed advertising is your remedy to set yourself right with the public. Resolve that all through 1922 this will be your policy. Don't procrastinate; only one thing is worse, and that is the chap who is afraid to begin—a quitter.

"What the coal merchant needs individually and collectively is the establishment of good will and confidence of the buying public. Good will may be defined as a feeling of satisfaction based upon satisfactory service, and service is never satisfactory until after it has been tried and tested.

"It is not enough that you deliver good coal and full measure—because nowadays that is imperative. The deciding factor in the satisfaction of a customer must always be the manner in which the account is handled after it is once obtained. The good will of the customer then usually depends upon the proper performance of what creative brains in business are so apt to regard as 'little details.'

"The greatest asset in your business—each and every one of you—is the good will and confidence of your customers. What are you doing to get it and maintain it?"

A RENEWED EFFORT IS TO BE MADE at this session of Congress to restrict further immigration into the United States.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

INDUSTRY and trade in general, according to a review of business conditions for December issued by the National City Bank of New York, continued during November to make and hold the gains made in October, although there is evidence that part of this gain was seasonal and is now falling off. The unusually warm weather in all parts of the country during the latter part of November affected retail trade to a considerable extent.

"The fundamental difficulty that has existed all through this year, that is, disparity between the price of farm products and all raw materials and the price of manufactured goods," the bulletin states, "continues to hamper the return of industrial activity.

"The settlement of the railroad strike was not obtained under conditions which give much promise of permanency. The railroads have all given notice of an application to the Railway Labor Board for further wage reductions, but the Board has stated that these requests will not be considered until after many questions affecting working conditions can be decided. It is not expected that these decisions will be ready before the middle of next summer and there is an insistent demand from producers, manufacturers, shippers and consumers all over the country for a more prompt adjustment of these matters.

"This situation illustrates the inadequacy of the machinery provided for the determination of rates, wages and working conditions on the nation's carriers. . . . It should be clear by this time that the railroad wage situation cannot be viewed or discussed solely from the standpoint of the roads and their workers. It profoundly affects the business and the prosperity of the country and cannot intelligently be viewed or considered without the effect on all lines of industry and the cost of living receiving due attention.

"It is nothing new to have the law of supply and demand pronounced a back number. Pronouncements of that kind have been appearing with great frequency for a long time, but it has always turned out that the law was working where the observers were not looking and in ways they did not understand. It may be suppressed for a time in one place, but it is like water on its way to the sea, it gets there eventually, no matter how much its course may be hindered."

Nearly All Industries Gain

Reports as to all of the American industries, except those relating to agriculture, are of an "encouraging character," it was stated in Washington, Dec. 9. With the exception of the agricultural industry it is stated that there is a steady recuperation.

Large Glass Plant Reopens

The Macbeth-Evans glass factory, Marion, Ind., one of the largest of its kind, which had been closed several months, has resumed operations, giving employment to five hundred persons working in three shifts. Street car service has been extended to the plant, a line being run from the soldiers' home.

Predicts Revival in Shoe Trade

The worst of the period of depression in the New England shoe industry is over, in the opinion of Edwin P. Holmes, retiring president of the New England Shoe Wholesalers' Association, expressed at the annual meeting of that organization in Boston, Dec. 14. Mr. Holmes declared that the industry was beginning to revive in spite of the fact that railroad, overhead and other charges remained as high as ever.

Railroads Lay Off Many Men

Five hundred employees of the New York Central R.R. repair shops at Elkhart, Ind., will be laid off indefinitely Dec. 24, and the Collinwood locomotive repair shops will be closed for an indefinite period because of depressed business conditions. Six hundred men will be affected in the Collinwood plant. The maintenance shops at Collinwood will continue to operate.

More than a thousand shop workers were thrown out of employment Dec. 15 when the Southern Railway closed its machine shops at Knoxville, Tenn., and suspended all work until Jan. 3 because of lack of traffic.

Thousands of shopmen employed by the Baltimore & Ohio R.R. were furloughed indefinitely Saturday, Dec. 17, when shops over the entire system shut down. Business depression and the necessities of effecting economies were given by officials of the road as prompting the action. The company has about fifteen shops, the principal ones being located in Baltimore, Cumberland, Pittsburgh, Keyser, W. Va.; Zanesville, Ohio; Cincinnati, Ohio, and Washington, D. C.

New England Textile Mills Hum

New England textile mills are busier this pre-Christmas season than at any time since the business slump which followed the war. While returns from other New England industries do not reflect holiday conditions equally bright, the Federal Employment Survey is authority for the statement, "the general feeling is optimistic for a marked improvement in all lines of industry after the New Year." The Federal Employment Survey for New England said its reports indicated that worsted spindles had returned to a 92.2 per cent basis; woolen spindles were 79.1 per cent operating, and cotton textiles on an 80 per cent basis.

Report Decrease in Army of Idle

A steady decrease in the number of unemployed in New York City has been in progress for several weeks and efficient workmen are experiencing less trouble in finding jobs, according to a statement issued last week by the Industrial Aid Bureau. Signs point unmistakably toward a permanent revival after the holiday season, it is said, as employers agree that they will require increased forces after the first of the year. There has been little or no real improvement, according to the bureau, in the demand for stenographers and unskilled labor, of which there is an oversupply for the few positions open.

Changes in Tax Law Seriously Affect Owners of Coal Land

Section Permitting Net Loss of One Year to Be Offset Against Net Income in Two Succeeding Years Contains Restriction on Mines

By Robert Murray Haig, Ph.D.*

AMONG the changes made by the new tax bill signed by President Harding on Nov. 23, five stand out as of great importance from the point of view of the business man and the investor. These are:

(1) The abolition of the excess profits tax as of the beginning of next year, coupled with an increase in the income tax on corporations at that time from 10 per cent to 12½ per cent.

(2) The reduction in the surtax rates on individual incomes which goes into effect at the same time.

(3) The establishment, with the beginning of next year, of a new class of income to be known as capital gain, which will be subject to a maximum rate of 12½ per cent.

(4) The broadening of the definition of the "closed transaction," effective for the current year, which makes possible many exchanges of property for property without subjecting the gain to taxation.

(5) The recognition, beginning this year, of a net loss from one year's operation as an offset against any profits which may accrue in the two following years.

The first two changes, the repeal of the profits tax and the changes in rates, have been the subject of much comment, but the other changes, being somewhat more technical in character, have been less discussed and their significance less fully appreciated.

Personal Service Corporation Disappears

Excess Profits Tax Repeal.—In spite of great pressure, Congress declined to repeal the profits tax for 1921 but did agree to abolish it thereafter. With it disappears the "personal service corporation," a special class established to care for certain corporations which it was desired to exempt from profits taxation. When the profits tax goes, the income tax rate on all net income of corporations rises from 10 to 12½ per cent. The change in the rate will cause corporations which make only moderate profits to pay slightly heavier taxes, but the total tax burden on corporate income will be much lighter, the official estimates of revenue under the new bill calling for $1,030,000,000 from this source (ignoring back taxes) this fiscal year and only $695,000,000 for the next fiscal year, when the changes will be in force.

Reduction of Surtax Rates.—The surtax rates on individual incomes are scheduled for reduction beginning with the first of next year. A comparison of the new scale with the old is difficult to make. It should be made clear, however, that the change affects small taxpayers as well as large ones. The maximum rates remain very high—50 per cent as compared with 65 under the old law. The 50 per cent rate applies to all income in excess of $200,000.

Surtaxes Begin on $6,000-$10,000 Incomes

The old rate on increment of income above $200,000 income was 60 per cent. Surtaxes in the future will not begin until the income is between $6,000 and $10,000. Under the old law the surtaxes begin at $5,000 and mount by more rapid steps. There also are slight changes in the personal exemptions, effective at once. According to the revenue estimates these changes will not provide much relief for individual taxpayers, for the government expects to get $780,000,000 next year with the changes in effect, as compared with $850,000,000 this year.

New Class of "Capitol Gains."—The most revolutionary section in the new act is Section 206, which sets up a new division of income. After the first of next year money made by individuals by selling or exchanging property "held for profit or investment" is subject to a maximum rate of 12½ per cent, instead of the regular rates, which range as high as 58 per cent (normal plus surtaxes). This is hedged about by several restrictions. The individual may not take advantage of the permission to use the 12½ per cent rate unless he is willing to pay at least 12½ per cent on his other income as well. The property "held for profit or investment" must have been so held for more than two years and may not include property "held for the personal use or consumption of the taxpayer or his family," or property which properly is subject to inventory. It is not necessary, however, that the property be connected with his trade or business.

The reason for the adoption of some such section as this is plain, whatever one may think of the wisdom of choosing this particular method of meeting the situation. As everyone knows, many sales of property have been postponed or entirely blocked by the unwillingness of prospective sellers to take their profits when they would immediately become subject to heavy surtaxes. This, of course, handicapped business. The solution adopted was practically to wipe out the offensive surtaxes on profits from this class of transactions.

One anomalous result of the selection of this solution, however, is that under this new arrangement a dollar of profit made from property which has grown in value is taxed at the maximum only 12½c., whereas a dollar made otherwise may be taxed as much as 50c. For example, in the case of a bond bought at a discount and sold at a profit, every dollar of interest on the bond may pay a tax nearly five times as great as every dollar of appreciation in the value of the bond, a fact which is likely to affect profoundly future methods of corporate financing.

Liberal Provisions on "Closed Transactions"

Much more could be said regarding the effects of this new section from the points of view of equity and of administration, but what is of particular interest here is to point out the very substantial relief granted by it to investors in property which appreciates in value.

The "Closed Transaction."—The advantage to the investor in property which is gaining in value, conferred by the section just described, is accentuated by the liberal provisions governing the "closed transaction" (section 202). This has long been a troublesome section of the field of income tax procedure. When one exchanges property for cash, no question arises. The transaction is "closed," and one accounts for his gain to the tax collector. But when one barters instead of sells, receiving other property instead of cash for his property, very serious questions arise. There are sometimes differences of opinion as to the value of the property received which lead to disputes and litigation. The old law went so far as to say that in the case of such trades the property received was to be treated as cash "to the amount of its fair market value, if any" (with certain exceptions in the case of a corporate reorganization—1918 law, section 202). The new law goes much further. It now states positively that no gain or loss on trades shall be recognized unless the property received on the trade "has a readily realizable market value." The phrase "readily realizable" adds a new and liberalizing element.

Even more important, however, are the exceptions made to the general rule. Even though the property received has such a "readily realizable market value," one need not account for the gain in certain cases. This is one: "When any such property held for investment, or for productive use in trade or business (not including stock-in-trade or other property held primarily for sale), is exchanged for property of a like kind or use."

How the Treasury will interpret this section is, of course, as yet unknown, but it would be a very narrow interpretation which would exclude exchanges of bonds or real estate for real estate. In other words, so long as one "barters" or "trades" his property for other similar property instead of selling it for cash, he need not account for his gains to the Treasury for tax purposes. Even if he does sell for cash, as has been noted above, he is subject to a tax of only 12½ per cent.

The provisions governing corporate reorganizations and

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sales of property to corporations also are greatly liberalized; so it is unnecessary to report many gains for taxation.

Net Losses.—With one minor exception included in the 1918 law, it has been the practice since the beginning of income taxation in this country to treat each year as a unit and to refuse to permit the fact that one has lost money this year to affect the amount of profits he must report the following year. Each accounting period has been carefully "insulated" from other accounting periods. This practice has worked much hardship, and the new law breaks away from the old precedents by inserting a provision, effective for 1921 (section 204, with a restriction on mines), which permits a net loss suffered in one year to be offset against any net income in the two next succeeding years. In other words, losses may be used to blot off subsequent gains but losses are "outlawed" for this purpose after the expiration of two years.

The new law contains many other new provisions which it would be interesting to discuss, did not the limits of this article prevent it. Such changes include the new rule regarding gifts, which makes the recipient, if he sells the gift, account for the gain in the value of the gift before he received it; the section aimed to prevent "wash sales" to establish losses; the provision covering cases where property is involuntarily converted into cash and the modifications in the various special taxes.

It has been possible to stress here only the most important departures in the new status. Careful examination by the business man and the investor will reveal the fact that it contains provisions, aside from the repeal of the profits tax and the changes in the rates, which will yield him very substantial relief from the burdens of war taxation under which he has been struggling for the past five years.

Open-Price Associations Declared in Violation of Anti-Trust Laws by Supreme Court

EXCHANGE of price information—the open-price association, in other words—is declared a restraint upon trade in violation of the Sherman Anti-Trust Law by the Supreme Court in a decision in the Hardwood Lumber case, handed down on Monday, Dec. 19, 1921. The government in carrying its case to the Supreme Court had charged that the American Hardwood Manufacturers' Association, consisting of 603 persons and corporations engaged in the production and sale of hardwood lumber, combined and conspired to eliminate competition among themselves and to enhance their selling prices in restraint of trade, and that they did this by comparing and exchanging under an "open-competition plan" the reports and bulletins concerning prices, stocks and production.

In rendering its decision the court divided, six to three, Justices McKenna, Holmes and Brandeis dissenting. It sustained the United States District Court of Western Tennessee, which in April, 1920, granted an injunction perpetually restraining the association from entering into further agreements under the plan, forbidding the further distribution of statistical information under the plan and directing the abandonment of all "efforts whatsoever having the purpose or tendency to enhance or maintain prices."

Called Combination to Control Price and Output

The opinion of the court was delivered by Justice Clarke, who described the organization of the association and asserted that it was a clear combination to restrict production and to increase prices.

The decision of the court will be far-reaching in that it will prevent operation of similar exchanges of information in other industries, including that instituted by the National Coal Association, which was suspended upon institution of the government's suit against the lumber interests. The Federal Trade Commission and the Department of Justice have also been investigating similar associations, although the Department of Commerce believed that such organizations could be effectively utilized in trade promotion.

Justice Clarke declared that the lumber association plan embraced the old trust "evil in a new dress," and that while there was no specific agreement as to production or price the members were in a united and concerted action to acquire control of the industry. Answering the lumber argument that the government issued information reports, the court pointed out that the government reports were available to both sellers and buyers while the association's reports were sent only to the sellers.

Dissenting, Justice Holmes, while admitting that it was an organization of sellers, said that its information was made public and that the plan did not bind the members, they being free to act as they chose. He also said there was nothing illegal in discussing prices, and that the plan would centralize purchases.

Justices Brandeis and McKenna also dissented, saying the percentage of control was not large—300 concerns out of 9,000 lumber dealers—and defended the practice on the ground of its aid to isolated mills. The service was useful in that the government maintained no reports as to market conditions. The meetings of the association and its reports were also available to the public. They admitted that the plan was a combination, but not in restraint of trade. The only evidence was that the combination sought to make money out of a boom market, there being no uniformity of action as to production or price, and they insisted that the anti-trust act did not "limit the desire to make profit."

Justice Brandeis declared it to be "an extraordinary fact" that the Supreme Court should alter its decision in the United States Steel Corporation case, where 50 per cent of the industry is controlled, and in the United Shoe Machinery case, where nearly all the shoe industry of the country was controlled, holding them not in violation of the Sherman law, and should hold in the present case that 603 out of many thousand hardwood operators "cannot exchange information without running counter to the provisions of the Sherman law."

With respect to the government policy toward the open-price associations, in some instances it was believed likely that additional prosecutions would be brought, while in others where the activities of associations do not come within the terms of the decision a definite outline of the application of the Sherman act could be made.

Constitutionality of Anthracite Tax Law Attacked in Dauphin County Court

EXPECTATIONS are that the Dauphin County Court of Pennsylvania will soon render a decision in the anthracite tax case, which was heard at Harrisburg, Nov. 25. Most of the questions raised against the constitutionality of the 1915 anthracite tax law were used in the argument by Henry S. Drinker, Jr., of Philadelphia, who represented the interests opposing the tax. George E. Alter, Attorney General, and George R. Hull, a deputy, spoke in favor of the act.

Emphasis this time was placed by the commonwealth on the importance of the byproducts of bituminous coal. Mr. Alter endeavored to show that hard and soft coal were two different kinds of coal and that either one could be taxed singly.

The case will be carried direct from the Dauphin County Court to the appellate court, so that an early decision from the state's highest tribunal can be obtained. Anthracite has been assessed under the act of 1921 since July 1 and the payment of the tax to the state commences on Jan. 1.

Open Shop Spreading in West Virginia

ALTHOUGH in many cases the United Mine Workers have been able to hold their members in line, open-shop sentiment in northern West Virginia continues to grow and many mines in the state are now being operated on that basis. There are no less than fourteen of these in the Morgantown section, mines on the Monongahela Ry. and on the Morgantown & Wheeling Ry. being included in that list. Mine workers have agreed to work and are working on a lower wage scale than the union would permit, and this has enabled operators to give them several working days a week. In the Upper Potomac field of West Virginia and in the Georges Creek field of Maryland there are approximately 800 miners who have gone to work on the basis of the 1917 wage scale. Where locals have accepted a lower rate of wages than is provided for in the union contract, the members have been automatically dropped from the organization.

Effort is being made by Harry B. Dynes, commissioner of conciliation, Department of Labor, who has been in the Fairmont region for several days, to reconcile the differences between the Long Coal Mining Co. and the miners at Reynoldsville. There are many points of disagreement but it is understood that the United Mine Workers' contract is not involved, as a new agreement made between the company and its employees displaced the contract with the United Mine Workers of America. When this occurred the men were dropped from the union.

Union miners are attempting by picketing to prevent the operation of the Haymond mine of the Ryan Coal Co., of Clarksburg, and on Dec. 6 assaulted a workman who, they thought, was going to work in the mine but who was in reality a county employee. Police were on duty at the mine both Monday and Tuesday to preserve order. The company has refused to collect the check-off and miners are on strike to enforce this provision.

A True Yarn

(Editorial from *Engineering and Mining Journal*, Dec. 17)

ONE autumn day we hitched our horse to the post outside the bare board, one-story "hotel" at Silver Peak, in Nevada. Silver Peak was an ancient and deserted mining town in those days. The mines had long been closed. Down the one long straggly sand-swept street the irregular board shacks, with their rusty stovepipes, projecting, straight or tilted, from the roofs, lined themselves without order or hopefulness. Nearly all of them were empty, windows broken, sand drifted over the doorsills. The few remaining inhabitants—who knows what held them there or what they lived on?—had more or less concentrated into the little shacks around the "hotel," where at least there was a bottle of whisky behind the bar, a stove for cold nights, and card tables.

When we walked in, there were five or six residents, old "desert rats," each with his chair tilted back against the wall, and his head sunk on his breast in an attitude of hopeless despondency. The bartender and proprietor took hardly a casual interest in our arrival, in a place where arrivals were very rare; the wall-pillars none save a cynical and crestfallen glance. The atmosphere was of some great evil, some community disaster, which might have soured so completely this silent crew.

We inquired the cause—asked the reason for the funeral At last we found out. One of the old-timers told us without humor, but with pathos and a justly wounded spirit He informed us that there had been, for some months past, almost exactly three hundred dollars in money in that town. They had their supply of grub; and had not had occasion to buy any supplies for a long time. But they had their social life—they talked, they drank, they played poker. Especially poker. Sometimes one man had the three hundred dollars, sometimes another; but always, Desert Bill observed, there was a chance of getting it back, and the game went on. The proprietor got some of it for drinks, but he lost it again to one of the boys. All went happily for weeks in this little sequestered remnant of life, as Desert Bill gave me to understand, till one day a feller hove in sight and said he was out to work some mining claims. And he played poker with the rest.

It wasn't, said Bill, that he didn't play a straight game, but the fact is that he had left very early in the morning after he had won the three hundred dollars. God knows he was welcome to the three hundred, which they didn't need, and he had won fair; but they had their occupation removed, and couldn't go on playing poker. Their whole joyous life was past; wherefore, if they caught that mean skunk they'd surely take a shot at him. And with hopeless sighs the boys hunched into their chairs and relapsed against the wall.

When we consider the unpopularity of America among the European nations at this time, we think of Desert Bill at Silver Peak in 1899, and we understand. It isn't that she did not get the world's gold in a fair game, but she has taken the pot and gone home with it; and they sit around with no gold to get in on the game with; and if they should get a chance at the United States they "shore would get even."

Anthracite Conciliation Board Has Settled 1,078 Grievances; 246 in 14 Months

MORE than a thousand grievances had been filed with the Anthracite Board of Conciliation from its inception up to Dec. 1, according to figures just compiled. The actual number, 1,078, represents a small fraction of the grievances adjusted through the instrumentality of the board because only those cases are listed in which informal efforts have failed to bring about an adjustment.

Under the present agreement, covering a period of fourteen months, the board has acted on a total of 246 cases, of which number 229 were filed by the employees and 17 by coal companies.

Season's Coal Receipts at Duluth-Superior 1,134,183 Tons More Than Last Year

RECEIPTS of coal, both anthracite and bituminous, at Duluth-Superior during the 1921 season of navigation totaled 10,164,849 net tons, an increase of 1,134,183 tons over last year. Receipts by months were as follows, in net tons:

Month	Anthracite	Bituminous	Total
April	83,058	120,212	230,027
May	173,190	1,548,880	1,722,070
June	192,830	2,125,453	2,318,283
July	339,383	1,650,629	1,990,012
August	418,238	1,068,555	1,486,793
September	207,901	647,095	854,996
October	257,240	808,260	1,065,500
November	141,496	325,457	466,953
December	31,306	25,666	56,972
Total for season	1,844,642	8,320,207	10,164,849

Freight-Car Loadings Increase 73,627

LOADING of revenue freight during the week ended Dec. 3 totaled 747,454 cars, according to reports from the American Railway Association. This was an increase of 73,627 cars over the total for the previous week, which included a boliday, Thanksgiving Day, but was 135,150 cars less than that for the corresponding week last year and 41,832 less than that for the corresponding week in 1919. Coal loadings totaled 137,293 cars, compared with 137,432 cars during the short preceding week or a reduction of 139 cars. An increase of 38 cars was reported for coke, the total being 6,345.

A. G. GUTHEIM, WHO SPECIALIZES in coal transportation for the car service division of the American Railroad Association, is being mentioned for membership on the Interstate Commerce Commission. The terms of two members of the commission expire in the near future. While it is possible that the President will renominate the incumbents, some are of the opinion that at least one change will be made. It is in connection with this possible vacancy that Mr. Gutheim's name is being mentioned.

Roads Make Perfunctory Protest Against Reduction of Rates; Public Sentiment Likely to Force Cuts

By Paul Wooton
Washington Correspondent

THE railroads failed absolutely to score in that part of their presentation of arguments against rate reduction which had been presented at the time of this writing. It was the general opinion that few new arguments had been presented and that no strikingly telling point had been made. It was apparent that the Interstate Commerce Commission has not been impressed by any of the arguments advanced. The case of the railroads is being presented in such a perfunctory way as to lead to the conclusion that they are sparring for time. There is evidence of legal strategy in an effort to keep the strong points of their argument in the background rather than present them now and allow them to be targets for the shippers. None doubts that the representatives of the railroads have in reserve a much better type of ammunition than has been fired thus far.

At the close of the session of Saturday, Dec. 17, the railroads had completed their preliminary statistical arguments against rate reductions, whereupon the Interstate Commerce Commission adjourned its investigation into the reasonableness of transportation rates at present levels until Jan. 9. Alfred Thom, of the Association of Railway Executives, gave notice that R. M. Aishton, president of the American Railway Association, would then be called to give testimony as to the efficiency and economy of current carrier operation.

Shippers' representatives and state and municipal experts will have an opportunity to cross-examine witnesses then. During recess the commission will study the statistics so far submitted.

Traffic specialists who are attending the Interstate Commerce Commission hearing recognize that the public sentiment in favor of rate reduction is so pronounced as to make it a foregone conclusion. Were the commission to announce a refusal to reduce rates, it is believed that there would be such a widespread resentment made manifest as to insure the railroading through of special legislation making a substantial rate reduction mandatory. The fear is expressed in some quarters that the commission will be influenced to such an extent by the overwhelming volume of public demand for rate reduction as to be inclined to go further than the best interests of all concerned require.

Demand for Reduction Keen on Basic Commodities

The commission is not likely to authorize a blanket reduction. A material reduction could be made in the rate on watermelons without affecting greatly the carriers' earnings. If the same reduction were to be applied to coal, which constitutes such a large proportion of railroad tonnage, it would have an important effect on earnings. For that reason some are of the opinion that coal rates will not be reduced to the same extent as will the rates on some other commodities. At the same time it is recognized that the demand is keenest for reductions on basic commodities.

Opposition to a "sweeping" reduction in railroad rates at the present time was expressed by railroad representatives at the opening of the investigation. It was argued that the railroads were not at present in financial position to afford a cut in revenue, but that if basic costs, including wages and fuel, were lowered, reductions could be made later. They recommended, on the other hand, a process of rate readjustment.

Howard Elliott, of the Northern Pacific R.R., said that while some rates may be too high, the present general level, with numerous adjustments since made, is not too high, considering what the railroads must pay for wages, fuel and supplies. He said a sweeping cut in rates would not increase transportation or revive business. He insisted that there should be lower wages on the railroads, in the mines and in the building trades, which would mean greater employment and a lower unit price on many articles.

"There was little complaint about the Transportation Act a year ago, or about the rates," said Mr. Elliott. "In fact, then the complaint was for more cars, more tracks, more engines, and a demand that the railroads move coal, etc., and the rate was a secondary matter."

George M. Schriver, vice-president of the Baltimore & Ohio, contended that the railroads were not now in financial condition to permit of a general rate reduction unless pre-war levels of costs of materials, etc., were reached. The basic costs of operation were declining and would continue, which would later enable reductions.

Carriers in the Southern and Western districts, the latter including the Mountain-Pacific group, presented their arguments Saturday. C. R. Capps, vice-president of the Seaboard Air Line, speaking for the carriers east of the Mississippi and south of the Ohio, argued that earnings from present rates were running at the rate of 2.2 per cent on invested capital.

Edward Chambers, vice-president of the Atchison, Topeka & Santa Fé, argued for Western carriers that the present rate schedule could not be considered too high, as the figures developed by L. E. Wettling, manager of their traffic bureau, showed current earnings to be 3.04 per cent on valuation of their properties.

Text of I. C. C. Ruling Refusing Decreased Rates on Lake Ore After Jan. 1

THE announcement of the Interstate Commerce Commission refusing continuance after Jan. 1 of decreased rates on lake ore, in which coal rates are involved, follows:

The commission today declined to issue special permissions under the sixth section of the Interstate Commerce Act to allow carriers in Eastern territory to continue from Jan. 1 to March 31, 1922, inclusive, reduced rates on iron ore. The commission's action is based upon protests of shippers located at Buffalo, Cleveland, Erie, Chicago and other lake ports alleging that the proposed rates result in undue discrimination against them and preference for competing furnace interests at Pittsburgh and other interior points.

Coal and iron ore are two of the important elements entering into steel manufacture. Most of the iron ore used in the East comes from Minnesota by lake. Lake-front furnaces, therefore, pay no rail freight charges on ore but transport their coal by rail from Pittsburgh and other interior points. Interior furnaces, on the other hand, while paying rail freight from Lake Erie ports on ore, are in most cases located in close proximity to the coal fields and pay only short-haul rates on coal.

In 1917 iron ore was transported from Lake Erie ports to Pittsburgh for 82c. per ton of 2,000 lb., whereas coal was charged $1.40 per ton from Pittsburgh to Buffalo, a difference of 58c. per ton. Iron-ore rates in the East were not increased during federal control, but coal rates were increased approximately 25 per cent. Rates on both commodities were increased in August, 1920, resulting in rates on ore and coal of $1.14 and $2.51, respectively.

Under the adjustment now proposed by Eastern railroads the ore rate would be 28c., or the same as in 1917, whereas the coal rate would continue $2.51, including the increases of 1918 and 1920, and being higher by $1.69 per ton, or 206 per cent, than the ore rate. The rates on iron ore which will apply after Jan. 1, 1922, will include materially less increase over the pre-war basis than rates on commodities generally—even less than the reduced rates on farm products soon to be made effective.

The action of the commission is in no sense to be interpreted as a disinclination to approve justifiably lower rate levels, but is based upon the continuance of premature reductions confined to certain rates, the outcome of which is to unduly prejudice iron and steel manufacturers located on the lake front to the advantage of competing interior furnaces.

Sales of British Coal in American Atlantic Ports Arouse Public Interest in Export Coal Rates

By Paul Wooton
Washington Correspondent

WHILE no one familiar with the coal business anticipates any extensive importation of coal, the announcement by Commerce Secretary Hoover that British coal is being sold in our Atlantic ports at a price which could not be met by dealers in American coal has aroused the entire country to a situation which has been developing for months but in which the public heretofore has taken little interest. The war-born realization that the United States had grossly neglected its foreign trade resulted in a general expectation that the United States under changed world conditions would become a great exporting nation. It is a matter of common knowledge that an export coal trade has an important bearing on the exports of other commodities and is almost an essential to a merchant marine. As American coal was crowded out of one foreign market after another, the process was so gradual and so unaccompanied by publicity in popular mediums that comparatively few knew that our foreign trade in coal had collapsed until announcement was made that England was walking away with business that had been ours undisputedly for forty years.

With the sudden manifestation of country-wide interest in the coal situation, government agencies other than the Department of Commerce evinced immediate interest in the situation, with the result that a meeting was called by Chairman McChord of the Interstate Commerce Commission on Dec. 14. It was attended by Secretary Hoover, representatives of several government agencies which deal with coal, representatives of the railroads, a committee of the National Coal Association, and by representatives of other interests concerned with coal.

The original intention was to have a quiet discussion of the situation in a small group, but the affair developed into quite an assembly, as more than fifty were in attendance. A committee was appointed to make a specialized inquiry into the situation. The personnel of the committee is as follows: J. B. Smull, vice-president of the Emergency Fleet Corporation; F. R. Wadleigh, fuel division, Department of Commerce; F. W. Whitaker, vice-president, Chesapeake & Ohio R.R.; T. F. Farrell, vice-president of the Pocahontas Coal Co., and W. V. Hardie, director of traffic for the Interstate Commerce Commission.

This fact as well as certain expressions at the meeting tend to the belief that the railroads themselves may propose immediate reductions in the export rates. Even if there should be no such initiative on the part of the railroads, it is believed that the Interstate Commerce Commission will act in the near future. It is regarded as certain that the matter of coal export rates will not be allowed to go over for decision in considering the question of a general reduction. The railroads face a difficult situation in the pressure for reductions in all export rates once a concession is made on one commodity.

While apparently American producers are facing a disadvantage of nearly $2 a ton as compared with English prices, it is believed that a cut of $1 in their tidewater cost would enable them to compete, particularly in instances when low charters could be obtained.

Kansas Insurgent Women War on Union Men Militia Called Out and Women Go Home

SCREAMING in foreign tongues, two thousand wives and daughters of the insurgent mine workers on Dec. 12 rushed on the members of the United Mine Workers of America who, remaining loyal to the organization, were at work at No. 17 mine of the Jackson Walker Coal & Mining Co., near Franklin, Kan. The Sheriff's deputies were powerless to stop them. The women entered the engine house and drove out the men. An interurban car which was bringing more men to work was compelled to go on without unloading its mine workers. Other men, arriving in automobiles, were taken prisoners.

The success at this mine emboldened the women to go further, their husbands, fathers and sons trailing along behind them ready to mix in if anyone was "unmanly" enough to defend himself against these viragos. In fact they called out threats against any who might thus presume. Dinner buckets were smashed and the men were showered with the victuals and coffee. Red pepper furnished an effective addition to these impromptu weapons.

To some mines they went in a body but others they tried to clean up by smaller groups, and occasionally, as at mines Nos. 9 and 19 of the Sheridan Coal Co., the men refused to leave their work, and the attackers retired crestfallen. The Jackson Walker Mines Nos. 45, 48, 51 and 21, being attacked in force, surrendered to the women's onslaughts.

On Dec. 14 the Kansas National Guard was ordered out, and four companies of cavalry and one machine gun company were sent into the field. On this day the women beat up one man and traveled to new mines in a string of automobiles a mile long. At some of the mines they entered the mine workers' homes and compelled the women and girls to accompany them on their march.

When the guard arrived the women returned to their homes, choosing the night of Dec. 15 as an occasion for stealing away unobserved. Six hundred warrants have been prepared for service and the authorities will endeavor to have the wives of unnaturalized mine workers deported.

Work has been resumed at most of the mines. On Dec. 16 the men at Sheridan mines Nos. 15 and 9 and Clemens mines Nos. 21 and 49 returned to work. If the troops are kept in the field for a while it is probable that the insurgent strike will come to an end.

One Anthracite Mine in Every Eight Idle

TWENTY-THREE thousand anthracite mine workers are idle as a result of the lack of orders for coal. To this another twenty-five thousand are likely to be added if business does not improve. However, the approach of winter means that the stagnation will not long continue.

W. W. Inglis, president of the Glen Alden Coal Co., was reported to have said on Dec. 15 that unless the demand strengthened unexpectedly, half the mines of his company, employing 17,000 men, would have to close down, and on the following day an announcement was made that the mines would work half time. C. C. Dorrance, vice-president of the Hudson Coal Co., foreshadowed similar irregular work for the 1,600 men in his mines. The Scranton Coal Co., with 5,000 men, also faces a shutdown.

The Lehigh Valley Coal Co. has 8,000 miners on a strike in violation of the contract. The strike arises out of two petty grievances affecting in the aggregate only seventeen men. About 15,000 employees of the Pennsylvania Coal Co., the Hillside Coal & Iron Co., the Jermyn Coal Co. and the Temple Coal Co. are idle by reason either of strikes or lack of orders.

The shutdown of the Pennsylvania and Hillside collieries was due to the latter. It affects 10,000 men. The mines closed are No. 14, Ewen, No. 6, Butler, Barnum, Old Forge, Central and Consolidated. The Jermyn Coal Co. had been idle since February when, on Nov. 15, after ten months' idleness, it reopened at the old scale. It worked a few days and then shut down, the management asking for a 5-per cent wage reduction as against 17 per cent which was the request on the first closing down.

Circuit Court of Appeals Returns Injunction Order to Judge Anderson to Be Recast

Finds Four Errors in Ruling of District Court Jurist—Enjoining Performance of Existing Check-off Contracts Declared to Have Been Beyond His Jurisdiction—Strike Danger Removed

IN a highly technical opinion handed down on Thursday, Dec. 15, the U. S. Circuit Court of Appeals returned the injunction threatening to disrupt the coal-mining industry of the country to Federal Judge A. B. Anderson at Indianapolis for a series of corrections. Judge Anderson is criticized for going beyond the limitations of the case and his own jurisdiction in the original decree.

Judges Baker, Evans and Alschuler, constituting the Court of Appeals, in their ruling find that Judge Anderson erred in confirming his grant of relief to the Borderland Coal Corporation, the litigant in the case against the United Mine Workers organization.

The decision removes the danger of a nationwide coal miners' strike and leaves a satisfaction in the minds of the union officials that they have won a victory according to interpretation of the opinion by attorneys for both sides. It is seen as a permission to the union to organize the West Virginia fields under peacable methods. Also it leaves the check-off in its previous status.

"From the record as it now stands," the opinion reads, "we are convinced that the District Court committed errors in exercising its judicial discretion in the following particulars:

"(1) In not confining the grant of relief to appellee.

"(2) In not limiting the prohibiting of the unionization or attempted unionization of the appellee's mines to the threatened direct and immediate interfering acts shown by the bill and affidavits.

"(3) In not limiting the prohibition of the sending of money into West Virginia to the use thereof in aiding or promoting the interfering acts.

"(4) In enjoining the performance of the existent checkoff contracts in the Central Competitive Field.

"The decree should be recast, and for that purpose the cause is remanded with the direction to the District Court to enter a preliminary injunctional decree which shall be in consonance with this opinion."

The court does not find that the case is an indictment to punish conspirators for their crimes. Neither does it find that the bill seeks to enjoin or dissolve an unlawful conspiracy or combination in restraint of trade, as was contended by counsel for the operators in the arguments on filing of the appeal.

On the check-off the opinion reads:

"The Borderland Coal Corporation sought and obtained a decree enjoining the performance of the existing contracts between the operators and their union employees in the Central Competitive Field with respect to what is called the checkoff provision. So far as the contracts themselves and this record discloses, the checkoff is the voluntary assignment by the employee of so much of his wages as may be necessary to meet his union dues and his direction to his employer to pay the amount to the treasurer of his union. In that aspect the contract is legal; and quite evidently there are many lawful purposes for which dues may be paid.

"If nothing else should prevent the Borderland Coal Corporation being given that part of the decree now under consideration [the check-off], the lack of injury to the Borderland Coal Corporation by the existence of the check-off contracts would suffice. The injury to the Borderland Coal Corporation property rights in interstate commerce of which the Borderland Coal Corporation was apprehensive was that it would be coerced into paying the high cost of production prevalent in the Central Competitive Field and thus be unable to meet or at least to meet so profitably the existent competition in interstate commerce. As long as the Borderland Coal Corporation is assured, as it now is, that it will have full protection in operating its closed non-union mine and in marketing its coal in interstate commerce without interference, the Borderland Coal Corporation should rather pray that all the elements causing the high cost of production in the Central Competitive Field should be maintained."

G. N. Snider Leaves New York Central to Become Manager of Coal Company

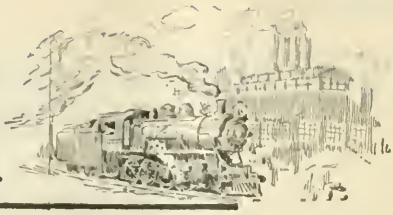
BEGINNING Jan. 1, 1922, G. N. Snider, coal traffic manager of the New York Central lines, will sever his connection with that company and become associated with the coal firm of Dickson & Eddy, New York City, as general manager. Announcement of this change was made Dec. 17.

Born in Spring Valley, N. Y., Mr. Snider was graduated from Nyack (N. Y.) high school in 1899 and New York University School of Law in 1906, and was admitted to the Bar of New York State in the latter year. His connection with railroad service began in December, 1899, when he became a messenger in the freight department of the West Shore R.R. He was transferred to the coal traffic department of the New York Central (Lines East) in February, 1902, as statistical clerk, occupying in turn all the higher clerical and secretarial positions. In February, 1909, he became chief clerk; was made assistant coal traffic manager March 15, 1911, and coal traffic manager Sept. 1, 1917.

G. N. SNIDER
Retiring Coal Traffic Manager, N. Y. Central R.R.

Mr. Snider assisted Rembrandt Peale in the organization and operation of the Tidewater Coal Exchange in June, 1917, and became chairman of the Executive Committee in March, 1919. He was transportation adviser to Fuel Administrator Garfield from October, 1917, to June, 1919, and became chairman of the Railroad Advisory Committee, Tidewater Coal Exchange, Inc., in May, 1920.

Production and the Market



Weekly Review

COAL men have adopted a policy of rigid curtailment of production in all fields, shrinking output to match a slim demand. The reduction in the volume of distress tonnage is correspondingly great and prices generally have been maintained. COAL AGE Index of spot prices remains at 83 for Dec. 19.

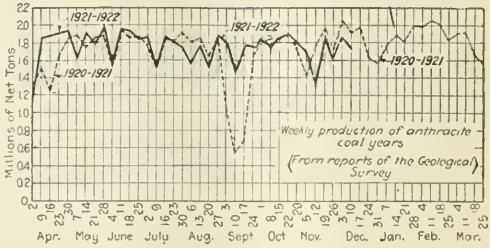
The sluggish buying of the past six weeks has eaten into consumers' reserves even with existing low requirements. Fuel purchasers have been reducing their heavy stocks in order to embody in their annual inventory sheets figures showing as strong a position as possible in cash resources and a minimum of investment in material and supplies.

Many coal houses have withdrawn their road forces until after New Year's, feeling that active solicitation of business only furthered the hammering down of prices necessary to close sales. While some look for but slight improvement after Jan. 1, others in the trade point to several encouraging features, the removal of the transportation tax and inventory period, colder weather, the gradually increasing industrial activity and prospective buying for storage in anticipation of a strike in the spring. Optimism and confidence prevail as some see a return of the interest of the consumer in future tonnage.

WORKERS HARD HIT IN UNION FIELDS

Union officials profess to see a victory in the decision of the Chicago court on Judge Anderson's check-off injunction, which is described elsewhere in this issue. Deplorable conditions exist among the men in the union-ized fields, where the higher wage scales have been adhered to despite loss in tonnage. The ever-increasing number of miners who are ready to accept lower wages as a result of short time and slim earnings this year doubtless will be a factor in the wage settlement next spring.

Steam sizes of bituminous coal are still rather scarce in the West, due to low domestic production, but demand is not strong enough to cause any appreciable price boost. The retailer is in an unenviable position. Heavily stocked with bituminous coal, bought at prices higher than current quotations, he has been faced with an unseasonably warm period and reduced buying power, which have greatly curtailed distribution. The usual public complaint against high-priced retail coal has been increased because of present low mine quotations, and a virtual boycott against the retailer has resulted.

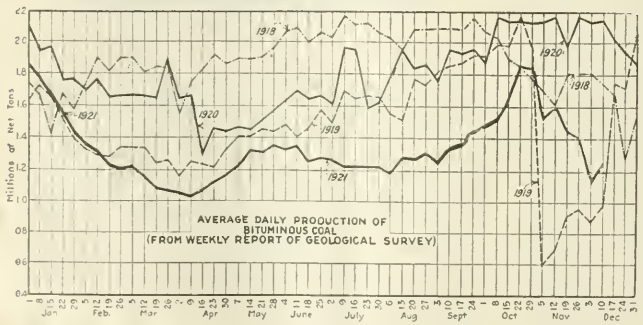

1921-1922
1921-1922
1920-1921
1920-1921
Millions of Net Tons
Weekly production of anthracite coal years
(From reports of the Geological Survey)
Apr. May June July Aug. Sept Oct Nov. Dec. Jan. Feb. Mar.

Anthracite operations are hard hit, as production has definitely outdistanced demand. Many independents are closed entirely, while others are experiencing heavy demurrage on coal, which is being offered at considerable reductions. Several companies are operating on part time and there is an increasing tonnage going to storage.

Beehive coke is sluggish. Prices for the first quarter of 1922 are not yet clearly defined, as consumers are apathetic. Nothing much but forced sales are moving on the spot market.

BITUMINOUS

Production has dropped back to the level of last April, normally the lowest month of the year. The output during the week ended Dec. 10 was 7,235,000 net tons, according to the Geological Survey, compared with 7,104,000 tons in the previous week. That the output during the remainder



Estimates of Production

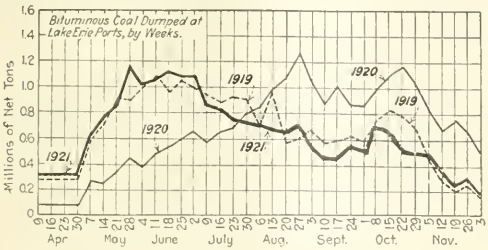
(Net Tons)

Week Ended	1921	1920
BITUMINOUS COAL		
Nov. 26 (*b*)	7,101,000	11,488,000
Dec. 3 (*b*)	7,104,000	12,812,000
Dec. 10 (*a*)	7,235,000	12,865,000
Daily average	1,206,000	2,144,000
Calendar year	386,439,000	521,207,000
Daily average calendar year	1,333,000	1,788,000
ANTHRACITE		
Nov. 26	1,677,000	1,708,000
Dec. 3	1,845,000	2,070,000
Dec. 10 (*a*)	1,703,000	1,933,000
Calendar year (*b*)	83,884,000	83,609,000
COKE		
Dec. 3 (*b*)	114,000	375,000
Dec. 10 (*a*)	111,000	374,000
Calendar year	5,160,000	19,941,000

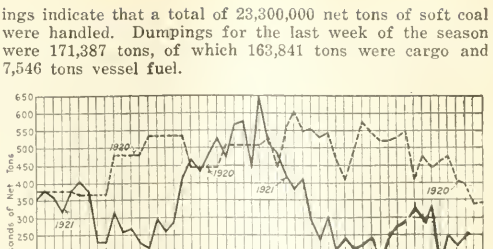
(*a*) Subject to revision. (*b*) Revised from last report.

of the year will continue around 7,250,000 tons per week is indicated by preliminary reports for last week—Dec. 12-17—showing an apparently unchanged rate of loading.

The cumulative output of 386,439,000 tons is 41,000,000 tons behind 1919, a year of depression. Demand has been so sluggish that the total production for 1921 will not exceed 405,000,000 tons. The last year in which the country used such a small amount was in 1909.



The last Lake cargo has been received at the Duluth-Superior harbor. Total receipts were 10,164,849 net tons, of which 8,320,207 were bituminous, larger than in any year since 1918. Preliminary reports of the season's coal dumpings indicate that a total of 23,300,000 net tons of soft coal were handled. Dumpings for the last week of the season were 171,387 tons, of which 163,841 tons were cargo and 7,546 tons vessel fuel.



Hampton Roads business is extremely quiet, the dumpings fluctuating around 250,000 tons weekly. Bunker business gives the most encouragement, as general shipping has increased slightly. Pier accumulations have decreased, but a few "market cargoes" in New England have kept prices soft. Shippers are interested in the efforts of Secretary Hoover to reduce rates on export coal by $1 a ton from

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern	Market Quoted	Nov. 21, 1921	Dec. 5, 1921	Dec. 12, 1921	Dec. 19, 1921†
Pocahontas lump	Columbus	$4.35	$3.75	$3.60	$3.50@$3.75
Pocahontas mine run	Columbus	2.35	2.25	2.20	*2.10@2.25*
Pocahontas screenings	Columbus	1.70	1.55	1.65	*1.45@1.70*
Pocahontas lump	Chicago	4.35	3.85	3.10	2.50@3.75
Pocahontas mine run	Chicago	2.65	2.25	2.25	2.00@2.50
Pocahontas lump	Cincinnati	.	3.10	3.25	3.00@3.50
Pocahontas mine run	Cincinnati	.	.	2.25	*1.75@2.50*
Pocahontas screenings	Cincinnati	.	.	1.40	1.25@1.50
*Smokeless mine run	Boston	4.80	4.80	4.80	4.75@4.90
Clearfield mine run	Boston	1.80	1.80	1.80	1.60@2.00
Cambria mine run	Boston	2.35	2.35	2.35	2.10@2.60
Somerset mine run	Boston	1.75	1.85	1.85	1.65@2.00
Pool 1 (Navy Standard)	New York	3.05	3.00	3.00	2.75@3.25
Pool 1 (Navy Standard)	Philadelphia	3.15	3.00	3.00	2.75@3.25
Pool 1 (Navy Standard)	Baltimore	2.70	2.40	2.30	**2.30@2.35**
Pool 9 (Super. Low Vol.)	New York	2.35	2.30	2.40	*2.15@2.30*
Pool 9 (Super. Low Vol.)	Philadelphia	2.45	2.35	2.35	*2.10@2.50*
Pool 9 (Super. Low Vol.)	Baltimore	2.40	2.05	2.10	**2.10@2.15**
Pool 10 (H. Gr. Low Vol.)	New York	2.05	2.05	2.05	*1.90@2.10*
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2.15	2.05	2.05	*1.90@2.10*
Pool 10 (H. Gr. Low Vol.)	Baltimore	2.10	1.85	2.00	2.00
Pool 11 (Low Vol.)	New York	1.85	1.70	1.80	*1.60@1.85*
Pool 11 (Low Vol.)	Philadelphia	1.85	1.85	1.85	*1.60@1.80*
Pool 11 (Low Vol.)	Baltimore	2.00	1.75	1.75	1.75
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.70	1.55	1.55	1.50@1.60
Pool 54-64 (Gas and St.)	Philadelphia	1.70	1.70	1.70	*1.45@1.70*
Pool 54-64 (Gas and St.)	Baltimore	1.65	1.60	1.45	**1.50**
Pittsburgh sc'd gas	Pittsburgh	2.65	2.65	2.70	*2.60@2.70*
Pittsburgh mine run (St.)	Pittsburgh	2.15	2.15	2.15	2.10@2.20
Pittsburgh slack (Gas)	Pittsburgh	1.40	1.35	1.55	1.50@1.60
Kanawha lump	Columbus	3.20	3.00	2.90	*2.75@3.00*
Kanawha mine run	Columbus	1.85	1.90	1.85	*1.75@1.90*
Kanawha screenings	Columbus	1.00	1.00	1.00	**.95@1.15**
Kanawha lump	Cincinnati	....	2.75	2.50	**2.25@3.00**
Kanawha mine run	Cincinnati	....	1.65	1.50	*1.25@1.50*
Kanawha screenings	Cincinnati	....	.95	1.15	**1.00@1.50**
Hocking lump	Columbus	3.15	3 10	3.05	*2.80@3.15*
Hocking mine run	Columbus	2.00	1.95	1.95	*1.85@2.00*
Hocking screenings	Columbus	$0.95	$1.15	$1.15	**$1.05@$1.25**
Pitts. No. 8 lump	Cleveland	3.10	3.05	3.15	*2.85@3.15*
Pitts. No. 8 mine run	Cleveland	2.00	2.00	2 05	*1.95@2.05*
Pitts. No. 8 screenings	Cleveland	1.30	1.50	1.55	**1.55@1.60**
Mldwest					
Franklin, Ill. lump	Chicago	3.75	3.80	3.80	3.50@4.05
Franklin, Ill. mine run	Chicago	2.85	2.75	2.75	**2.75@3.00**
Franklin, Ill. screenings	Chicago	1.60	1.75	1.80	**1.85@2.25**
Central, Ill. lump	Chicago	3.35	3.35	3.35	*2.75@3.50*
Central, Ill. mine run	Chicago	2.50	2.25	2.50	2.25@2.75
Central, Ill. screenings	Chicago	1.35	1.70	1.70	**1.75@1.85**
Ind. 4th Vein lump	Chicago	3.50	3.35	3.35	3.00@3.75
Ind. 4th Vein mine run	Chicago	2.75	2.75	2.75	2.60@2 90
Ind. 4th Vein screenings	Chicago	1.75	1.90	1.90	**2.00@2.25**
Ind. 5th Vein lump	Chicago	2.80	2.80	2.80	2.60@3.00
Ind. 5th Vein mine run	Chicago	2.45	2.45	2.45	2.25@2.60
Ind. 5th Vein screenings	Chicago	1.50	1.50	1.55	**1.50@1 75**
Standard lump	St. Louis	3.10	2.85	2.80	*2.60*
Standard mine run	St. Louis	1.95	1.95	1.95	*1.90*
Standard screenings	St. Louis	.95	1.15	1.25	1.25
West Ky. lump	Louisville	3.00	2.60	2.75	**2.65@3 00**
West Ky. mine run	Louisville	1 90	1.75	1.75	1.50@2.00
West Ky. screenings	Louisville	1.00	.95	1.05	**1.25@1 50**
South and Southwest					
Big Seam lump	Birmingham	3.75	3.65	3.65	3.25@4 00
Big Seam mine run	Birmingham	2.00	2.00	2.00	**1.90@2.30**
Big Seam (washed)	Birmingham	2.30	2.30	2.30	*2.00@2.80*
S. E. Ky. lump	Louisville	3.60	3.00	3.15	*2.75@3.00*
S. E. Ky. mine run	Louisville	2.20	2.05	1.75	*1.65@1.80*
S. E. Ky. screenings	Louisville	1.15	.95	1.00	**1.00@1 25**
S. E. Ky. lump	Cincinnati	....	3.15	3.15	3.00@3.25
S. E. Ky. mine run	Cincinnati	.	1.75	1.55	*1.35@1.50*
S. E. Ky. screenings	Cincinnati	.	.75	.95	**1.00@1 25**
Kansas lump	Kansas City	5.00	5.00	5.00	5.00
Kansas mine run	Kansas City	4.25	4.10	4.10	4.00@4.25
Kansas screenings	Kansas City	2.50	2.50	2 50	2 50

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in heavy type, declines in *italics*.

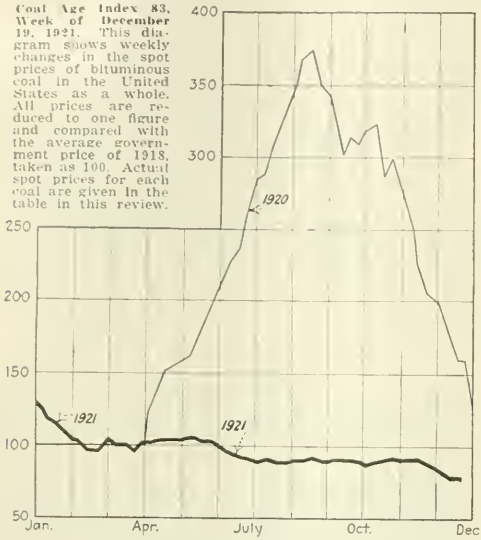
Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	Dec. 5, 1921 Independent	Dec. 5, 1921 Company	Dec. 12, 1921 Independent	Dec. 12, 1921 Company	Dec. 19, 1921† Independent	Dec. 19, 1921† Company
Broken	New York	$2.61		$7.60@$7.75		$7.60@$7.75		$7.60@$7.75
Broken	Philadelphia	2.66	$7.60@$8.00	7.75@ 7.85	$7.00@$7.50	7.75@ 7.85	**$7.50@$7.75**	7.75@ 7.85
Egg	New York	2.61	7.50@ 8.00	7.60@ 7 75	6.50@ 7.25	7.60@ 7.75	6.50@ 7.25	7.60@ 7.75
Egg	Philadelphia	2.66	7.75@ 8.00	7.75@ 7.85	7.25@ 7.75	7.75@ 7.85	7.25@ 7.75	7.75@ 7.85
Egg	Chicago	5.63	8.00*	7.15*	8.00*	7.15*	*7.50*	7.15*
Stove	New York	2.61	8.25@ 8.75	7.90@ 8 10	8.25@ 8.50	7.90@ 8.10	*8.00@ 8.25*	7.90@ 8.10
Stove	Philadelphia	2.66	8.50@ 9.00	8.00@ 8.35	8.50@ 8.75	8.00@ 8.35	8.50@ 8.75	8.00@ 8.35
Stove	Chicago	5.63	8.50*	7.40*	8.50*	7.40*	*7.75*	7.40*
Chestnut	New York	2.61	8.25@ 8.75	7.90@ 8.10	8.25@ 8.50	7.90@ 8.10	*8.00@ 8.25*	7.90@ 8.10
Chestnut	Philadelphia	2.66	8.50@ 9.00	8.05@ 8.25	8.50@ 8.75	8.05@ 8.25	8.50@ 8.75	8.05@ 8.25
Chestnut	Chicago	5.63	8.25*	7.40*	8.25*	7.40*	*7.75*	7.40*
Pea	New York	2.47	4.75@ 5.00	6.05@ 6.45	4.25@ 5.00	6.05@ 6.45	**4.75@ 5 50**	6.05@ 6.45
Pea	Philadelphia	2.38	4.75@ 5.00	6.15@ 6.25	4.25@ 5.00	6.15@ 6.25	4.25@ 5.00	6.15@ 6.25
Pea	Chicago	5.63		5.80*		5.80*		5.80*
Buckwheat No. 1	New York	2.47	2.50@ 2.75	3.50	2.25@ 2.75	3.50	2.25@ 2.75	3.50
Buckwheat No. 1	Philadelphia	2.38	2.50@ 3.00	3.50	2.25@ 3.00	3.50	2.25@ 3.00	3.50
Rice	New York	2.47	1.50@ 2.00	2.50	1.60@ 1.75	2.50	**1.60@ 2.00**	2.50
Rice	Philadelphia	2.38	1.75@ 2.00	2.50	1.75@ 2.00	2.50	1.75@ 2.00	2.50
Barley	New York	2.47	1.00@ 1.25	1.50	0.75@ 1.00	1.50	**1 00@ 1.25**	1.50
Barley	Philadelphia	2.38	**1.25@ 1.50**	1.50	1.00@ 1.25	1.50	1.00@ 1.25	1.50
Birdseye	New York	2.47		2.50		2.50		2.50

*Net tons, f.o.b. mines.
†Advances over previous week shown in heavy type, declines in *italics*

Eastern producing districts to seaboard to meet increasing British competition.

All-rail movement to New England was 2,437 cars during the week ended Dec. 10, as compared with 2,786 cars the week previous. The situation is gloomy and a rate reduction is imperative, especially as the smokeless 1922 basis is predicted as low as $1.50 net f.o.b. mines. New England roads would thus be placed at a great disadvantage as regards carriers' revenue.



Coal Age Index 83, Week of December 19, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.

ANTHRACITE

Production of hard coal declined to 1,703,000 net tons during the week ended Dec. 10, representing a decrease of 142,000 tons as compared with the week preceding. The decline was partly because of the religious holiday but mainly due to the slackening demand. November production was 6,859,000 tons, smaller than in any November of recent years except in 1918, when the influenza epidemic was at its height.

Retail markets are affected by the unseasonable weather, while steam sizes reflect the condition in the bituminous industry. Some independent operators are closing, as they are unable to obtain satisfactory prices for their product, and many companies are either working part time or running coal to storage. The season's Lake movement was 3,814,487 net tons, as compared with 3,584,286 in 1920 and 4,156,218 in 1919. The sluggish demand at the end of the season cut down the big lead over 1920 shipments. Rail shipments to New England amounted to 3,245 cars in the week ended Dec. 10, an increase of 195 cars over the week previous.

COKE

Beehive coke production continues to hover around the 110,000-ton mark. The total output during the week ended Dec. 10 was 111,000 net tons, compared with 114,000 in the week preceding. Byproduct is competing with beehive coke on first-quarter contracts. A stagnant market prevails, due to the dullness in the iron and steel industry and but little interest is being shown by the buyers.

MONTHLY OUTPUT OF BYPRODUCT AND BEEHIVE COKE IN THE UNITED STATES (a)

(In Net Tons)

	Byproduct Coke	Beehive Coke	Total
1917 monthly average	1,870,000	2,764,000	4,634,000
1918 monthly average	2,166,000	2,540,000	4,706,000
1919 monthly average	2,095,000	1,587,000	3,682,000
1920 monthly average	2,565,000	1,748,000	4,313,000
August, 1921	1,402,000	248,000	1,650,000
September, 1921	1,423,000	289,000	1,712,000
October, 1921	1,734,000	416,000	2,150,000
November, 1921	1,766,000(b)	477,000	2,243,000

(a) Excludes screenings and breeze. (b) Subject to revision.

To manufacture the coke produced it is estimated that 3,289,000 tons of coal were consumed, of which 2,537,000 tons were used in byproduct ovens and 752,000 tons in beehive ovens. It will be seen that the coke industry now requires about 3,000,000 tons a month less than in 1920, a fact which explains in part the present subnormal demand for coal.

ESTIMATED MONTHLY CONSUMPTION OF COAL FOR MANUFACTURE OF COKE

(In Net Tons)

	Consumed in Byproduct Ovens	Consumed in Beehive Ovens	Total Coal Consumed
1917 monthly average	2,625,000	4,354,000	6,979,000
1918 monthly average	3,072,000	4,014,000	7,086,000
1919 monthly average	2,988,000	2,478,000	5,466,000
1920 monthly average	3,685,000	2,758,000(a)	6,443,000
August, 1921	2,015,000(a)	391,000(a)	2,406,000
September, 1921	2,044,000(a)	456,000(a)	2,500,000
October, 1921	2,491,000(a)	656,000(a)	3,147,000
November, 1921	2,537,000(a)	752,000(a)	3,289,000

(a) Assuming a yield in merchantable coke of 69.6 per cent of the coal charged in byproduct ovens, and 63.4 per cent in beehive ovens.

Foreign Market And Export News

GERMANY—Production of coal in the Ruhr region during the week ended Dec. 5 was 1,787,000 metric tons, according to a cable to *Coal Age*. The output for the week previous was 1,907,000 tons.

The reparations commission has sent to the German government a note calling for complete prohibition of the export of German coal to neutral countries.

SWEDEN—During the week ended Nov. 26 imports of fuel totaled 15,750 tons, of which 13,000 tons of coal and 2,540 tons of coke came from the United Kingdom.

BELGIUM—The situation in the coal market remains practically unchanged. A slight revival in industrial coal and in coke is noted. Quotations are mainly firm.

SPAIN—Railroads are being required by a royal decree to use a maximum amount of coal produced within the Kingdom. The decree was issued to meet the increasing tendency to use foreign coal, resulting in the domestic industry being left in desperate straits. Another royal order allows Spanish warships to take on foreign coal in certain harbors without import formalities.

There has been a slight rise in the price for small Asturian coal. Freights from Gijon are very firm to all ports. At Barcelona the following quotations are made: Large, 90 pesetas; small, 70.

On Dec. 16, 13,000 Asturian miners went on strike. The Communists and Socialists in the workers' unions appear to be divided in opinion relative to the acceptance of a reduced wage and the number of work days per week. The Communists are reported to be demanding a six-day week.

BRAZIL—During September, 1921, imports of coal at Rio de Janeiro amounted to 94,875 metric tons, as compared with 100,828 tons for September, 1920, according to *Commerce Reports*.

INDIA—There is considerable Welsh coal now on the Bombay market. Not much Bengal is in stock, as it is hard to compete with Welsh coal where port facilities are available, owing to the freight rates, but Bengal and other Indian coals meet the industrial demand in the interior of the country. Welsh coal is quoted at 44 rupees, c.i.f., Bombay. Bengal coal is steady; first is quoted at 32@33 rupees and good second at 28@32. Over 7,100 tons arrived from Abadan, 5,300 from Durban, 5,200 from Australia and 7,600 from Cardiff during the last week in October.

British Shippers Seek Lower Rail Freight Rates

Wages in South Wales, 28 Per Cent Over 1915 Level, Now at Bottom — London Prices Held Up While Export Prices Sag

PRODUCTION of coal in Great Britain during the week of Dec. 3 was 4,693,000 tons, practically the same as for the preceding week. Demand is improving and prices in general are firm or up.

Newcastle best steam coal is now 24s. 6d. and there is a fairly steady demand. Good gas coke is being sold for 45s. and other gas cokes at 40s.; foundry and furnace coke is 32s. 6d. The Gothenburg gas works has placed an order for 4,000 tons best Durham gas coals, though the price is not given. The Bombay and Baroda Railway is in the market for 60,000 tons. Open market quotations are: Best steams, Tynes, 24s.; Blyths, 25s.; second steams, Tynes and Blyths, 22s. 6d.; small steams, Tynes, 13s.; Blyths, 22s. 6d; unscreened steams, 19s.@22s.; gas bests, 22s. 6d.; seconds, 20s., 21s.; specials, 23s.; unscreened bunkers, bests and specials, 21s. 22s.; Northumbrians, 19s., 21s.; Durhams, 20s.; coking coals, 20s., 22s.; export households, 25s.-27s. 6d.; furnace coke, 30s.; gas coke, best, 45s.; ordinary, 40s.

The Mining Association, representing the owners, is urging the railway companies to reduce transport charges on coal, and in support of their case give the following figures: The output of coal in 1913 was 287,000,000 tons; in 1920, 229,000,000 tons, and in 1921, based on September, 205,000,000 tons. Industry has consumed 25 per cent, or 43,000,000 tons less, and shipments for bunkering or export show a reduction of 39,000,000 tons, or 40 per cent. Shipments of coke have declined 65 per cent, or 800,000 tons, and patent fuel 30 per cent, representing 600,000 tons. The current production of metallurgical coke is at the rate of 2,480,000 tons, against 12,700,000 tons in 1913.

On the October audit figures the wages in South Wales for December are 28.03 per cent over the 1915 standard. On this basis the wage rates will vary from 6s. 4.8d. to 8s. 1½d. per day, which is stated to be the lowest figures to which wages in the South Wales area will go. The lowest-paid men will be granted a special subsistence allowance which will bring their minimum up to 7s. 2d. per day.

Lancashire, Cheshire and North Staffordshire miners will undergo a December cut of 2.25 per cent on the November rates. On the October ascertainment the miners in the Forest of Dean area will receive an advance of 1d. per shift. These men are now working six shifts per week and their wages amount to slightly more than 45s. per week, which is a reduction of 11s. on the January rates.

The London press has initiated a campaign against the high prices of London coal. *The Daily Mail*, which is generally recognized as being the most influential daily in London, is particularly active in this direction. At the present time the price of best household coal in London varies from 49s. 6d. per ton in some districts to 63s. in others. The fact that coal which costs the householder 65s. is produced at the pithead for 40s. is arousing a storm of protest. Apparently there is a "ring" of coal dealers in London which is determined to maintain prices to the householder (who has no organization or trade union) irrespective of wage cuts and lower production costs. It is probable that a boycott of this ring will result.

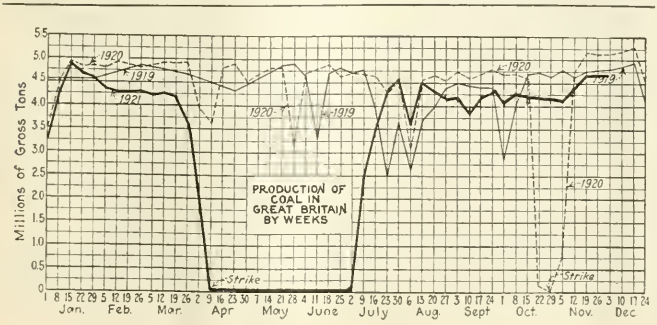
Hampton Roads Business Dull

Business was extremely dull last week, except for some activity in the bunker trade. New England shipments have not materially changed from their low ebb of the last few weeks.

Pool 1 prices have dropped, coal of this grade being offered in some specific instances at $4.65, although the general quotation is no lower than $4.75. Some Pool 2 sold last week for $4.45, while pools 5, 6 and 7, in which supplies are practically absent, with no demand, are selling as low as $4.15.

General shipping during the last ten days has shown a slight increase, with a consequent increase in the bunker business, practically every ship which puts into port taking bunkers, either in oil or coal. Freight rates to foreign ports, having reached what is regarded as their lowest possible point, have shown little or no change this week, and it is believed they will not go lower at any time soon. Rates to New England are unchanged, the rate to Boston being 95c.@$1, with the lower figure more frequently quoted.

Trimming charges, reduced this month at Hampton Roads piers by 20 per cent, are being tried out as an experiment by the shippers, to determine whether they will ask for a further reduction. Shippers have not had an opportunity, they say, to fully test the new rates.



Pier and Bunker Prices, Gross Tons

(Foreign Bunker Quotations by Cable to Coal Age)

	Dec. 10	Dec. 17†
PIERS		
Pool 9 New York	$5 40@$5 50	$5 40@$5 50
Pool 10, New York	5 25@ 5.35	5 25@ 5 35
Pool 9, Philadelphia	5.50@ 5.60	5 50@ 5.60
Pool 10, Philadelphia	5.25@ 5.50	*5.25@ 5.45*
Pool 71, Philadelphia	5.75@ 6.00	*5.75@ 5.90*
Pool 1, Hamp. Rds.	4 70	4 65@ 4 75
Pools 5-6-7 Hamp Rds	4 25	*4 15@ 4 25*
Pool 2, Hamp. Rds.	4 60	*4.45@ 4.55*
BUNKERS		
Pool 9, New York	5.70@ 5.90	5.70@ 5 90
Pool 10, New York	5.55@ 5.65	5.55@ 5.65
Pool 9, Philadelphia	6.00	6.00
Pool 10, Philadelphia	5.65@ 5.85	*5.65@ 5.75*
Pool 1, Hamp. Rds.	4 80	*4.75*
Pool 2, Hamp. Rds.	4 70	*4.60*
Welsh, Gibraltar	40s. f.o.b.	40s. f.o.b.
Welsh, Rio de Janeiro	65s. f.o.b.	65s. f.o.b.
Welsh, Lisbon	45s. f.o.b.	45s. f.o.b.
Welsh, La Plata	62s. 6d. f.o.b.	62s. 6d. f.o.b.
Welsh, Marseilles	120 fr. f.o.b.	125 fr. f.o.b.
Welsh, Genoa	40s. t.i.b.	40s. t.i.b.
Welsh, Madeira	42s.6d. f.a.s.	42s.6d. f.a.s.
Welsh, Teneriffe	42s 6d. f.a.s.	42s.6d. f.a.s.
Welsh, Malta	45s. f.o.b.	45s. f.o.b.
Welsh, St. Michaels	60s. t.i.b.	60s. t.i.b.
Welsh, Las Palmas	42s. 6d. f.a.s.	42s. 6d. f.a.s.
Port Said	51s. 6d. f.o.b.	51s.6d. f.o.b.
Belgian, Antwerp	40s. f.o.b.	40s. f.o.b.
Alexandria	46s. f.o.b.	*45s.*
Bombay	38 rupees	38 rupees
Capetown	42s. 6d.	42s.6d.

C.I.F. Prices, American Coal

(In Gross Tons)

	—Dec. 10— Low Vol.	High Vol.	—Dec. 17† — Low Vol.	High Vol.
French Atlantic	$8.70	$8.50	$8 75	$8.50
Weat Italy	8.70	8.50	8 75	8 50
The Plate	8.90	8.70	8.90	*8.65*
Havana	6 75	6.50	6.75	6.50

These quotations are purely nominal and as far as can be learned, no business is being done in these markets.

Current Quotations British Coal f.o.b. Port, Gross Tons

Cardiff:	Dec. 10	— Dec. 17† —
Admiralty, Large	26s.	25s.6d.@ 26s 6d.
Steam, Smalls	18s.	18s.6d.@ 19s. 6d.
Newcastle:		
Best Steams	24s.9d.	*24s.@25s.*
Best Gas	22s.3d.	22s.@ 22s.6d.
Best Bunkers	21s.6d.	21s. 6d.@ 22s. 6d.

† Advance over previous week shown in **heavy type**, declines in *italics*.

Export Clearances, Week Ended Dec. 15, 1921

FROM HAMPTON ROADS:

	Tons:
For Africa:	
Br. S.S. Heathfield, for Dakar	6,902
For Canal Zone:	
Am. S.S. Cristobal, for Cristobal	9,678
For Chile:	
Nor. S.S. John Blumer, for Curaco	3,328
For Cuba:	
Am. S.S. Glyndon, for Cienfuegos	1,976
Nor. S.S. Gro, for Havana	6,442
Br. S.S. Muneric, for Havana	6,596
Nor. S.S. Harriet, for Sagua la Grande	2,045
For Peru:	
Br. S.S. Shelley, for Callao	2,501
FROM PHILADELPHIA:	
For Cuba:	
Swed. S.S. Gothia, for Havana	——

Hampton Roads Pier Situation

	— Week Ended — Dec. 8	Dec. 15
N. & W. Piers, Lamberts Point:		
Cars on hand	1,520	1,559
Tons on hand	76,801	76,061
Tons dumped	104,583	121,650
Tonnage waiting	17,050	8,300
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	1,680	1,095
Tons on hand	84,000	54,750
Tons dumped	47,553	70,852
Tonnage waiting	5,000	1,800
C. & O. Piers, Newport News:		
Cars on hand	1,174	1,184
Tons on hand	58,700	59,200
Tons dumped	44,607	36,362
Tonnage waiting	1,623	.....

Reports From the Market Centers

New England

BOSTON

"Market Cargoes" Leave Depressing Effect — Much Interest in Rate Question—Curtailment General in All Districts — Anthracite Slackens — Retail Prices Not Stable.

Bituminous—In the judgment of many of the trade the market here is more generally unsatisfactory than at any time in several years. While certain factors are holding their quotations on a firmer basis, there are no sales being made on those levels. The few consumers who are actually buying are able to get all they want at bargain prices. Receipts from Hampton Roads have sagged notably the past fortnight, due to growing conviction on the part of the smokeless agencies that it is futile to try forcing tonnage on so reluctant a market. Steam users generally have such ample reserves, considering business prospects, that they will have little interest in offerings during the next 30 days.

There remain a few "market cargoes" to be disposed of. Three small cargoes recently had to be sold at an average price of $5.35 alongside, and certain others are being hawked about the territory around $5.50 on cars. More than anything else, this gives a significant sidelight on the current market.

With so discouraging a background, it is only natural there should be discussion of next season's business. The outcome of the smokeless operators meeting on Dec. 8 left anything but a favorable impression. Recent price developments in the bunkering business at Hampton Roads have also had a depressing effect and certain interests are freely predicting $1.50 as a probable base price per net ton f.o.b. mines. Should there be any such price, it will leave very little territory here for Pennsylvania mines to supply.

There is renewed interest here in the possible reduction of railroad rates. Mr. Hoover's recommendation that tolls to Atlantic ports be reduced $1 per ton has attracted notice and there is general agreement among the trade that some such move will have to be made if we are not to relinquish export business. At the same time, all-rail tariffs need rectifying quite as much. To leave the New England situation as it is will not only give waterborne coal an unfair advantage, but it will cripple the New England railroads so far as operating income is concerned.

In Central Pennsylvania numbers of operations are existing almost solely on contracts for railroad fuel. Were it not for these, the all-rail movement into New England would be very much lighter than current figures show. Sales agents are struggling to place coal, and all kinds of low prices are the result. This condition shows up more particularly where coal is on demurrage at Philadelphia and New York piers.

Anthracite—Demand for domestic sizes seems progressively less from week to week. Independent shippers are hard put to it to move egg and pea and quotations are still receding. The old-line companies are of course able to put these sizes in storage when there is lack of orders. Water transportation is more than plentiful and several tugs and barges have been put out of commission because of slack business.

Retail trading shows no sign of bracing up. Prices are on so high a level that small dealers are tempted to shade the current list and unless trade improves the next few weeks it is quite likely there will be a more or less ragged situation at retail.

Tidewater—East

NEW YORK

Slow Anthracite Demand—Independent Quotations Softer — Bituminous Shows Little Change — 1922 Inquiries Appear —Less Distress Coal.

Anthracite—If anything, conditions are quieter than they were last week. A reflection in the situation can be seen in the mining regions where several thousand workers are idle because of the lack of orders. Retail yards are filled and dealers are not taking on any additional tonnage.

There is considerable coal at the local piers and between Tidewater and the mines. Most of the companies have stocked considerable coal and others are now storing the bulk of production. Independents have cut their prices to a point where to sell at lower prices would be to dispose of their output at a cost below that of production.

The low temperatures last week did not have any beneficial effect on the market. Egg and pea are quiet with little movement in either. Quotations as low as $6.50 were reported on egg coal. The average low figure was about 50c. higher.

Pea was easy and although it was said some grades were being offered at around $4.50 it was added this was either washery or distress coal.

There have been many inquiries regarding buckwheat which indicates to the trade that the market for it will soon improve. Rice and barley are moving slowly.

Bituminous—Although present conditions are dull local houses are beginning to receive inquiries as to what might be expected in prices for deliveries during the first three months of 1922. Most consumers have several weeks' supply on hand and with the discontinuance of the war tax on Jan. 1 and the uncertainty of the freight rate situation they are not inclined to buy any more coal than they actually need.

Several vessels arrived in this harbor last week with partially consigned cargoes of Southern coals. The tonnage available for spot buyers was being offered at $6 for Pool 1 and $5.75 for Pool 2, both alongside delivery.

Some coal men look favorably on the outlook for next year. They claim that there is a comparatively small tonnage in consumers' bins and with the termination of the present wage scale on March 31 it is expected there will be heavy buying shortly. They all look to an increase in the steel buisiness which will result in a better coal market.

The market is getting into a healthier state, due to the closing down of many mines and the shipping of less coal to this point. Although this has not increased prices it will benefit conditions.

While there are no further reports of English coal being brought into this market as ballast and then sold here, it has been reported that some foreign coals have been carried into Boston and sold there in competition with domestic fuels. Quotations for spot coals do not show much change.

PHILADELPHIA

Anthracite Helped by Colder Weather —Dealers Almost Cease Ordering—Independent Quotations Slump — Bituminous Dullness Persists—Prices Still Soft.

Anthracite—The arrival of the coldest weather of the year, prevented a complete shutdown in the anthracite industry. Despite this there has been no rush on the part of the consumers to purchase, while the retailer has continued to work from stock rather than order from the shippers.

Barring the prevalence of extreme weather, there is no one in the trade who expects a revival before the New Year. Always on the approach of the holiday season there is a decided falling off in sales. Owing to present conditions a number of mines have already curtailed working time, while the others are hoping conditions will so shape themselves as to permit operation up to Christmas Day.

This week only chestnut is in any kind of demand, and even this size is not urgently wanted. There are numerous cases where this has been refused for lack of room to store it. There is not a company that does not have a surplus of every size on hand, much of it being on demurrage.

The week also saw the first real break in prices, as some of the independent shippers were compelled to make drastic cuts on egg and pea in an effort to move them. One independent shipper notified customers of a reduction of egg to $7.75 and pea $5.75 until further notice, although still asking the premium figures for stove and nut.

The dealers report an improved demand for the week, but are firmly convinced that it will take most unusual weather to bring the demand up to the point of normal activity. The consumer is very loathe to order in any quantity, the greater portion of the orders being for single ton lots.

In the steam sizes there is no change and buckwheat has sold recently at $2.50@$3, with but a light tonnage moved. Rice finds few takers. Barley is still in fair demand, but can easily be bought below $1.50 when the buyer is inclined to shop around. The companies are putting their surplus of the steam sizes into the storage yards in unusually heavy quantities.

Bituminous—Production is at a very low level. Ordinarily December has not been a good month for business and has been even less so this year. As the consumer has seen the price drop steadily during the past nine months,

he is not yet convinced that the lowest level has been reached, even though he knows that the prices are not profitable to the producers. There is some hope expressed that on account of postponed purchasing during December there will be at least a small measure of revival after the first of the year.

It is with the greatest difficulty that prices are held from utter collapse and is probably due more to the fact with the mines on short time there is no accumulation to upset the market. However, despite this for the past two weeks there has been an inclination to shade prices and some of the better houses have followed suit.

BUFFALO

Trade Still Quiet, but Cold Weather Helps Anthracite—Bituminous Stocks Preclude Further Buying.

Bituminous — Demand promises to continue light for a considerable time. Somehow the trade has managed to forget that there were large profits but little more than a year ago, in which all had a chance to share. At the same time some who did plunge heavily in those days are now proposing to settle with their creditors on a percentage. Still the trade does not seem to realize that flush times are more unsettling than lean times and should be regarded with distrust. Today, as a rule, the shippers in this trade who were careful are doing much better business than those who plunged.

Consumers have about all they can carry and so must buy more slowly, for actual consumption does not increase very visibly. Still Buffalo is using a goodly amount of coal. People are divided as to how much publicity should be given to the complaints that come from the stagnant trades. Some say that the best should be made of it all, as it would tend to improve the conditions, but the people most concerned do not offer much assistance.

Quotations continue at $2.75 for Youghiogheny gas lump, $2.50 for Pittsburgh and No. 8 steam lump, $2.25 for Allegheny Valley and all mine run, $1.50@$1.75 for slack.

Anthracite—Independents are cutting the circular a dollar or more to keep going until the turn in the demand sets in. Not in a long time has the movement into consumers' hands been so light at this time of the year.

The buying in small amounts is more general than usual. Some consumers are still waiting for lower freights or something else to reduce prices. Others are short of money. Again the notion still holds with some that the prices are so high that they must come down of their own weight if the holding off is kept up.

Lake—Shipments ceased on Dec. 9, an early date, but the shippers had not been anxious for tonnage for a month and loadings ran down so that the big lead over the former season fell off rapidly. The demand for tonnage was so light that only a few cargoes paid more than the ordinary summer freight.

The shipments for the season amounted to 3,814,487 net tons, as against 3,584,286 tons in 1920. The shipment for 1919 was 4,156,218 tons, for 1918 it was 2,913,103 tons, and for 1917 it was 4,137,004 tons.

Coke—The situation does not change materially. Local furnaces are running a little faster than they were, but they do not ask for much coke outside of their regular supply. The prospect is for a quiet winter. Jobbers quote 72-hr. Connellsville foundry at $4.15, 48-hr. furnace at $3.15 and stock at $2.75.

BALTIMORE

Little Enthusiasm Shown in Bituminous — Market Is Flat — Hard Coal Situation Is Also Unsatisfactory.

Bituminous—The soft coal market is still in the grip of an era of low prices, due largely to extremely keen competition. In selling under such a market there is little room for any real profit.

As a matter of fact, not a few of the producers are running at actual loss, while middlemen, after they have charged off demurrage and other costs, frequently find themselves operating without profit. It is truly a most unsatisfactory period for soft coal men. Conditions covering the export and bunker business also are unsatisfactory.

Only one vessel has cleared so far in December with less than 6,000 tons of coal on cargo account. There is much talk in the air that following the arms conference in Washington there will be a move of a financial nature made along international lines that will reestablish a better condition of exchange. Should this occur it seems undoubted that a great improvement will take place in the matter of export coal trading, as contract after contract inquiry has fallen through because of failure to adjust the exchange question.

Anthracite—Dealers report that business continues below normal. The weather has been colder but not severe enough to cause any spurt in ordering and receipts are comparatively light. There is enough reserve in the yards here to take care of emergencies, and no one is willing to stock up coal on which there is not likely to be a lively call.

Inland West

CLEVELAND

Slack Continues Firm—Industrial Buying Dull—Early Meeting on Lake Rates Planned—"Contract" Inquiries Appear.

Save for some betterment in the demand for slack and a gradually improving retail movement, the coal market remains lifeless. Industrial stocks are low, but apparently are sufficient to carry plants over into the New Year. Low operations, partly seasonal and partly due to general conditions, are causing the drain upon stocks to be exceedingly light. Consumers' attitude toward coal stocks is much the same as toward other materials; they want the year-end inventories to show the healthiest position possible.

Industrially the past week has brought forth some queer twists. The mainstay of the section, iron and steel and all metal working industries, are undergoing a considerable contraction of activities. On the other hand, the rubber industry is meeting with unexpected successes in its spring sales campaign.

In the meantime the coal trade is giving heed to next year's business. Inasmuch as reduced freight rates are not believed probable before next spring some consumers have indicated they will soon come into the market for contract coal. Consumers also are closely following developments in the mine labor situation and the first tangible indications that a strike may come will be followed by a demand for supplies. The drastic slump in output of prepared sizes has resulted in a shortage of slack.

A call is to be issued soon for a conference in Cleveland in January between coal operators interested in Lake shipping, railroad men and dock operators. The purpose of the meeting is to devise some policy on freight rates from the mines to the lower docks for next season.

Receipts of bituminous coal for the week ended Dec 10, rebounded from the low volume of the past few weeks, showing an increase of 205 cars; the total amounted to 866 cars, divided; industrial 657, retail 209. The increase was almost entirely in steam coal for industrial concerns.

DETROIT

Sales Are of Small Volume—Inventory Period Defers Purchases — Retailers Get Slight Stimulus — Prices Nominal.

General lack of buying interest continues. Sales made are small and the disposition appears to be toward delaying commitments. Offerings of high-grade coal, that in previous years has been in keen competition among large consumers, attract little attention.

Seasonal conditions are an influence in curtailment of buying. Operations which have been on a low degree of activity for several months are further reduced by the falling off in demand that precedes the holidays.

With a desire to embody in annual balance sheets figures showing as strong a position as possible in cash resources and a minimum of investment in materials and supplies, buyers are taking only such stock as is absolutely necessary to meet current requirements.

Domestic buying is curtailed by the extensive unemployment. Lower temperatures of the last few days has given a slight stimulus to the demand, but this business has not yet expanded to a degree that brings new orders from dealers.

Quotations are of a rather nominal nature. Smokeless lump and egg is $4 @$4.50; mine run $2.25@$2.50; nut and slack $1.25@$1.50. West Virginia lump is $3@$3.25; mine run $2; nut and slack $1.15@$1.25. Ohio lump is $2.75@$3; mine run $1.75@$1.90; nut and slack $1@$1.25.

INDIANAPOLIS

Retail Prices Follow Downward Trend at Mines — Non-Union Quotations to Depress Local Figures.

Byproduct coke, produced in Indianapolis has been reduced $1.50 a ton, and this has been followed by a cut of $1.75 in the retail price. Eastern Kentucky and West Virginia retail prices also have been cut 25c.@75c.

Dealers say the lower retail prices are natural adjustments. Prices at the mines have been reduced recently and the reductions represent in a retail way several small cuts in wholesale costs made recently. Competition of non-union mines probably will force lower prices at Indiana and Illinois mines.

The retail business has been unusually light. Consumers are not stocking up as heavily as they did last year. Sales indicate they generally are buying for immediate needs only. Revised prices are: Linton No. 4 lump.

$6.75@$7; egg, $6.50@$6.75; mine run, $6.25; southern Illinois egg, $7.75@$8; lump, $8@$8.25; West Virginia lump, $8.75@$9; Hocking Valley lump, $8@$8.50; Pocahontas mine run, $8.50; lump, $10.50.

CHICAGO

Domestic Market Demoralized—Salesmen Withdrawn from Road — Eastern Offerings Undercut Local Fuel.

The market is inactive on both steam and domestic coals. As is true at nearly every industrial center in the Middle West, the market on screenings and steam coals of a like nature have been strengthening, but so far as domestic coal is concerned, the market is practically dead. Sales agents have been withdrawing their men, as it seems a waste of time and money to keep them on the road.

Those on the inside claim there is going to be a crop of failures after Jan. 1. The trade last year and during the war had a great many newcomers listed in its records. These cut quite a figure while the cutting was good, and many of them made money very rapidly. Lacking, however, the experience of years in the coal business these gentlemen did not conserve their resources and this past year has just about lost them their previous earnings. Numerous mines were opened, which produced off-grade coals. These mines can only be operated when there is a great shortage, and as this time is past these properties have slowly languished until practically all of them are now closed. Even with this tonnage off the market, too much coal is being produced.

Eastern coals continue to be the big bear of Midwest operators. One Eastern firm flooded the Chicago market with a circular offering smokeless for $1.90 for spot shipment. Quotations direct to the trade at $1.90 a ton caused considerable dissatisfaction, especially among the large retail firms who contracted early in the season for Pocahontas at prices ranging $3@$4 for mine run. Very little consignment coal has been found in Chicago during the past few days. What little did come in was from the Illinois and Indiana mines, rather than from Eastern operators.

The Chicago market on eastern Kentucky as well as West Virginia coal has been badly demoralized, and during the week it was possible to get good West Virginia block as low as $2.25, while egg from the same districts sold frequently at $1.75. Anthracite is extremely sluggish, but prices are being held firm at circular.

COLUMBUS

Holiday Quietude Grips the Market—Domestic Quiet — Screenings Stronger —All Reserves Heavy.

Coal markets are the dullest in many months. It is now a hand-to-mouth proposition and will require some industrial activity, coupled with extreme cold weather, to inject any life into the trade.

Domestic is slow in every way because of the warm weather and bad industrial conditions. Dealers' stocks are heavy and they are devoting their attention to cleaning up. Stocks are of higher priced coal and since credits to consumers have been extended to a large degree, retailers are not in a position to take on any more tonnage. Retail prices are still weak and somewhat irregular. Hocking lump is selling $5.75@$6.25. West Virginia splints are $6.75@$7.50, depending on grade and size, Pocahontas is selling around $9.

Steam trade is at a standstill. Many concerns are closing down for the end of the year's stock-taking. Railroad demand is not large and public utilities are about the only purchasers of consequence. Owing to a reduction in the lump production more strength has developed in the smaller sizes.

Lake trade is over and the figures for the year show a fairly active season. The H. V. Docks at Toledo loaded a total of 4,538,531 tons during the season as compared with 4,008,112 tons in 1920. The T. & O. C. Docks loaded 1,096,515 tons as compared with a total of 1,785,250 tons last year.

The Hocking Valley field, including Pomeroy Bend and Crooksville, is loading but 15 per cent of normal while Cambridge is doing no better.

CINCINNATI

"No-Bills" Disappear—Market Steadier but Demand Still Light—Retail Market Quiet.

The decided curtailment of production in the past few weeks has shown an effect. Some coals have nearly doubled in price, while others that have been wobbling around have steadied to a degree that makes definite quotations possible.

Perhaps the greatest contributing factor to this change is the wiping out of the "no bills" and surplus coal that has stood at the front door of this gateway for several weeks. Portsmouth scales reported that from a thousand cars in excess of normal this had been cut down to a hundred. The DeCoursey yards of the L. & N. have also been pretty well cleared. In the face of this, however, rejections still continue high and inquiries have little of the old-time snap.

The retail situation has veered around a little more in line with the wholesale reductions. Some of the smaller companies have broken away from the long-established figures and are offering smokeless lump at $9@$9.50; mine run $7@$7.50 and slack, $6. Quotations on bituminous are: Lump, $7@$7.50; mine run, $6@$6.50 and slack, $4@$5. Mine prices are shown in the Weekly Review.

ST. LOUIS

Weather Conditions Bring Coal Business to Standstill—Price Cuts Fail to Stimulate—Country Demand Unusually Light.

St. Louis continues to see a lagging market that threatens to demoralize prices if it continues much longer. Standard coal is moving on such orders as are being placed and these call for small quantities.

The Mt. Olive & Staunton Coal Co., feeling that Standard coal was getting away with such business as existed, cut their St. Louis price from $3.50 at the mine to $3. The Standard operators immediately brought the price of 6-in. lump down to $2.75 and lower and 2-in. lump to $2.25, so that the Mt. Olive situation is no better off now than it was before the cut was made. The retailers, however, have not as yet cut their prices.

There is no anthracite or smokeless moving and the deliveries of coke have fallen off to a remarkable extent since the first of the month. The movement beyond St. Louis is light. A little moves to Kansas City and in straggling lots to St. Joseph and Omaha markets, while some steam sizes move to Chicago.

Canada

TORONTO

Cold Weather Stimulates Trade—Supplies Plentiful—Bituminous Still Quiet.

Retail trade has considerably improved during the last few days with the setting in of cold weather and dealers are receiving good orders from domestic consumers though the volume of business is by no means as large as usual at this season.

There are plentiful stocks of all grades in the yards. There is no change as regards bituminous which is selling very slowly, the market being still overstocked.

Quotations are as follows:

Retail:	
Anthracite egg, stove, nut and grate	$15 50
Pea	14 00
Bituminous steam	10 25@ 10.75
Domestic lump	12 00
Cannel	16 00
Wholesale f.o.b. cars at destination.	
2-in. lump	7 00@ 7.75
Slack	6.00@ 6 75

Northwest

MILWAUKEE

Market Continues Dull—Last Cargoes Being Received—Reduction in Gas Coke.

Dealers are waiting patiently for a change of luck, which must necessarily come in the form of cold weather. With the holidays at hand and little snow or ice, the situation is not promising. Orders are few and far between, and small in quantity.

The market is well supplied and there is no danger of a shortage. Prices are held steady, with the exception of coke. Small size gas coke is now being advertised at $10 per ton, a reduction of $1. A new addition to Milwaukee's dock firms is offering Elkhorn at $10 per ton, for nut, and $9.50 for pile run, delivered into bins.

Eight cargoes reached port thus far in December, and there are still two or more cargoes coming. Seven were anthracite and aggregated 51,690 tons. There was one 7,000 ton cargo of soft coal. This brings the season's receipts thus far up to 1,009,662 tons of anthracite, and 2,586,302 tons of soft coal, or 3,595,964 tons in all, against 873,003 tons of anthracite, and 2,376,178 tons of soft coal, or 3,249,181 tons during the entire season of 1920. These figures do not include carferry or rail receipts.

MINNEAPOLIS

Market Is Backward Due to Mild Weather — Concessions Necessary to Move Coal—Retail Coal Prices Steady.

There have been occasional samples but no real winter yet. This is a thin basis upon which to attempt to market coal against a reluctant and backward buying brigade. But that is what the coal trade has been working against, and it is not surprising that they have accomplished so little. There is no

chance of selling beyond a limited store to any purchasers.

Cut prices have been the rule on dock coals, practically everything except hard coal having been cut by some firms. All-rail coal has been moving on very narrow margins. The only basis on which sales could be made seems to be at cut prices.

There remains hardly more than four or five weeks of time during which prices may be expected to get much support from the winter. After the middle of January the edge is usually off the buying. There seems to be little hope to establish a steady market at the list prices on dock coals, while the all-rail market is tolerated only on the basis of concessions.

As yet retailers locally have not suffered much from cutting prices. If there has been cutting it has been limited. This, too, may be expected before long, for there are a number of newcomers in the retail field, and in a field of beginners there are always some who stand ready to experiment with cut prices as a means of building up business.

About all that can be said for the prospects for the market is that they are probably not materially different from those of many other commodities. In numerous lines dealers are facing a pressure for lower values while holding goods which cost them more money. But they are generally better off than the coal trade in that it is possible for them to buy new goods at low prices, average between high and low costs and sell on the basis of the average.

The price of gas coke, prepared to regular sizes, has been cut $1.50 at retail, making the price $14. The local plant announces an expectation that freights will be cut next year as a reason for anticipating it with a cut in price. It has been sold in this market as a substitute for hard coal. Some have half expected that this will result in a cut in anthracite but this seems exceedingly unlikely.

DULUTH

Receipts Adequate—Market Is Quiet—Both Steam and Domestic Slow.

The last cargo of coal has arrived at the Head-of-the-Lakes and the docks are full. It is estimated that considerably more than 5,500,000 tons are in storage.

Receipts from Dec. 1 to the close of navigation totaled 31,360 tons of bituminous and 25,710 of anthracite. Six cargoes were received last week of which three were hard coal.

During 1921 there were received at this port 10,164,849 tons, 1,134,183 tons more than last year, an increase of 12.56 per cent. To make up this increase hard coal went 207,195 tons above last year's figures to 1,844,642 tons, and soft coal receipts were 8,320,207 tons, a gain of 926,998 tons. In all 1,071 boats arrived here with coal this year against 1,029 last year and 1,028 in 1919. The average yearly tonnage received for the last five years is 10,104,828.

Shipments to the interior continue light. Dealers believe that people are burning wood to a great extent throughout northern Minnesota and Wisconsin, being enabled to do this by the mild weather. Manufacturing and mining is practically at a standstill, which has reduced the movement of industrial coal.

Prices have not changed with the exception of buckwheat, which is offered at retail by one firm at $7, or $1.50 lower than the dock list price. Other firms are not meeting this cut, although all are generally known to be overstocked with this size.

West

SALT LAKE CITY

Colder Weather Enlivens Retail Market — Price Increase Criticized — Employment Outlook Improves.

Retailers report a brisk business, due to the cold weather which has set in. There is much discontent at the rise in price, announced a week ago, as it came at a time when everyone thought there would be a decrease.

The announcement by the Utah Copper Co., that the mines at Bingham Canyon would reopen on April 1, was received with much satisfaction by local coal interests. About 2,000 men may be employed to start.

DENVER

Unseasonable Weather Hits Production — Miners Strike Ineffective — Troops Not Removed.

Unseasonable weather caused a drop of 60,000 tons in the weekly tonnage within three weeks, necessitating the temporary shutdown of a number of mines, including several of those that had been reopened only a short time before, following the strike. Troops will not be withdrawn from the coal fields, as petitioned by the union. The strike is virtually ended, but enough men affiliated with or as sympathizers of the union are making it necessary to police the district. Notices of the return to 1917 wages are being filed by many companies. Rockvale bituminous lump retailed a year ago at $12; today, under the reduction of $1 inaugurated by the Colorado Fuel & Iron Co., it is $11, while nut is $10.50. Trinidad slack is $6.90.

There are about 2,500 men out of work in the various fields because of the cessation of operations where the reduction of $1 a ton cannot be met unless the men, who are under contract, agree to a revision of wages.

South

LOUISVILLE

More Mines Down—General Situation Gloomy—Domestic Market Stagnant—Light Steam Offerings Raise Price.

The trade is about as slow as it has been in years. More mines are closing down, while western Kentucky is meeting stronger competition out of eastern Kentucky, which is paying a lower wage scale.

Jobbers report that there is a good call for screenings and very small production. In fact, there is not much demand, but less production. Lump is not moving, and producers cannot supply contracts. This may start mine run moving.

Industrial demand is showing no improvement, while the retailer has big stocks on hand. Unless some severe weather comes, the retailer may have a large carry-over.

It is hinted that the recent reductions to the 1917 wage scale in eastern Kentucky do not represent the end of the cut, although further reductions may be staved off until after a settlement of the general wage scale in the spring. It looks like eastern Kentucky and West Virginia have about decided to hold their wage scale at under all unionized fields, and go after business from that basis.

At that prices are too low right now for production on a profitable basis. There is distress coal on the market, and some eastern Kentucky block has been offered as low as $2.25.

BIRMINGHAM

Acute Dullness Pervades Trade — Inquiry Weak — Production Shows Decided Falling Off — Additional Mines Close.

There has been no visible market improvement in the past week. What little business that is offered is of spot character and individual orders are for only a few cars for prompt shipment. As a whole the tonnage is small and not of sufficient weight to have any bearing in the trade.

Mild weather continues, hence no betterment can be reported in the domestic market. It is almost as difficult to move as steam. The advent of steady cold weather, which is absolutely essential for the relief of this situation, is of uncertain realization.

Quotations on steam and domestic coal f.o.b. mines are about as follows, although some lower grade coals of inferior quality can be had under these figures. Many such producers have been forced to close down under present stringent market conditions, and the prices given are representative: Carbon Hill mine run, $1.90@$2.25, washed, $2.50@$2.85, lump and nut; $4@$4.25; Cahaba mine run, $2.25@$2.75, washed, $2.50@$3.15, lump and nut, $5@$6; Black Creek mine run, $2.50@$2.75, washed, $2.50@$3, lump and nut, $5@$6; Corona mine run, $2.25@$2.50, washed, $2.75@$3, lump and nut, $4@$5; Pratt mine run, $2.25@$2.50, Montevallo lump and nut, $6@$7.50.

Southwest

KANSAS CITY

Retail Business Dwindles—Stocks Are Heavy—Mine Disturbance Fails to Affect Market—Steam Coals Short.

Unseasonable weather again prevails. Dealers are stocked to the sky, and as the market has dropped they are hard hit. Their large stocks cost them 75c. @$1 per ton more than they would have to pay for the same grades today, and it is to be admitted that their complaint against this condition is well founded. The salesman who now calls on his trade is not received as pleasantly as he would have been if his company had made a fair price in the first place and stuck to it. Springfield district Illinois lump dropped to $2.50 in Kansas City; egg to $2.25 and these are two grades that the dealers had bought heavily.

Wives of the Kansas miners are taking up the fight and state troops are in the field to protect property and the miners who wish to work. Only 10 per cent of the mines working could supply all the domestic grades that are in demand.

Steam grades continue very scarce but there are no material changes in prices.

News From the Coal Fields

Northern Appalachian

CONNELLSVILLE

Stagnant Market Reflects Iron and Steel Conditions—Furnace Oven Production Increases—Little Interest in New Contracts.

The coke market continues stagnant, with no demand for prompt furnace, little call for prompt foundry and only occasional interest in contract prices. The dullness is due simply to stagnation in the iron and steel market and is not attributable to anything like a deadlock between coke seller and buyer. The blast furnaces that use purchased coke are not moving all of their current product and are making very few sales, while some are talking of banking over the holidays.

While there is a considerable volume of furnace coke loaded on track the holders are making no price concessions. They would be glad to receive inquiries but as a rule do not quote prices without inquiries. The nominal asking price is $3. For heating and miscellaneous purposes coke is quoted $2.50@$2.75. Even this market is quite inactive.

In foundry the spot market is particularly quiet after a very moderate run of carload orders last week. Some foundries having contracts that expire Dec. 31 are asking prices for the first quarter but will probably be quoted for January only. Spot furnace is $3; contract furnace, $3.25@$3.40; spot foundry, $3.75@$4.50.

The *Courier* reports production in the week ended Dec. 10 at 56,780 tons by the furnace ovens, an increase of 8,780 tons, and 32,130 tons by the merchant ovens, a decrease of 2,940 tons, a total of 88,910 tons, an increase of 5,840 tons.

PITTSBURGH

Market Remains Stagnant—Improvement Expected in February—Non-Union Competition Ruinous.

There is no material change in the situation. The market continues stagnant, with a little buying of high-grade gas, such as cannot well be secured from other districts. The nearby non-union fields are taking nearly all the steam business. There is scarcely any byproduct market as the ovens that use coal not of their own mining are usually supplied by long-term contracts.

With the decreased demand for Connellsville coke, operators are making more effort than formerly to sell coal and thus the competition is increased rather than lessened.

Operators do not look for any important increase in demand before February, when there may be an increase either on account of increasing industrial operations or from buyers wishing to stock against a possible mining suspension in connection with settlement of the new wage scale.

Gas slack, quoted last week at $1.50 @$1.60, is in slightly better demand, and there are more sales at $1.60 than formerly. Steam slack is $1.30@$1.40 mine run and ordinary gas, $2.10@ $2.20; ¾-in., $2.60@$2.70; Pan Handle 1¼-in. domestic, $2.75@$3; high-grade gas mine run, $3.

EASTERN OHIO

Continued Sluggish Demand—More Mines to Close—First of the Year May Check Declining Demands.

The predominating factor during the week ended Dec. 10 was the continuance of a sluggish demand, and the tonnage mined showed a further slight recession. It is not improbable that some additional mines will close down temporarily.

Total production amounted to 294,000 tons or 45.5 per cent of potential capacity. Likewise, the output is on a parity with operations during April, when demand was very dull and before opening of the Lake season. Association mines worked 37 per cent of possible worktime as compared with 41 per cent the preceding week, and produced approximately 44 per cent of capacity.

Cumulative tonnage figures for the calendar year indicate a production of 16,925,000 tons as against potential capacity of 30,442,000 tons, showing that 55.5 per cent of capacity has been mined during the year.

Due to continued mild weather and apparently no increase in the amount of traffic being transported by railroads, if anything, they are curtailing the quantity of fuel being mined for their account.

If the coal trade is any criterion by which industrial activity may be measured, it must be concluded that any changes in the Ohio industrial situation during the week were in the nature of a slackening of activities rather than anything else. Present tendencies in the iron and steel industry are toward a slight decrease in output, with the railroads reporting business duller than it has been for weeks. The slight recuperation has now been overtaken by seasonal dullness, resulting in more or less "marking time" on the part of industry until after the first of the year.

Industrial concerns are putting their houses in order, and are optimistic as to the outlook for business with the new year, and while it is not expected that there will be any extraordinary improvement, it is felt that inquiries and sales will at least take on new life.

Slack remains about the same as reported for last week. The volume available is rather restricted, and the price remains firm at $1.50.

UPPER POTOMAC

Production Increased by Some Mine Resumption on Reduced Scale—Market too Weak to Sustain It.

There was a slight increase in production during the week ended Dec. 10, made possible by the fact that approximately 800 miners have accepted a return to the 1917 wage scale. Where these reductions were in effect the average pay under the new scale was about 80c. a ton for machine-mined coal. There was no assuranee, however, that even with reduced production costs, mines would be able to operate steadily.

CENTRAL PENNSYLVANIA

Deplorable Conditions in Union Fields—Sentiment Favors Resumption at Lower Wages.

Mining conditions are anything but encouraging and unemployment is becoming greater throughout the district. Central Pennsylvania lost, during the month of November, 15,768 car loads, or 788,400 tons by reason of being unable to meet competition. In the eleven months of 1921 ending Nov. 30, the field lost a total of 128,872 carloads, or 6,443,600 tons.

In the unionized section there is much suffering among the miners and the demand for relief is so great that the United Mine Workers are unable to cope with the situation and local officials threaten to resign. In some of the districts, notably at Robertsdale, Broad Top and in some sections of Cambria County, the locals threaten to box up their charters and send them to headquarters unless relief comes soon. This would indicate that the miners are ready to go back to work at the reduced scale.

Things are happening with great rapidity in all coal fields east of the Mississippi River and operators venture to predict the collanse of the United Mine Workers in this section before April 1, 1922.

FAIRMONT AND PANHANDLE

Idleness More Pronounced—Inquiries Disappear—Distress Tonnage Heavy.

FAIRMONT

Idleness was more pronounced than ever during the week ended Dec. 10. On an average only about 48 mines out of the 300 were in operation from day to day. Commercial demand was almost at a standstill and little other than railroad fuel was moving. Buyers were not even making inquiries and contract orders alone furnished a production outlet.

NORTHERN PANHANDLE

With loadings limited largely to railroad fuel, production was not over 65,000 tons. What little coal was mined was moving to the West or to Buffalo. Inquiries were scarce and no new contracts were being made.

UNIONTOWN

Byproduct and Beehive Competing for New Contracts—Few Inquiries—Coal Market Sluggish.

The few inquiries out for furnace coke for 1922 requirements indicate that byproduct makers will be sharp competitors with beehive producers. Prices for next year's delivery are not clearly defined. A $3.75 figure for the first three months is heard in some quarters and $3.50 in others.

The spot market is unusually quiet, both for coal and coke. Tonnage moving from market sales is a negligible quantity and in most cases is the result of forced sales. Furnace coke is quoted nominally at $2.75@$3. Foundry is a little better at $3.75@$4.25. All grades of coal are weak, steam being quoted at $1.40@$1.50 and byproduct $1.65@ $1.85.

ANTHRACITE

Market Turns Stagnant — Some Companies Curtail Production—Many Independents Closed.

The situation is the most serious that it has been in a number of years. There are practically no orders for coal coming in. The Pennsylvania Coal Co. announced the closing down of ten mines indefinitely, due to lack of orders. The Lehigh Valley Coal Co. has eight collieries closed, due to an outlaw strike.

The Susquehanna Collieries Co. is only operating part time at a number of its mines. Many of the independent collieries have closed down entirely because of the lack of orders.

Middle Appalachian

LOW-VOLATILE FIELDS

New River Output Increases with Reduced Wages — General Markets Unimproved—Contract Cancellations.

New River and the Gulf

If New River production increased somewhat during the week ended Dec. 10, it was because some miners had agreed to accept lower wages and not because of any change in market conditions. The bulk of production was on contract and even these were in process of curtailment. Comparatively little domestic coal was being marketed.

Idleness increased greatly in the Gulf region, more than half of the mines being down, with conditions described as the worst of the year. Producers believe that after Jan. 1 the outlook might warrant them in mining more coal, but for the present they are without a market, one grade being as much of a drug as another.

Pocahontas and Tug River

Pocahontas mines were not producing more than 130,000 tons a week with "no markets" in excess of 220,000 tons. Not only was there no spot business offering, but contract orders had been scaled down to almost nothing. Bunker and coastwise business was scarce and Tidewater shipments were reduced to the minimum.

Tug River production was reduced because of the growing market dullness and did not reach more than 50,000 tons. Spot sales had largely ceased and contracts had been either canceled or curtailed. Shipments to affiliated steel companies continued and most of the coal loaded found its way to Western markets.

HIGH-VOLATILE FIELDS

Pre-Holiday Idleness Dominates — No Market for Spot Coal — Production Drops Further.

Kanawha

Idleness dominated the situation during the week ended Dec. 10, most of the mines being shut down. Spot demand for either domestic or steam fuels was at the zero mark and inquiries were few. Buyers were able to secure distress coal in sufficient quantities to meet their needs.

Logan and Thacker

Logan production, while increased slightly, was less than 50 per cent of capacity. Little other than contract coal was being moved, although producers were able to ship some tonnage to Detroit and points on the Ohio River. Even the fact that mines were in a position to meet declining prices, failed to attract any new business.

Thacker production dwindled to about 65,000 tons, no market losses reaching 135,000. The spot market was in a comatose condition, sales being out of the question. Mines operated about two days.

Northeastern Kentucky

The downward trend of production continued, the output not being 25 per cent of capacity. General market conditions barred most of the mines from operating, although they were in a position to quote lower prices than organized mines could make.

Virginia

Production was not much under 60 per cent of capacity or about 120,000 tons. Some of this, of course, was utilized in coke making. Virginia mines had a good contract market, comparatively speaking, which enabled operators to go ahead at a time when most plants are shut down.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Production Is Low — Heavy Domestic "No-Bills"—Additional Mine Closings Inevitable.

Very little change is noted in the situation and there seems to be little hope for improvement before the first of January, if then. The few mines that are trying to operate now will probably close soon until after the holidays, as in most cases their sidings are full of prepared coal which can only be moved at sacrifice prices.

Screenings are moving a little better, but even at that, buying is only from hand to mouth. Prices on best 4-in. block are around $3; 2 x 4-in. egg, $2.10 @$2.25; nut and slack, $1@$1.15; mine run, $1.65@$1.80.

Middle West

MIDWEST REVIEW

Market Dullness Continues — Steam Coals More Active with Low Production—Domestic Situation Stagnant.

But little change has taken place in the coal market during the last week. The situation has not grown worse, because such a development would be absolutely impossible. On the other hand, on account of the extremely warm weather no improvement has been noted.

As has been the case for some time, the country trade is marking time. Sales made to the retail trade in the country have been few and far between. What sales were made were done at reduced prices. It is a noticeable fact that the retail trade is looking for a cheap coal and overlooking for the time being, the question of quality and preparation.

One angle of this development may prove advantageous to some Eastern operators. In Iowa, for instance, the only kind of West Virginia and Kentucky coals recently moving out was the 4-in. block or 2-in. lump. Those retail dealers now do not want to pay the price for block and are buying egg at prices ranging $1.75@$2.50, applying it on what few retail Kentucky orders they have on their files. It is to be hoped that this forced introduction of Eastern bituminous egg will bring beneficial results in the long run to Eastern operators who, up to now, have only been able to market their coarse coal in the West.

The industrial situation is extremely stagnant. Steam coals are mounting in price, some sales being reported at $2.25 for best grade southern Illinois screenings, but as usual, this increase in price was brought about by scarcity of steam coal at the mines rather than increased industrial activity. We heard of one instance west of the Mississippi River which will give a very good idea of the industrial Middle West situation. One railroad serving Illinois, Iowa, Missouri and Kansas reports on one division thirty conductors working as brakemen on freight trains at reduced wages in order to keep steady employment and to keep themselves in line for pension. The traffic of this particular railroad has fallen to very low levels and the officials are not in an optimistic frame of mind, as they do not see where an increase is coming from. Current quotations are shown in the Weekly Review.

The old heads in the game are not looking for greater activity in the coal market until after the first of January. When that time comes there will, perhaps, be some improvement. As it is now, the warm weather combined with the holiday season has joined to bring the whole situation practically to a standstill.

Very few difficulties have been reported in the way of labor. Some trouble occurred last week in Kansas where the wives of some of the striking miners attempted to interfere with the operation of several of the mines. State troops were called out and the situation is now well in hand.

WESTERN KENTUCKY

Movement Generally Light—Production Steadily Declining—Hope to Readjust Wage Scale — Non-Union Competition Grows.

Continued mild weather and lack of prepared orders has resulted in retailers being out of the market, except a few of the small ones which are not carrying much stock. There is little fine coal to be had, and operators are supplying most of this on contracts, with the result that the market on screenings is strong.

Operators are coming into price competition with West Virginia and eastern Kentucky coal at this time but have been able to meet it due to lower freight rates. However, they are anxious to secure an adjustment if possible of the present union wage scale.

Eastern Kentucky has cut wages to the 1917 level, and western Kentucky is beginning to feel competition where cheap coal is being shipped on higher-priced western Kentucky orders, where jobbers cannot get screenings.

Operators are running less than two days a week, while many mines are down. Screenings are scarce as a result of the small production of lump, and whereas they were selling for 40c. a few weeks ago they are now quoted $1.25@$1.75. Prices of prepared coal are weakening a trifle.

SOUTHERN ILLINOIS

Continued Warm Weather Has Upset Market Conditions — Domestic Moving Slow—Tendency to Cut Prices—Steam Shows Some Strength.

The Carterville situation continues bad on account of the warm weather. Railroad tonnage has eased off but is about the only thing that keeps some mines working. Lump is heavy and hard to move. Screenings show the best movement, but the demand is not strong enough to justify a higher price.

There is considerable unrest among the miners on account of the idleness preceding a holiday, but in spite of everything that the operator can do to move coal the market will not take it. The present is a forerunner of what is going to happen in normal times with the overproduction that Illinois is capable of.

Somewhat similar conditions prevail in Duquoin and Jackson County. It is the same slow, hard pull, with some down for as long as two weeks at a time.

The Mt. Olive district is doing more in railroad coal than anything else. Domestic movement means about one day a week and there is no steam coal to offer as a rule because it goes on contract.

St. Louis price on Mt. Olive was cut from $3.50 to $3 and this will likely prevail in Chicago, while the country price remains $3.75 for domestic sizes. This has caused some feeling on the part of the dealers who have large quantities stored and it is going to hurt Mt. Olive in the future. The cut was started in order to offset the inroads that Standard coal is making in St. Louis.

In the Standard district things are in a bad way and gradually getting worse. The lump market is shot to pieces and it is going to take a lot of cold weather to bring it back. Railroad demand is fairly good, but the general condition through the field is far from satisfactory to both miner and operator. Some mines have been down now for three weeks without working and others have coal piled up that it will take about three weeks to move, present weather prevailing.

Screenings are about the only thing that seem to move at all without work.

News Items From Field and Trade

ALABAMA

A new enterprise promising much for the Birmingham District has begun operations at Mobile. **The DeBardeleben Coal Co.** is shipping bunker coal to Galveston via ocean-going barges. In return, cargoes of sulphur from Freeport, Tex., for the acid plants of Birmingham are expected to be obtained.

A tour of inspection of the Birmingham district will be made by **D. A. Lyon**, supervisor of the Bureau of Mines. He will be accompanied by **A. C. Fieldner**, who has charge of the byproducts coke division and other parts of the fuel division, and also by **R. G. Davis**, chief of the experimental station established in Minnesota in the ore region.

ALASKA

Coal operations in Alaska under Navy Department direction have not progressed far enough, in the opinion of Admiral R. E. Coontz, chief of naval operations, to permit the drawing of any conclusions at this time. In a report to the Secretary of the Navy, he states, however, that mining operations will have advanced sufficiently by Autumn to enable the Navy to make a definite decision as to the value of this undertaking.

The Alaskan R.R. has invested $342,362 in a coal mining department.

ILLINOIS

The Sangamon County Mining Co. is planning for the installation of new machinery at the Latham mines recently acquired. The present output will be increased.

Chris Oberheide, of the firm of Oberheide and Son, Chicago retailers, who is now on an eight months' trip around the world, has written Chicago friends, telling them of his pleasant trip. He has visited, or will visit, Cuba, the Panama Canal, Hawaii, Japan, China, the Suez Canal, and various countries of Europe.

The Franklin Coal and Coke Co., with extensive operations in Franklin and Williamson counties, has announced its intention to sink another mine between Mulkeytown and Royalton. The mine will be located on the new branch of the Illinois Central which is to be constructed.

John Pynchon of the Crozier Pocahontas Coal Co., has returned to Chicago from a trip through Indiana and to Cleveland. He declares the coal situation there is as bad as it is in Chicago.

B. R. Yeagley, secretary of the Indiana Retail Coal Merchants' Association, with headquarters in Indianapolis, is in Chicago visiting railroad claim agents. He is seeking to straighten out approximately $10,000 worth of coal claims that have arisen during the last few months.

The Belleville Coal & Mining Co. has increased its capital stock from $100,000 to $180,000.

Doswell Brown, secretary and treasurer of the Kentucky and Tennessee Coal Co. of Nashville called on the Chicago trade recently. He declared he saw no signs of encouragement in the industry, and said that there is a large quantity of coal on track in Tennessee.

INDIANA

More than 500 miners employed in three of the seven mines owned and operated by the **Clinton Coal & Mining Co.** went on strike recently on order of President John Hessler of District No. 11, U. M. W., after the operators had refused to reinstate a pumper, alleged to have been unjustly discharged.

The Riverside Coal Co., of Jackson, Ky., has filed suit in the Federal Court at Indianapolis, asking $5,000 damages from Carl A. Seibel, of the **Dunn Coal Co.**, Fort Wayne, alleging that he refused shipment of 7,000 tons of coal. The suit charges that Seibel contracted for 10,000 tons and after delivery of 3,000 tons refused to accept further shipments when prices broke sharply. The damage asked represents the difference between contract and the present price on 7,000 tons of coal.

Orpheus M. Dickey filed two suits on contract in Terre Haute recently, asking judgment for $500 in each case. **The Woods Coal Co.** of Coal Bluff, was named as defendant in one action, while the other action was against the **Nevins Coal Co.**, also of Coal Bluff. Dickey alleges that the Woods company ordered 2,000 motor ties from him and that the Nevins company ordered 41 poles and 250 railroad ties; and that in each case the company refuses to pay for the material.

To aid the Methodist Episcopal Hospital at Princeton in a campaign to make up its annual deficit, Princeton and Francisco miners have each agreed to give the labor required to dig 1,000 pounds of coal. **The Princeton Coal Mining Co.** and the **Ayshire District Collieries** will give the coal.

KANSAS

Women sympathizers of Howat, brought military control of the coal field several steps closer by continued recent attacks on workers. Attacking two mines of the **Central Coal & Coke Co.**, one mob prevented sixty men at Mine 51 and forty at Mine 48 from going to work.

KENTUCKY

J. M. Dewberry has been appointed general coal and coke agent of the L. & N. R.R., at Louisville, for the entire system, succeeding **E. H. Dulaney**, who has been appointed chairman of the southern freight rate committee, at Atlanta. Dulaney in turn succeeded **C. D. Boyd**, who is now traffic manager for the Southern Appalachian, Hazard and Harlan operators' associations, he serving jointly for the three organizations, which keep up one traffic bureau.

Thieves recently tunnelled a twenty-inch brick wall to enter the office of **Louis Desnoguets & Co.**, Lexington, coal dealers, blew a safe and took about $900 in cash.

The Cumberland & Manchester R.R., operating a short line in the Knox and Clay county coal fields, has announced contracts placed for $250,000 worth of equipment, including two new 150-ton freight locomotives, a passenger locomotive, thirty steel coal cars, ten wooden cars, and a number of box cars and general equipment.

John C. Lepping, Louisville, has changed the name of the **River & Rail Coal Co.**, to the **Lepping Coal Co.**, (retail) following objections made to the use of this name by the Rail & River Coal Co., Inc., jobbers.

The Aldins Coal Co., Robinson Creek, capital $30,000, has been chartered by T. J. Phillips, Frank Marcum and A. R. Roberts.

The Crawford Coal Corporation, Williamsburg, capital $150,000, has been chartered by Essex P. Blalock, J. B. Bowling and J. H. Bowling.

Clint C. McClarty has affirmed ownership of the **Tri City Coal Co.**, Louisville.

MISSOURI

The Riverside Coal Co., Novinger, Adair County, has been chartered with a capital stock of $20,000.

Gen. J. L. Wulff has been appointed president of the Western Coal & Mining Co. of St. Louis, succeeding **W. P. Hawkins**, deceased. Mr. Wulff was the sales manager for the company in Kansas City, Mo.

The Central Missouri Coal & Mining Co. will develop 600 acres of coal at Holt Summit, and will spend $75,000 to install its plant.

The Bates Coal Mining and Mercantile Co. has opened a new coal mine on the Bellier place, north of Rich Hill, and is now loading shipments for the market.

NEW YORK

Major W. P. Tams, head of the Tams interest in West Virginia, attended a smokeless meeting in New York early in December. **J. C. Sullivan**, who is extensively interested in smokeless operations in southern West Virginia, was also in New York at that time.

One hundred and forty former employees of **Westinghouse, Church, Kerr & Co.** met for supper recently and organized the **"W. C. K. Alumni Association,"** to meet weekly, on Wednesdays, for luncheon between twelve and one o'clock at Zimmerman's Restaurant, 180 Fulton Street, New York City, where alumni are welcome. Secretary, A. H. Tummel, 131 Warwick Street, Brooklyn, N. Y.

The object of the Association is the maintenance of the friendships formed by the members during many years of service with Westinghouse, Church, Kerr & Company. The periods of this service run anywhere from three years to twenty-five years.

Robert T. Hasler, of Hasler & Co., Norfolk, was in New York recently, in conference with officials of his office there.

The Archdeacon-Sakis Coal Co. has opened an office at 817 White Bldg., Buffalo, and will act as sales agents of the **Braddock Coal Co.**, of Cumberland, Md., besides doing a general jobbing business.

New York City office of the **Blaw-Knox Co.** has been moved to the Carbide & Carbon Bldg., 30 East 42nd St.

OHIO

The Pittsburgh-Ohio Coal Co., recently organized, is arranging for the early operation of property acquired in Jefferson County, consisting of over 200 acres of coal lands. Machinery for mining by stripping will be installed. A. F. Smith is president.

Cliff Randall, who has been in charge of the Detroit office of the Main Island Creek Co., is now associated with the Island Creek Coal Sales Co. and will continue to be located in Detroit. This announcement was made from the Cincinnati offices.

R. A. Colter, of the C. G. Balke Co. spent a week in the East, most of which was with New York affiliations getting a first hand view of the export situation.

Frank B. Stewart, president of the Winifrede Coal Co., returned to the head offices in Cincinnati after several days of conference with the directors at their headquarters in Philadelphia.

Changes effected by the consolidation of the **Fort Dearborn Coal Co., the Yukon Coal Co. and the Wood-Morton Fuel Co.** in Cincinnati will mean the closing of the latter company's offices and the return of **A. L. Bobbit** to Charleston and the sales direction of the new corporation for this territory being placed in the hands of **R. H. Boykin**, who has had charge of the Ft. Dearborn's offices.

The Island Creek Coal Sales Co.'s Cincinnati office, which has been located in the Union Central Bldg. for a number of years will be moved to the Dixie Terminal Bldg.

The American Inland & Export Coal Co., has changed its location from the thirteenth to the fourteenth floor of the Union Trust Bldg., Cincinnati.

Pittsburgh interests have purchased the holdings of the **Williams Coal Co.**, Steubenville, for $66,000, according to an announcement by George W. Borden, receiver for the company.

The Roth Coal Co., which has maintained an office in the First National Bank Bldg., Cincinnati, has closed it and its affairs are now directed from the offices of **Jewett Bigelow & Brooks.**

The Western Fuel Co., has moved from the tower of the Union Central Bldg., Cincinnati, to the ninth floor of the same.

PENNSYLVANIA

Charles H. Dorrance, who has been acting for several years as vice president and general manager of the Hudson Co., will, in the future, devote all of his time to the duties of vice president, according to an announcement issued today by the company. He is succeeded as general manager by **R. H. Buchanan** of Scranton who, since last July, has been assistant to the general manager. **Charles W. Wagner** has become superintendent of explosives.

H. D. Kynor, of Scranton, formerly of Pottsville, has been appointed assistant general manager, succeeding Buchanan. **R. V. Williams**, of Scranton, who has been acting as general superintendent of the Lackawanna district, has also secured a position as assistant general manager.

The Madiera Hill Co. is planning a new railroad siding, new breaker yards and water lines at its Natalie and Hickory Swamp collieries, near Pottsville.

The S. Flory Manufacturing Co. has recently secured an order from the **Hudson Coal Co.**, Scranton, for seven hoists equipped with the Flory improved band friction.

The Reitz Coal Co., Philadelphia, has filed notice at the office of the Secretary of the Commonwealth, Harrisburg, of an increase in capital stock from $500,000 to $1,000,000; John Lochrie, president.

The Goshen Coal Co., Clearfield County, has filed notice of an increase in indebtedness from nothing to $100,000; H. B. Hartswick, treasurer.

The Fairfield Coal & Coke Co. has filed notice of an increase of indebtedness from $500,000 to $750,000; I. L. Hammond, Westmoreland County, treasurer.

Announcement has been made that the **Clairton Coke Co.** will build six additional batteries of byproduct coke ovens at Clairton.

The Dauphin County Commissioners will not make any increases during the present triennial assessment of the coal lands in the northern part of Dauphin County. Anthracite holdings there were increased materially three years ago. The increased assessments made in 1918 have not been recognized by the **Philadelphia and Reading Coal and Iron Co.** The company has appealed from the assessment and the tax collectors have returned the company's property to be sold by the County Treasurer for taxes. For three years the company has been paying the county taxes on what it says is due.

The Clymer Coal Co., Commodore, has been chartered with a capital stock of $10,000. David J. Thomas, Clymer, treasurer. The incorporators are: Lloyd H. Guelick, Clearfield; William T. Thomas, Clymer, and David J. Thomas, Clymer.

The Roman Coal Co., Greensburg, capital, $25,000; treasurer, Pietro Angeline, Bradenville, has been organized. The purpose of the company is the mining of coal and the manufacture of coke. The incorporators are: Anthony De May, Greensburg; Pietro Angeline and Ernesto Pagliaricci, Bradenville.

The Fuel Service Co. has notified the office of the Secretary of the Commonwealth of an increase in its capital stock from $50,000 to $100,000. A Markle, Jr., is treasurer, Luzerne County.

The Nay Aug Coal Co. has increased its indebtedness from nothing to $750,000; David Boies, president, Lackawanna County.

The Lindsay Coal Mining Co. has increased its indebtedness from nothing to $80,000; A. L. Light, Jefferson County, treasurer.

The award of compensation in the case of Mrs. Hannah M. Morgan against the **Philadelphia and Reading Coal and Iron Co.**, an appeal carried to the Schuylkill County Court, is affirmed and judgment has been entered in favor of the claimant for $3,303.

UTAH

The Department of the Interior has issued to date five coal mining leases and four prospecting permits for this state, according to H. J. Smith, acting mining supervisor for the Bureau of Mines with headquarters in Denver. Mr. Smith is on an inspection trip in Utah coal fields.

Fear is expressed lest the fire which originated a short time ago along the outcropping of a valuable coal vein on the government land in Garfield County should have become uncontrollable. Only meager reports have been received in Salt Lake City so far, but it is known that the burning area has spread into a tunnel. Two government engineers have reached the spot and a plan for fighting the fire is being rapidly organized.

VIRGINIA

Under a **readjustment of trimming rates** on coal loaded at Hampton Roads piers, charges on vessels of the self-trimming type are reduced by approximately 18 per cent. Rates on other classes of vessels are lowered to a more limited extent, except in one instance, where the new tariffs call for an advance of 1 cent a ton on trimming. Lower rates were effected as a result of conferences betwe-en the Hampton Roads Maritime Exchange and the representatives of the Norfolk & Western, Virginian and Chesapeake & Ohio railroads. Coal shippers are non-committal on the rates, the belief being that if they are demonstrated to be unsatisfactory, protests will be lodged with the Interstate Commerce Commission asking for further reductions.

The Norfolk office of the **Central Pocahontas Coal Co.**, scheduled to have been closed Dec. 10, will remain open.

WASHINGTON, D. C.

Among a long list of **claims pending before the Shipping Board**, according to a report to Congress, are the following coal claims: American Shipping & Fuel Co., $107,842; Berwind White Coal Mining Co., $26,500; Clearfield County Coal Co., $2,922; Coal & Oil Corporation, $824; Commercial Coal Co., $762; B. J. Lynch Coal Co., $7,000; Lake & Coal Export Corporation, $10,864; New Orleans Coal Co., $2,500; United Coal Co., Rotterdam, $5,957; United Coal Companies, $391,610; Virginia Iron & Coal Co., $26,680.

Plans for organization of coal mine chapters of the **Joseph A. Holmes Safety Association** were considered at a recent meeting at the Bureau of Mines at which were present in addition to representatives of the Bureau of Mines and the American Mining Congress, J. W. Reed, director of safety of the Consolidation Coal Co. and a representative of the United Mine Workers, W. J. James. Another meeting will be held in January and it is expected the organization will be put in motion in March.

Among coal estimates submitted to Congress by the various departments of the government are the following: **Panama Canal**, anthracite, $4,005; bituminous, $190,995; **coast guard**, $993,200; **coal for public buildings**, $1,255,000; **Bureau of Mines**, for testing fuel, $136,000 a decrease of $6,510; **naval coal depots**, $306,000, a reduction of $291,000.

Appropriations totaling $1,632,560 have been submitted to Congress to cover the expense of work planned for the next fiscal year at the Bureau of Standards. One of the items making up this total is mine scales investigation, $15,000.

The Internal Revenue Bureau announces in connection with the appointment of a committee representing the public and the government to simplify tax forms and regulations under the new revenue law that initial consideration to changes in the matter of regulations and forms covering the coal industry will be had by the subdivision of the Bureau on Natural Resources.

WEST VIRGINIA

Kanawha County coal men have organized the **Eclipse Coal Co.**, the new concern being capitalized at $50,000. General offices of the company, for the time being, will be maintained at Charleston. Active in organizing this company were: J. B. Vaughan Logan; O. J. Cox, E. M. Cox, Fred Nicholson, of Charleston, and S. A. Lewis, of Cabin Creek.

Michigan men are behind a movement for the further development of Logan County territory, having organized the **Logan Island Creek Coal Co.** which will operate near Critas in Logan County, that place to be the headquarters of the new corporation which has a capital stock of $200,000. Identified with this company are: Charles Coryell, Charles A. Coryell, George MacPhail, R. F. MacPhail, all of Bay City, Michigan; W. R. Lilly, Logan, W. Va.

Representative Goodykoontz, in a House speech urging the creation of an additional judgeship in the Southern District of West Virginia, in which, however, he failed, said it was to relieve the crowded docket due to increased litigation over coal land titles due to new industries coming into the state from all over the country in order to locate near the base of a supply of coal and other fuel. High freight rates on coal are forcing manufacturers to establish their plants close to a supply of fuel and this rapid development has increased the business of the courts.

The American Coal & Coke Co. has been incorporated with a capital stock of $100,000. Incorporators are Edward A. Byrne, F. E. Peabody, J. J. O'Connell, Charles M. Rhoad, John C. Bierer, Pittsburgh.

A recent visitor in the Fairmont field was **M. L. Hudson**, treasurer of the Edward Hines interests of Chicago. After spending a day or so in that field he left for New Orleans.

J. W. Bischoff, general superintendent of the West Virginia Coal & Coke Co., with headquarters at Elkins, and also president of the West Virginia Mining Institute, was in Charleston recently, attending a meeting of the institute.

Alex Laing, general manager of the MacAlpin Coal Co. is back at his office again after a trip through California and Texas, having visited the Mexia oil fields of Texas during his western trip.

H. P. Brydon & Bros., of Piedmont, W. Va., were awarded $12,500 damages in their breach of contract suit against the **Reliance Coal & Coke Co.**, of Cincinnati in a hearing at Cincinnati. The suit grew out of the failure of the Baltimore Mfg. Co., of Baltimore, Md., to take coal which it had contracted for.

R. B. Isner, who recently became connected with the Old Dominion Coal Corporation of Charleston spent a few days in Elkins recently. Mr. Isner was formerly located at Elkins where he was the sales manager of the **West Virginia Coal & Coke Co.**

After some delay and several legal tangles the sale of $325,000 worth of the Morgantown & Wheeling Ry. for $162,500 to **Samuel Purseglove** of Cleveland was recently consummated. The bonds were owned by Clay and Morgan districts of Monongalia County and were issued for the purpose of helping to build the road, which has been in the hands of a receiver for some time. A number of improvements are contemplated in the Scott's Run section in order to facilitate the handling of coal. A scale is to be built near Maidsville and a "Y" at the mouth of Scott's Run.

It is probable the reports of the Senate Committee on Labor on its recent investigation of the West Virginia coal strike will be delayed several weeks. Pressure of other legislation has prevented the committee from giving much attention to the report, and the committee is now taking up the proposed department of welfare. The delay is also occasioned by the desire of the committee to endeavor to present to the Senate a comprehensive report containing recommendations which would seek to alleviate disputes in all industrial fields.

Following a visit paid to the Western offices of the Central Pocahontas Coal Co. in Cincinnati by **Vice-President W. J. O'Toole**, of Welch, W. Va., the following changes in the sales personnel were announced. **George Loeb**, who has been in charge of the Norfolk office, to the Cincinnati office and **Frank Wright**, who has been in the New York office, to the Michigan territory.

The opening of Mine No. 7 of the **Babcock Coal & Coke Co.** in connection with the development of the lease of this company on the Nuttall land at Cliff Top, in Fayette County, signalizes the beginning of general development work on the part of this company. The mines have been closed down for several months and in the interim the company has been at work getting the new mine in shape to open. The new mine is to be equipped with electrical apparatus both inside and out. Because of the topography of the land, it was necessary to build an elevator from the mine mouth to the storage bin.

The Raleigh-Wyoming Coal Co. is engaged in constructing a large coal plant at Glen Rogers, in Wyoming County. An up-to-date shale-making brick plant has been added.

W. D. Reed, of the Fairmont & Masontown Coal Co. has returned from a business trip to Washington.

James H. Henshaw of Fairchance and Robert W. Henshaw of Uniontown are among the incorporators of the **Fielder Coal & Coke Co.**, with offices at Morgantown.

The Glad Creek Coal and Lumber Co., a $1,000,000 concern just incorporated, has arranged to develop coal and timber on a large scale in the Shady Spring district of Raleigh County. The chief members of the company are E. A. Simmons and D. S. Twehig, of Charleston; B. D. Lacy and Mrs. B. D. Lacy, of Clothier, and S. W. Rickey, of Cincinnati, Ohio.

BRITISH COLUMBIA

At a meeting of the district branch of the **Canadian Institute of Mining & Metallurgy**, held recently at Cumberland, B. C., addresses were delivered by J. D. McKenzie, chief geologist of the Western division of the Dominion Geological Survey, on coal formation; by Col. J. E. Leckie, chairman of the Western division of the Institute, on the aims and objects of the institute; and by Nichol Thompson, chairman of the mining bureau of the Vancouver Board of Trade, on the mining industry.

Traffic News

The Interstate Commerce Commission has ordered suspended **Supplement 11, to the Missouri-Pacific Tariff, I. C. C., No. A-4891**, following petition filed by J. Van Norman, Louisville attorney, representing the western Kentucky operators. This supplement was to become effective Dec. 5, but the I. C. C. sustained the application and ordered that effective date of order be postponed until April 4, 1922, pending hearing and further order of the commission. The supplement published reductions ranging from 10½c. to 91½c. on coal from Missouri-Pacific, southern Illinois mines to points in Louisiana, Arkansas and Texas. In some instances, this would create for western Kentucky a disadvantage of 54c. per ton as against a present advantage of 8c.

The I. C. C. has suspended until April 4 proposed reductions in rates on bituminous coal from mines on the M. P. R.R. in southern Illinois to points in Arkansas, Louisiana and Texas.

John Hawkins & Sons, of Nutley, N. J., allege unreasonable demurrage charges on coal shipments which could not be unloaded because of their frozen condition.

In the complaint of the **Consolidated Coal Co.** of St. Louis, the commission decides that the rate on fine coal from Mount Olive and Staunton, Ill., to Kansas City, Mo., is not unreasonable.

The Interstate Commerce Commission has suspended until April 8 the proposed reduction of 5c. per ton on coal from Alabama mines to Gulf ports when for bunkerage, for export or when for points in Florida and Texas accessible by water, but an increase of 20 cents a ton when handled through tipple for other purposes.

The Utah Ry. Co. is to take over the line of the **Utah Terminal Ry.**, according to a notice filed with the Interstate Commerce Commission. The former was recently refused permission to operate as an interstate line. It is situated in the coal fields in the Spring Canyon district, owned by a group of operators.

The I. C. C. has suspended from Dec. 5, 1921, until April 4, 1922, the operation of certain schedules which proposed reductions in the rates on coal from mines in the Rock Springs and Cumberland districts in Wyoming to points in Utah south of Ogden, Utah, on the lines of the Southern Pacific, Oregon Short Line, Denver & Rio Grande Western, Los Angeles & Salt Lake, and other lines.

The Northwestern Traffic and Service Bureau is complaining against unreasonable rates on soft coal from Alger, Wyo., to Grand Junction, Ia.

Application of **the Peerless Coal Co.** for rehearing of its case in which the Illinois Public Utilities Commission recently decided rates on coal from various points on the Springfield Terminal Ry. to interstate destinations were not unreasonable, has been denied by the commission. The rehearing was requested on th ground that the Springfield group rates are higher than those in Ohio, Pennsylvania and Indiana.

Before the Interstate Commerce Commission the **Illinois Terminal R.R. Co.** has replied to the brief of respondents, saying that the objectors to the proposed extension desire to prevent competition between the **Donk Bros. Coal & Coke Co.**, and the coal companies in and around O'Fallon.

The Wm. L. Dee Clay Mfg. Co., of Mecca, Ind., has filed a protest against the abandonment of the Chicago and Indiana Coal Ry. Division of the Chicago & Eastern Illinois R.R., saying operation of the line is essential, particularly the twenty miles from Mecca to West Melcher.

Obituary

Charles B. Kinne, for 30 years a member of the coal trade of Buffalo, died recently. He was always a prominent figure in the bituminous trade and conducted a business in his own name. As president of the Northeastern Coal Co., he was at one time coal purchasing agent of a great part of the tannery interests of the country.

Harrie E. Everett, aged 53, Chicago retail coal dealer, died recently, after a two weeks' illness. He was connected with W. Everett & Son, and was well known in the retail coal trade of the city.

James H. Price, aged 67, secretary-treasurer of the Washington Coal and Coke Co. of Fayette County, Pa., died at his home in Dawson recently. Heart disease was the cause of death. Mr. Price was formerly an official of the Pittsburgh-Buffalo Coal Co. and the American Steel and Wire Co., Pittsburgh.

Association Activities

Southwest Virginia Coal Operators' Association

At the last meeting of the association, it was decided to secure the services of a traffic manager and plans are on foot to have whoever may be retained begin his services about the first of the year. The November meeting was largely attended and a number of questions affecting the industry in Virginia were given consideration.

The association has sponsored a school of instruction for mine foremen conducted under the supervision of R. V. Long, Director for vocational training of the Virginia State Board of Education and J. C. Wright of the federal vocational board. So thoroughly have some operators become impressed with the value of such instruction to foremen that they have committed themselves to a continuance of the program. One producer has secured the services of a member of the federal board of vocational education to spend four weeks at his plant and another member of the association proposes to employ a director of vocational training at his plant. The hope has been expressed that a field director may ultimately be secured.

St. Louis Retail Coal Merchants' Correct Weight and Inspection Bureau

The newly organized bureau, consisting of thirty-five retail dealers, has elected the following officers: President, F. L. Keightley; vice-president, Charles Lehr; secretary, W. J. Hooper; treasurer, John Kessin; commissioner, E. J. Wallace. The bureau was organized principally to have corrected certain ordinances in St. Louis which are the cause of unfair restrictions against the coal trade, and it is their intention to put on inspectors to see that the public is protected against short weights and substitutions.

Northwestern West Virginia Coal Operators' Association

At a meeting of the advisory board of the association, held late in November at Clarksburg, a policy was adopted to be pursued at the joint board meeting of operators and miners held to deal with the Francois Coal Co. case. Representing the operators were A. Lisle White, Everett Drennen and C. H. Tarleton, members of the advisory board, together with E. S. McCullough; the miners were represented by Nick Aiello, president, Patrick Buckley, vice-president and Edward Matthews, secretary of Subdistrict 4, together with Frank McCartney, district board member. Operators are becoming impatient because of the large number of trivial strikes in northern West Virginia during recent months.

St. Louis Coal Service Bureau

At a recent meeting of the bureau, new officers elected for the coming year were: President, L. P. Coan; vice-president, W. H. Riester; secretary, M. J. Reinagel. Executive committee: W. T. Hegwein, W. F. Heinecke, W. A. Schroeter, C. R. Watkins and W. H. Boehmer.

This organization consists of about twenty of the largest dealers in St. Louis.

Coming Meetings

The American Institute of Consulting Engineers, Inc., will hold its annual meeting Jan. 16, 1922, at the Engineers' Club, 32 West 40th St., New York City. Secretary F. A. Molitor, 35 Nassau St., New York City.

New England Wholesale Coal Association will hold its annual meeting Jan. 10, 1922, at Boston, Mass. Secretary, R. S. Townsend, 27 Kilby St., Boston, Mass.

Southern Appalachian Coal Operators' Association will hold its next meeting Jan. 27, 1922, at Knoxville, Tenn. Secretary, J. E. McCoy, Knoxville, Tenn.

Pike County Coal Operators will hold their annual meeting Jan. 6, 1922, at Pikeville, Ky. Secretary, F. E. Miller, Pikeville, Ky.

Volume 20 New York, December 29, 1921 *Number* 26

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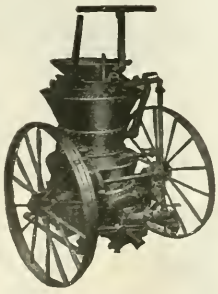

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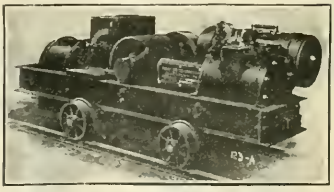

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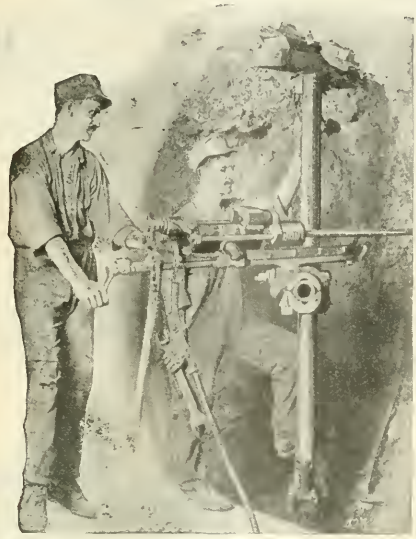

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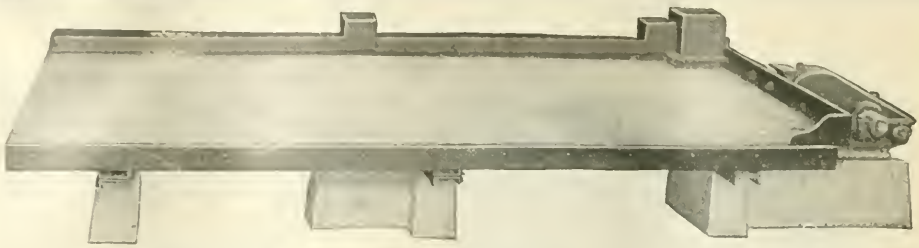

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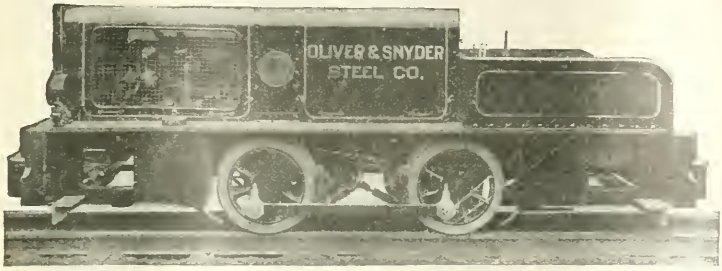

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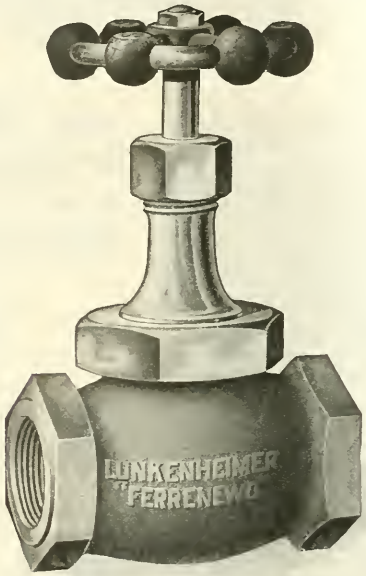

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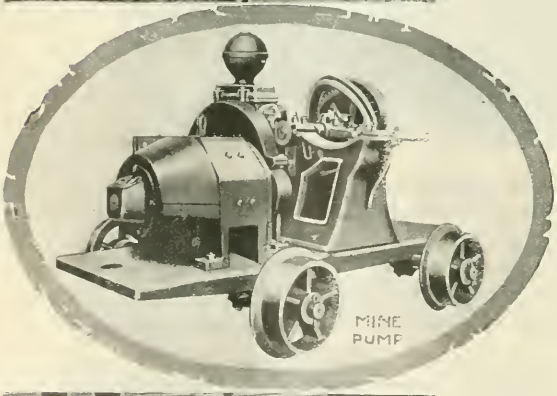

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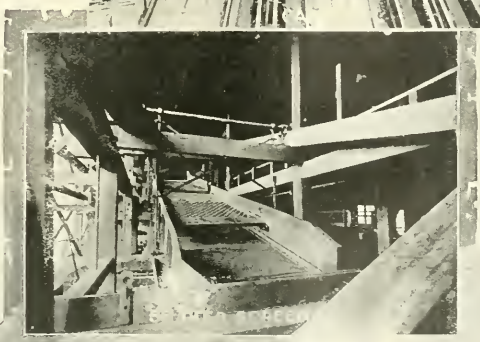

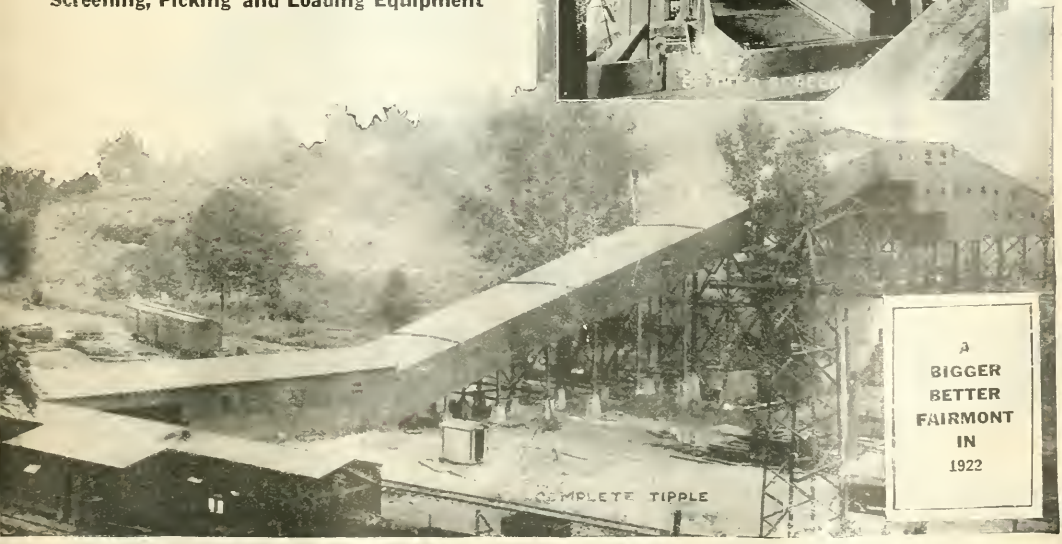

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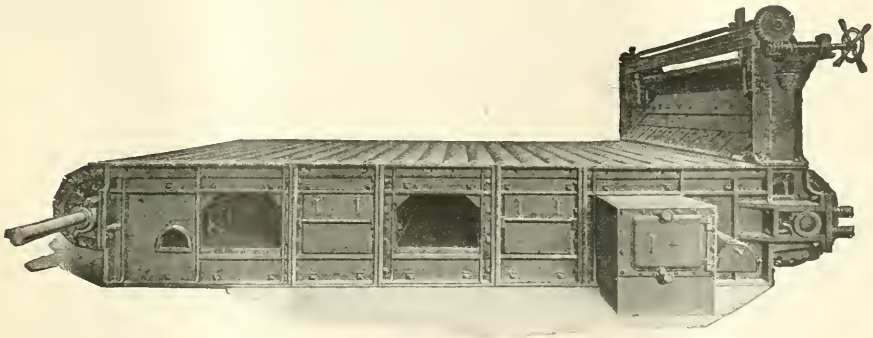

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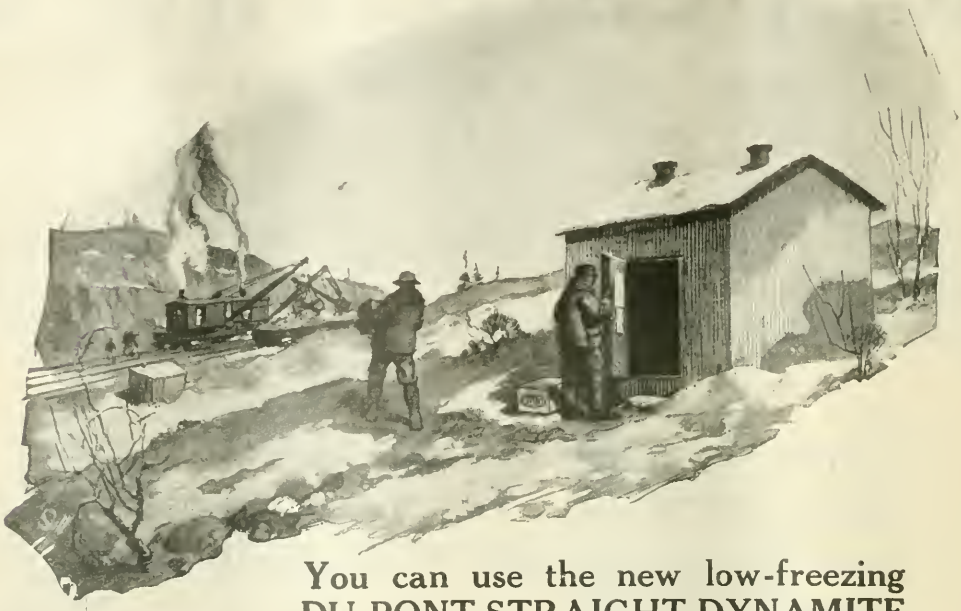

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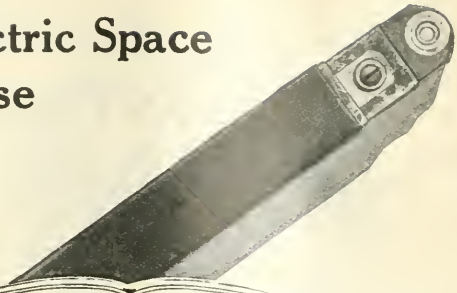

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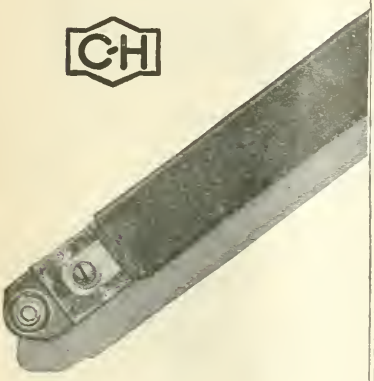

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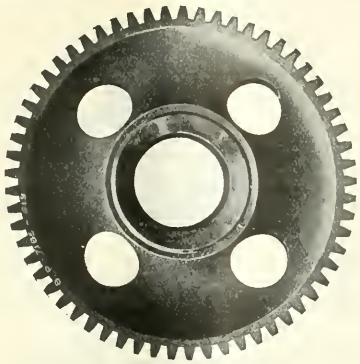

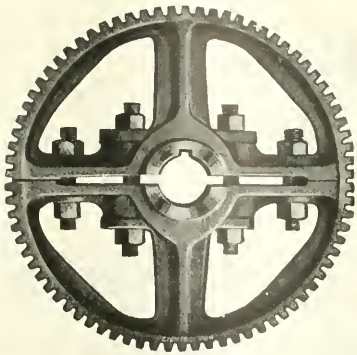

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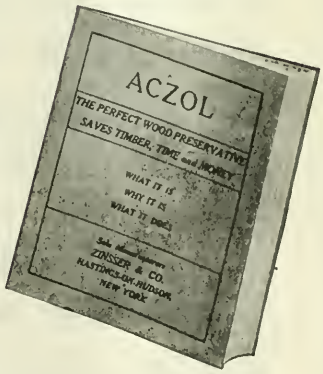

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SAVES EVEN THE HEART OF THE WOOD

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER AND R. DAWSON HALL, *Editors.*

Volume 20 NEW YORK, THURSDAY, DECEMBER 29, 1921 Number 26

Business Plans and the Legal Hazard

HOWEVER much we may regret that Mr. Justice Brandeis' opinion was not that of the court in the hardwood lumber case, we are confronted with the fact that a majority of the highest court of the land believe that the purpose and effect of the activities of the "open-competition plan" are to restrict competition and thereby restrain interstate commerce; that in short it is a combination and conspiracy in restraint of trade within the meaning of the anti-trust act.

The suspense is over. In no uncertain terms the court of courts has decided that interchange of trade information among competitors is unlawful. It is true that the court was passing on the operations of one particular group of business men who appear to have taken full advantage of the information they mutually exchanged, but it is not specified how far and in what respects these hardwood manufacturers might have proceeded without violating the law, nor has the court intimated other than that each and every activity of the "open-competition plan" is illegal. It has not stated that if they had done "this" or "that" and no more, all would have been well, nor does it differentiate in any way in the culpability of the association between the simple collection, compilation and dissemination of data and the use made of these data. It is not stated, for instance, that exchange of price information is proper but that bulletining members with market reviews and forecasts is improper.

On the contrary, the court finds the "plan" simply "an expansion of the gentlemen's agreement of former days, skillfully devised to evade the law." The whole system comes under the law in the words "To call it open competition because the meetings were nominally open to the public, or because some voluminous reports were transmitted to the Department of Justice, or because no specific agreement to restrict trade or fix prices it proved, cannot conceal the fact that the fundamental purpose of the 'plan' was to procure 'harmonious' individual action among a large number of naturally competing dealers with respect to the volume of production and prices, without having any specific agreement with respect to them, and to rely for maintenance of concerted action in both respects not upon fines and forefeitures, as in earlier days, but upon what experience has shown to be the more potent and dependable restraints, of business honor and social penalties—cautiously reinforced by many and elaborate reports, which would promptly expose to his associates any disposition in any member to deviate from the tacit understanding that all were to act together under the subtle direction of a single interpreter of their common purposes, as evidenced in the minute reports of what they had done and in their expressed purposes as to what they intended to do.

"In the presence of this record it is futile to argue that the purpose of the 'plan' was simply to furnish those engaged in this industry, with widely scattered units, the equivalent of such information as is contained in the newspaper and government publications with respect to the market for commodities sold on boards of trade or stock exchanges. One distinguishing and sufficient difference is that the published reports go to both seller and buyer, but these reports go to the seller only; and another is that there is no skilled interpreter of the published reports, such as we have in this case, to insistently recommend harmony of action likely to prove profitable in proportion as it is unitedly pursued."

The test of legality hereafter to be applied to any and every proposed exchange of information by business men through an association is whether it is useful. If the knowledge thus to be gained can be of any help to the individual in conducting his business better and more profitably, it is illegal. So far back does this decision of the Supreme Court set us.

It does not seem too much to say that unless the Sherman law is amended—and who hopes for that?—other ways of doing business must be devised. The *Iron Age* notes editorially that "One effect will be to make it necessary to depend to a greater extent than ever upon trade-paper quotations, which will be virtually the only source of general information among manufacturers and distributors as well as buyers." Another possibility is the "exchange," on which open trading in coal, for instance, would take place with consequent publication of prices. Judge Carpenter, in his linseed oil decision, spoke of luncheon clubs, to which might be added the golf links. Increased co-operation through the government, in which direction the Department of Commerce is leading American business today, offers still another avenue of approach.

Brophy—Leader or Misleader?

UNABLE to recognize that they are up against a condition and not a theory, the officials of the miners' union in central Pennsylvania received a well-deserved jolt when, on Dec. 19, T. H. Watkins, president of the Pennsylvania Coal & Coke Corporation, one of the largest employers of union coal-mine labor in that field, told Mr. Brophy, president of the local union, that he did not care to have further communication with that official, but that he would treat with his employees direct.

There is no argument on the point of which operator has done the business and which miner has worked this year. The non-union fields with wages scaled down in harmony with economic conditions have worked and profited. The union fields and men, of which central Pennsylvania and Mr. Watkins' employees are typical, have not worked. Six million tons of coal not produced, a share of the going trade in 1921, lost to one field

because the union will not even meet the employees for a discussion of the problem that is common to both.

Central Pennsylvania is a high-cost field, with markets practically limited to territory reached by all-rail routes east and north of the mines, principally Canada, New England, New York and Pennsylvania. Someone must have been censoring Mr. Brophy's information, since he clings to the idea that the men he is supposed to represent are and have been this year working as steadily as those not under such stubborn control as his.

Since April Mr. Watkins has been seeking to win the local miners' union over to a consideration of whether it would not be better for them to agree to a present reduction in wages, and have a few days a week work, rather than no work at high wages.

How can such blind leadership as that typified by Mr. Brophy succeed? It is not unionism and collective bargaining to which Mr. Watkins shuts his door. He is and always has been a friend of union labor. He is doing its constructive thinking now, where Mr. Brophy has failed. He would put central Pennsylvania back on the map as a coal producer. Where thirty years ago the miners were driven to force recognition of their cause, today conditions are making for a reversal, so that operators, deprived of their trade through selfish leadership of the unions, are being forced to storm the citadel of unionism.

The Answer Is "It Hasn't"

A WELL-KNOWN English writer recently made inquiry of COAL AGE as to the reason why the tonnage per man per day in the anthracite region had increased, whereas British tonnage per man-day had declined. He believed that it was more reasonable to compare the British collieries with the American anthracite mines than to use the mines of the American bituminous regions in making the comparison. For this reason he wanted to know why the anthracite output per man had increased, whereas the British daily output per employee had declined.

In 1890 the output of anthracite per man per day, according to the U. S. Geological Survey, was 1.85 tons, whereas in 1918 it was 2.29 tons, a high figure of 2.50 being reached in 1899. Outputs, of course, are more or less fortuitous. In 1899 the high figure per day was the result of unsteady work. The mines ran only 173 days in that year and the men accordingly were willing to do their best when opportunity presented. In 1918, however, there was no irregularity of opportunity to stimulate their work, but the year was one in which patriotism replaced dire necessity as an energizer.

Looking over the figures, however, it is inescapable that some influence has been at work which has lifted these figures of production per man per day, despite the disadvantages of greater depth, greater distance for transportation, shorter hours, more timbering, more and deeper pumping, more labor for ventilation and more and larger waste heaps. Is this increased tonnage per man day to be ascribed to such matters as a reduction in the number of preparation employees, to improved methods of transportation, to second mining (where a man can produce coal with less effort than in first mining and where no development work has to be done) and to the introduction of machine mining at a few of the mines? These favorable conditions certainly have helped, though some will perhaps declare with regard to second mining that cleaning up old falls, silting the workings or, its alternative, the repair of damaged houses and the increase in cost of hauling and cleaning the waste that always accompanies second mining have more than offset these improvements and made pillar drawing in the end no more economical than work in the solid.

An overpowering fact seems to dwarf all the others. It is that the figures of the U. S. Geological Survey can be readily misinterpreted and in consequence have almost always been misunderstood. The English writer in question also seems to have misread them. The U. S. Geological Survey does not record the coal actually produced. It gives tables showing the coal which is disposed of in three different ways, namely: (1) Loaded at the mines for shipment, (2) sold to local trade and used by employees and (3) used at the mines for steam and heat. But in times past much of the coal mined and brought to the surface was disposed of in none of these three ways. It was piled with rock and boiler ashes in big dumps; it was washed into the streams. Of no immediate value, and without recognized potential worth, no care was taken of it and no record was made of the quantity actually produced. For this reason the actual production even as late as 1890 was higher than was recorded. In contrast, in computing the production of 1918, coal entered into the figures that might, in a sense, have been accredited to 1890 and even to earlier years, for it was coal mined and hauled at an earlier date and recovered from culm banks, flooded flats and the river beds.

In 1890 only about 10 per cent of the shipments consisted of buckwheat, No. 1 and "smaller," and the smaller made only 2.2 per cent of the total, whereas in 1916 26.5 per cent of the total shipments consisted of buckwheat No. 1 and smaller. In 1918, when unusual drafts were being made on the culm banks, these steam sizes made up 32.2 per cent of the total, and it must be remembered that the culm banks contain some coal that is larger than buckwheat.

Painstaking efforts are now being made to state just how much of the coal below and above buckwheat comes from culm banks and represents the minings of previous years, despite the fact that freshly-mined and culm-bank coal are being prepared in the same breaker and being mixed for the market. It is impossible, however, to tell how much of the coal output in 1918 or any year was the freshly-mined, but rejected, coal of 1890.

For these reasons we would reply to the question of our English friend: Why has the production of anthracite per man per day increased? by saying quite simply "It probably hasn't."

In 1918 143,237 men, working 293 days, freshly mined and prepared for use and market 80,502,383 gross tons. This is 2.15 short tons of freshly-mined coal per man per day.

In 1918 the breakers working on fresh-mined anthracite saved a quantity of coal of buckwheat No. 1 size and smaller which represented 27.07 per cent of all the coal which the breakers produced. If that saving had been made in 1890, instead of the 10 per cent which the record shows the total coal produced would have been increased 23.4 per cent. As each man is alleged to have produced 1.85 tons, he must actually have produced 1.234 times that quantity, or 2.28 tons. Thus in 1890 he produced 2.28 tons and in 1918 only 2.15 tons. Hence by this analysis the figures are reversed. The coal produced per man per day is declining rather than increasing.

Steel Timbers and Grouted Lagging of Steel and Brick Make Durable and Dry Shaft Bottom at Revloc, Pa.

Calculations Showed Steel to Be More Economical Than Brick or Concrete—Heavy Steel Beams and Girders Were Accordingly Framed and Placed—Water from an Old Borehole Finally Shut Off

By R. B. Woodworth
Pittsburgh, Pa.

IN EARLIER years mine structures often were built of temporary or perishable materials. Wooden timbering was placed even on important headings, although it was realized that before the mine was worked out much of it would have to be renewed. Today, however, most new work is carefully planned with the idea that all timbering and roof supports shall remain in place and in service until the workings have been exhausted. Much of this work is now executed in steel or reinforced concrete instead of wood.

An interesting example of unusually heavy construction in steel is presented by the shaft bottom in the mine of the Monroe Coal Mining Co., at Revloc, Pa. This is shown in the accompanying illustrations. The operation is comparatively new, shaft sinking having been started in 1916 and the coal reached the following year. Two concrete-lined shafts, one a supply-and-man shaft and the other the main hoisting shaft, have been sunk. During the period of development and while the main shaft-bottom roof supports were being placed, the coal was hoisted and loaded on cars at the supply shaft. In 1918 the tonnage had reached such proportions that it was no longer economical to raise it in the supply shaft, and work was begun on the main shaft bottom.

The main hoisting shaft comprises two principal compartments (one 12 ft. x 12 ft. 8 in. and the other 12 ft. x 12 ft. 5 in.) and is served on each side by four tracks for loaded and empty cars. Each compartment is fitted with a self-dumping cage carrying two cars side by side. Sixty-five feet from the center of the shaft on the loaded side is a crosscut containing the mechanism of the trip feeder. This required special framing.

Preliminary estimates were made on brick arches, reinforced concrete and steel timbering. These indicated that the steel supports would be more economical and in every way more satisfactory. The roof was, therefore, supported by steel I-beams resting on sidewalls of standstone masonry. The roof beams at the shaft bottom were 20 in. deep and weighed 65 lb. per foot. They were so placed that their outer ends rested on the sandstone walls. At the center they were framed into a 24-in. 80-lb. girder carried on 8-in. 34-lb. H-beam columns located in the center of the heading. The span between sidewalls—28 ft. 6 in.—was too great for the load to be carried on single or continuous beams.

At the crosscut, where the span was reduced to 16 ft.,

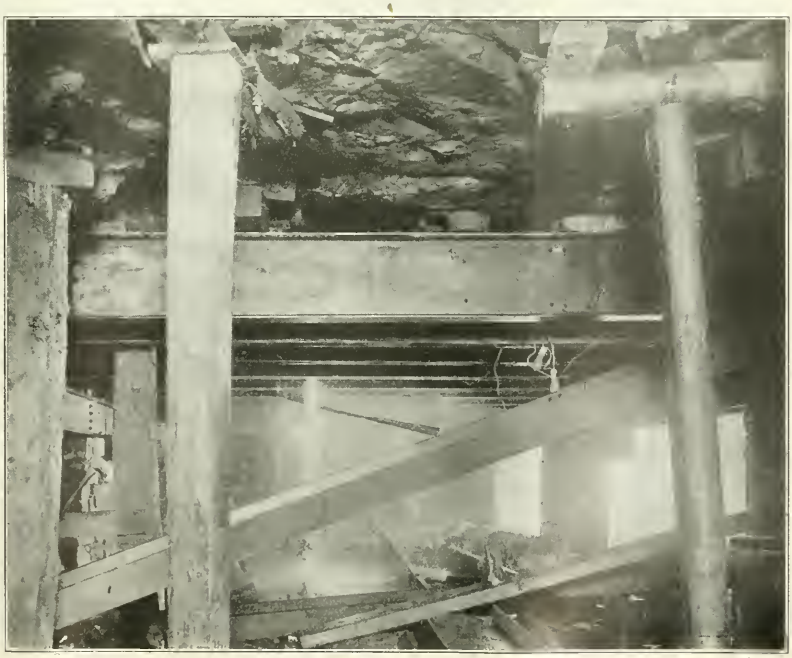


FIG. 1

Placing Steel Timbers

It will be noted how broken is the roof and how difficult to maintain even with timbers forming veritable cribs which are built up on the tops of the supporting posts, these posts being placed as close to the roadway as possible. This exhibits one of the failings of wood timber work. If when such timbers fail from weight or decay they could be replaced without roof falls it would not be so regrettable. In this case, of course, the wood timbering was essentially, and by absolute necessity, only temporary.

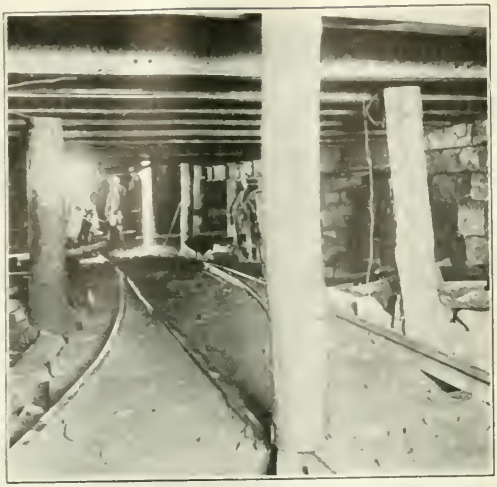


FIG. 2. WHERE WORK IS NEARER COMPLETION
The walls on the right are of sandstone. Note the heavy 3-in. stream of water from the borehole, which appears also in Fig. 1.

18-in. 55-lb. beams were used. These it was necessary to carry over the crosscut, the scale room and the trip-feeder machinery pit on box girders composed of two 15-in. 60-lb. beams. The original intention was to support these latter by three sandstone piers, each 24 x 36 in., in cross-section. When the full load was placed upon these piers, however, they proved to be of insufficient strength to carry the weight safely and were later replaced by six steel columns, two of which were made up of three 18-in. beams and the other four of three 15-in. beams. These were of sufficient strength to carry the load, and the framing has proved entirely adequate. The length of heading as framed is 150 ft.

After the steel beams had been set they were lagged with tees spaced on 9½-in. centers. A single row of brick was laid between the tees and grouted in position; the space between the brick lagging and the roof was then filled with grout under pressure, drippings from which upon the roof beams can be seen in one of the accompanying photographs. The steel columns at the cross-cut also were filled with grout.

While this construction was going on a diamond drill-hole that had been put down in testing the coal measures was cut into at a point in the center of both cross-cuts and main heading 65 ft. from the center line of the shaft. This hole had been ineffectually sealed with grout and when cut into let loose a stream of water 3 in. in diameter at a pressure of 130 lb. per square inch. It was found impractical to reseal this hole prior to placing the steel roof supports, because, when the opening was plugged, excessive pressure was thrown on the crevieed roof. The water flowing from the drillhole made it exceedingly difficult to excavate the roof and bottom, to place the masonry and to erect the steel.

Entire Installation Is Made Dry

After the steel roof supports had been placed, the drillhole and the hoisting shaft (which, although lined with concrete, made considerable water) were grouted under pressure and made practically waterproof. This in conjunction with the grouting above the steel lagging made the whole installation dry.

Preliminary design of the shaft bottom, including the layout of tracks, machinery, etc., was made by C. E. Sharpless, chief engineer of the Monroe Coal Mining Co., in conjunction with Heyl & Patterson, Inc., engineers, of Pittsburgh, Pa. The finished plans and preliminary design of the steel roof supports was made by R. V. Whitman, assistant chief engineer of the Monroe Coal Mining Co., under whose supervision the entire work was executed. The steel framing was detailed and fabricated by the Carnegie Steel Co.

Fig. 1 is a longitudinal view through the heading and shows the work in its early stages during the placement of the new steel timbering. It also shows a part of the roof and the old timbering in place, as well as the loca-

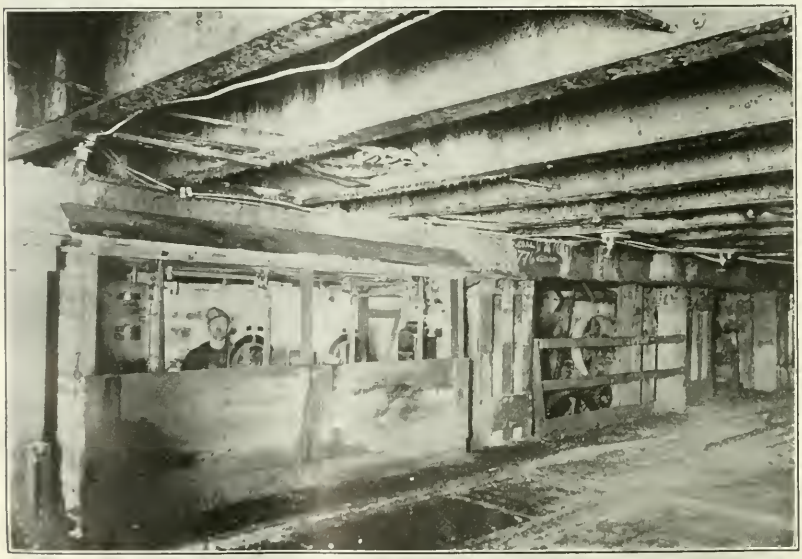


FIG. 3

Timbering at Scale and Machinery Pits

At the crosscut the main side track is only 16 ft. wide so 18-in. 55-lb. beams could be used. The difficulty lay in giving them support, for the load had to be concentrated at a few points owing to the presence of the trip-feeder and weigh pits. Sandstone columns were found inadequate, even though 24x36 in. in cross section, so six steel columns, two of three 18-in. beams and four of three 15-in. beams, were used for that purpose.

FIG. 4

Completed, Ready for Painting

On the right and left will be seen the strong box girders, made of 15-in. 60-lb. I-beams, by which the cross beams are carried. The steel posts which in turn support these box girders can also be seen. In the rear center may be discerned the 8-in. 34-lb. H-beam columns which support the 24-in. 80-lb. girder which gives center support to the long girders over the four-track section.

tion of the cross-cut. Fig. 2 is, in like manner, a longitudinal view through the heading but in the opposite direction. Fig. 3 was taken looking partly down the heading, and shows the scale and the machinery pits. In this figure the finished work and the steel columns which finally replaced the sandstone piers after their failure are shown in some detail. Fig. 4 corresponds to Fig. 1, but shows the installation completed except for cleaning and painting the steel work. It was taken looking from the crosscut side toward the shaft. Fig. 5 is a drawing showing the general layout of the entire shaft bottom.

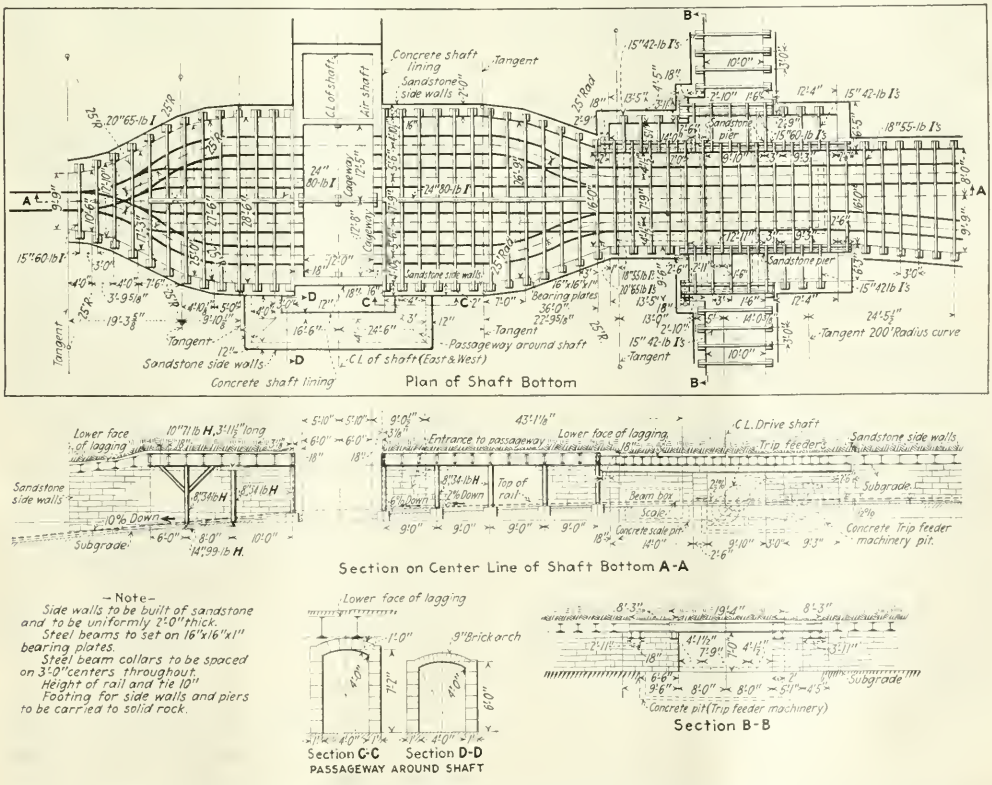


FIG. 5. PLAN AND ELEVATIONS OF THE REVLOC SHAFT BOTTOM

The sandstone walls were built as planned but during construction the sandstone piers shown were replaced by steel piers in order to obtain greater strength.

In Utah Outcrop Fires, Wants in Coal Seam and Sluffing Ribs Present Unusual and Difficult Mine Problems*

Indians Probably Started the Fires, Which Have Penetrated Sometimes Half Mile from Crop—In Places Rooms Eighteen Feet Wide Fill with Coal from Sluffing Pillars—Water Pressure Weakens Ribs

By J. B. Forrester†
Hiawatha, Utah

IN THE OPERATION of the coal mines of Utah few adverse conditions are encountered. The physical conditions for the most part favor the economical extraction of the coal. Still, several obstacles are encountered which keep up the interest of the mining man and prevent him from getting in a rut. Of these I shall mention only burning, wants and the sluffing of ribs.

Should one travel along the outcrop from Ivy Creek, in Emery County, to the line between Utah and Colorado, one outstanding feature would be indelibly impressed upon one's mind. This is the omnipresent indication of burning in places. Viewing the eastern escarpment of the Wasatch Plateau from a distance, many splotches of dark red are plainly visible, always lying above the coal floor. The stratum at this elevation is a felspathic sandstone, appearing as a white line running the full length of the above-mentioned escarpment and about midway between the floor of the valley and the top of the plateau.

The coal-bearing complex consists of shales, sandstones and coal, and varies from 200 to 1,100 ft. in thickness. The number of coal beds present is exceedingly variable. As a rule the shale, which forms the bulk of this complex, has been baked by the burning of the coal, and the iron present has been oxidized to the ferric state, coloring the shale a dark red. This baked material forms a "shingle" talus that in places covers the entire complex.

Burned Crop Usually On the Arid Slopes

It is natural to expect that the most extensive burned areas will be found in the canyons facing the south and east and on the southern slopes of ridges running east and west. That expectation agrees with the facts. Still in this arid region the northern slopes also have been the scene of many crop fires, especially in those canyons that face to the east. In fact today instances are not rare where northern slopes are now heavily timbered with balsam and fir that have attained a diameter of 14 to 24 in. and are growing upon the disintegrated baked shingle. Development of the bed proves that the coal has been burned at least 500 ft. back from the outcrop. These conditions, however, are not normal.

In this arid climate the southern and eastern exposures are steep and barren, except for the scrub pine, cedar, mahogany and kindred semi-xerophytes.[1] Bunch grass also is a lover of such places. Little soil is found in these localities, as it is either blown away as fast as formed or washed away by the rare torrential rains or by the rapidly melting snow.

Thus the physical conditions in this region are favorable for the starting and maintenance of outcrop fires. There are four possible ways in which such fires could have been started, namely: (a) Lightning, (b) forest fires, (c) Indian fires, (d) spontaneous combustion. The last of these may be dismissed without comment.

Fulgurites Show What Lightning Has Done

It is difficult to understand how lightning could be a direct cause of this phenomenon. Nevertheless fulgurites[2] have been reported by reliable observers from the district between Quetchupah and Ivy Creeks. They were found in and near the coal floor. Under forest fires should be included brush and grass fires. It is more than probable that lightning is the direct cause of many of these. Because, as mentioned before, scrub pine, cedar and bunch grass form the bulk of the vegetation found on the rocky and barren slopes, a coal fire might easily be started from one kindled in this material.

In this area the humidity is low. In the cool, dry fall and winter months the atmosphere is highly charged with static electricity. Lightning discharges are not uncommon and many shattered tree trunks throughout this region testify to its severity. No doubt, conditions being favorable, some fires have thus been started.

I, personally, lean more to the Indian-fire hypothesis than to any other. It must not be considered that the Indian started all the fires, nor that he did it intentionally. He probably did not associate this year's outcrop fire with last fall's venison dinner. Neither do I believe that the only meals he had were on the coal floor, nor that he chose a different sunny slope for each meal. I believe, however, that he was a potent factor in the starting of outcrop fires. It is probable that no one of the above-mentioned three causes can account for the phenomenon in its entirety, but all probably were contributing factors.

Much of Burned Area Has Been Washed Away

The extent and intensity of the burnings were governed in large measure by the topography. And the fires in turn modified the terrain. In dealing with the extent of the burning as it exists today it must be borne in mind that at least some of it took place a great many years ago. Thus at present there may be only a few feet of burned coal on the outcrop, whereas in reality there may have been several hundred feet originally.

The range of burning that has come under my personal observation varies from a few feet to more than half a mile. In one locality that I have in mind, the coal floor in a canyon running south is a little more than half a mile from the outcrop in the head of a canyon running west. The coal is burned in the head

*Paper entitled "A Few of the Adverse Mining Conditions Encountered in Mining Coal in the Utah Field," read on June 27 before the Rocky Mountain Coal Mining Institute.

†Chief engineer, United States Fuel Co.

[1]Plants which can subsist with a minimum of rainfall.

[2]Holes in sand caused by lightning, which vitrifies the silica in its passage.

of both these canyons. The bed will average 17 ft. in thickness. The burning has extended to the west from the point first mentioned for more than 2,000 ft. How far it has extended from the other canyon eastward is unknown, but the settlement of the superincumbent strata has opened a fissure on the top of the ridge, 1,150 ft. above, ranging from 15 to 20 ft. wide.

At another locality a northwest ridge has been burned for more than 1,200 ft. from the southwest slope, leaving only a thin wall some 500 ft. wide along the northeast slope. At many places in this field, where the burning has occurred on both sides of a ridge, fissures have been caused by the settlement of the overburden extending parallel with the crest.

Some Shales Have Been Melted to Slag

The intensity of heat developed by the burning can be judged by the condition of the shingle talus. Where the fire has been but a smoldering one, only a slight discoloration can be noticed and the shale has been only slightly hardened. Where the heat generated has been intense the shale is glazed and in some instances even slagged.

This latter condition generally is encountered where the cover has not been thick, so that the settlement has opened a fissure before it has reduced the air supply to any great extent. The fissure thus produces a strong draft that may be intensified by air currents. Where these conditions are encountered the fissures may simulate what are familiarly known as blowouts.

This condition seriously hampers the successful laying out of a development plan capable of being closely followed, especially where the coal outcrops over much of the property to be developed. In many instances this unknown quantity has produced a one-sided mine which otherwise would have been a well-balanced operation.

The second difficulty—wants—has even a stronger influence upon the economical extraction of coal. Before proceeding further I wish to define what is meant by this term. A want is any local absence of coal, whether caused by erosion, pre-existing streams or lack of the deposition or growth of the original vegetation. It does not include areas where the coal is gradually replaced by the increasing thickness of a parting, which finally "pinches out" the bed.

High Ground in Swamp Is Low Ground in Mine

Most of the wants encountered in this region are the result of a lack of the vegetation from which coal forms. Whether we adopt the "drift" or the "in situ" theory concerning coal formation, the same explanation of the occurrence of wants will apply. A study of the Dismal Swamp or the many other localities in which peat is now in process of formation shows that islands and peninsulas of higher ground in the swamp sometimes prevent the accumulation of vegetable matter. Judging the past by the present we can with a fair degree of justification call these wants ancient islands and peninsulas.

In discussing this occurrence with a prominent geologist he advanced the opinion that these wants were the result of displacements of the unconsolidated vegetal matter by the unconsolidated overlying strata. He would thus account for the thick portions of this coal by assuming a fairly uniform thickness and then a displacement or squeezing of the unconsolidated vegetal matter into a much smaller area. If this were true contorted bedding planes would exist in the coal. Thus far I have been unable to find any evidence that this is the case.

As a matter of fact cross bedding occurs. This would indicate that the material which formed the coal had been washed rather than squeezed into its present location. True, where the wants occur the face of the argillaceous material appears slickensided, but it must be remembered that the original thickness of the vegetal matter was somewhere between five and twelve times its present depth. This fact alone would account for all the slickenside that has been found.

Barren Ponds More Common Than High Lands

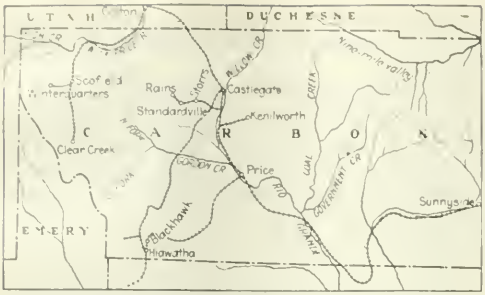
Should the swamp become submerged before lakes and ponds in the swamp were filled with vegetal matter, barren areas such as are found in this field would be formed. Differences between existing barren areas should be characteristic of their formation. The islands and peninsulas would give slopes conforming to those of an inverted bowl, and the ponds would afford inclinations conforming to those of a bowl set upright. In most instances these slopes partake of the nature of filled-in ponds rather than of islands and peninsulas.

At one locality only have I observed a case of erosion subsequent to the deposition of the coal-forming material. In this instance a river channel is clearly defined and is filled with gravel. This would indicate that the swamp had been elevated before the final consolidation of the coal-forming material occurred.

The presence of a want in an entry approaching it is indicated by the roof coming down or by the coal being replaced by "boney." The material composing the barren areas consists chiefly of arenaceous shale grading into a fine-grained sandstone. There are no joints or

COAL AREAS OF THE STATE OF UTAH

The more important mines in this state are found in the western part of Carbon County, which is detailed in another map. The towns comprise the more important mining centers of the state, overlooking those, of course, in the county mentioned.



MINING AREA OF CARBON COUNTY, UTAH

Map shows important mining towns, the only exceptions being Colton and Price, which are junction points only.

slips in this material, and consequently it is hard to shoot. The fineness of the grain and the presence of the argillaceous material indicates a rather deep-water deposit.

In mining in an area of this nature the unexpected always happens. About the time that an entry is approaching a fair development and the management is congratulating itself upon being ready for a good run in the autumn, the face shows a full height of rock instead of coal. To meet this possibility the mine must be developed more extensively than the requirements for the coming season would warrant. Much dead rock work must be done during the slack season, even though that expenditure greatly increase the cost per ton. This necessity is not viewed favorably by managers who are striving to satisfy their directors and the dividend-hungry stockholders. At times this condition becomes so serious that the operating department does not know which way to turn. The coal seems to be lost and no signs are visible to indicate the direction in which to drive in order to find it. In this respect wants are far more serious than faults. In some regions a game of continual hide-and-seek goes on between the operating department and the elusive coal.

In deciding upon the most advantageous method of developing a property several facts must be taken into consideration. Among these is the size of pillars necessary to support the superincumbent strata. To determine this intelligently one should know not only the thickness of cover under which the coal lies, the nature of the roof rock, the direction of the cleats (both in the coal and in the roof), the amount of water that may be expected, and the dip of the measures but also the structure and compressive strength of the coal.

Unusual Sluffing of Coal from Ribs

Working places are protected by pillars supposedly ample to support the overburden. Should the pillars be made too small, crushing will ensue. This phenomenon will be made manifest by the slobbing of the ribs, the bouncing of the pillars and the squeezing and loss of appreciable areas of coal.

I wish to call attention to one condition that has come under my observation. In a certain area the lower 4 ft. or so of the coal consists of a fibrous layer, the upper portion being massive in structure and dense and hard in texture. Overlying this is about 1,400 ft. of waterlogged strata, consisting chiefly of a sandstone-shale complex. This area lies upon an almost flat anticline, which circumstance tends to open up the rock and afford easier passage to the flow of water contained.

Upon driving into this area, water freely flowed from the roof. As the entry progressed the water followed (the entry being driven to the dip) and the upper reaches of the passage became drier. When a cover of about 900 ft. had been reached, a decided sluffing of the ribs became manifest. As no extensive development work had been done and no pillars had been extracted it was difficult to account for this phenomenon.

It was discovered, however, that the fibrous layer (the fibers running almost vertically and at right angles to the bedding planes) was giving way to some unforeseen forces. But little development work had been done, and the increase of pressure resulting from the extraction of two entries 14 ft. wide was too slight to explain the sluffing of the ribs. The coal, because of its fibrous structure, could stand but little side pressure and would bend and break like an overloaded column.

Water Pressure Mines the Fibrous Coal

Now assume that 900 ft. of watersoaked strata lies above the coal. A static pressure will result equal to 390 lb. per square inch. This will be exerted in a direction normal to the ribs of the entry. The full pressure consequent on this head may, of course, not be realized to its fullest extent. But when we consider the area over which the water emerges and the quantity—8,000 gallons per hour—which is being discharged, it at once appears that the water is under considerable pressure. This pressure inevitably will force off thin laminae of coal, producing the same result as a squeeze brought about by the pressure of the overburden.

It also is well known that the original thickness of the coal-forming material must have been many times the present thickness of the bed. It is reasonable to suppose that such a degree of compression would set up internal strains that would weaken the resulting deposit which would appear first in the weakest portion of the bed. In a homogeneous stratum the internal strains would not be noticeable, but where one portion is much weaker than the rest, a slight stress causes failure.

It appears that these two factors are sufficient to account for the sluffing mentioned. Whether or not other factors are at work I cannot say as yet. This phenomenon has become so serious that rooms originally driven 18 ft. wide have become completely filled with coal from the ribs. The massive portion of the bed sometimes is undermined from 6 to 7 ft. before it will break. This process is quite different from the slabbing that I have noticed at other places. In these workings if the loosened slab is left resting against the rib and it is not removed by some too-energetic miner, but little additional slabbing will take place. This is not so with the phenomenon under discussion. It begins as soon as the entries and rooms are driven and progresses rapidly at first and then at a slower rate until the ribs have taken a slope that approaches the angle of repose for small coal.

It is readily seen that the most economical method for extracting the coal from areas such as these would be some kind of a retreating system. To take advantage of the room-and-pillar method and the retreat, a retreating panel plan has been adopted. It will be of great interest and utility to watch the development of this system, and many valuable lessons will be learned while it is in process of elaboration.

Coal Mining Institute of America Tentatively Approves New Constitution and Considers Papers and Questions

Safety Gates, Carbon-Monoxide Masks, Selection of Explosives, Mining of Superincumbent Coal Beds, Longwall Working of Low Coal, Sealing Off Abandoned Areas and Leaving Idle Mines Unventilated Among Problems Presented

ABOUT FOUR HUNDRED members were present at the Dec. 7, 8 and 9 meeting of the Coal Mining Institute of America. The sessions of the first two days were held in the Chamber of Commerce Building, Pittsburgh, the last day being spent in visits to the East Liberty tunnels, the Carnegie Technological Institute and the Bureau of Mines, about a hundred stopping for these features of the meeting, making the innovation well worth while.

The president's report had reference to the progress of the institute. The secretary-treasurer had a most favorable story to tell as to membership, but most discouraging as to finances. There were 1,243 members on Jan. 1 and 1,603 before the institute met and other names were being presented. New members were enrolled from New Zealand and Peru. Some justification seems gradually to be developing for the claim that the institute is about to enter a wider field than is covered by the coal institutes in other states. But some of the old members fail to respond when payment of dues is requested, thus causing a gradual depletion of the institute's resources.

Hosler Elected President for Coming Year

Rush N. Hosler was elected president by a unanimous vote. No other candidate was presented. W. E. Fohl received 198 votes; A. R. Pollock, 151 votes; Thomas Mather 115 votes; J. F. Bell, 88 votes, and Dr. Crabtree, 79 votes for vice-president, the first three being declared elected. For the executive committee J. B. Hanford received 152 votes; M. D. Cooper, 116 votes; Dr. Crabtree, 116 votes; Nicholas Evans, 111 votes, J. T. McDonald, 79 votes; M. S. Murray, 73 votes, and Dr. R. Blower, 50 votes. The first four, therefore, will be members of the executive committee during the ensuing year. J. D. Mason was unanimously re-elected secretary-treasurer without opposition.

The proposed changes in the constitution took up much time in the morning session, were considered again in the afternoon meeting and cropped up a third time during the morning of the second day. The attempt was to get approval of the constitutional changes this year so that in 1922 they may be reasonably sure of being accepted in the form in which they are presented. Failing of approval at that time they cannot be so modified as to become of effect in 1923, as notice of amendment to be made must be given at the meeting before its acceptance, which is two years before it can be put into effect.

If the new constitution is adopted formally next year applicants for membership will be able to vote, as they have done hitherto, at the election following their application, those over a full year in arrears will be deprived of the right to vote, there will be ten managing directors instead of four, as was provided in the revision of the constitution recently suggested; voting will be by letter ballot, the names being provided by petitions of members which must each be accompanied by twenty-five signatures and should these petitions fail to fill out the ballot, the executive committee will be empowered and instructed to add the necessary names.

This latter provision, arranging, as it does, for a letter ballot, was bitterly opposed. But as the result of a standing ballot it was declared accepted. A secret ballot revealed that 106 favored a mailed ballot and 69 supported the old constitution with nominations and votes on the floor of the convention. The standing ballot taken at an earlier session was on a slightly different proposition and was much closer.

Dr. George H. Ashley then delivered an extemporary address with lantern slides on the "Mineral Resources of Pennsylvania," which, of course, are mainly coal, though copper, lead, zinc and nickel are not unknown, and iron ore, clay, ganister and limestone are important resources. Mr. Ashley said that the aggregate thickness of the bituminous coals was 145 ft. and that they occurred in 46 separate seams. In the anthracite region the coal thickness is between 200 and 250 ft.

The Columbus question, as to the important elements to consider when selecting a combination battery-and-trolley locomotive for gathering cars, being introduced, W. E. Brandt gave an instance where three mines having respectively animal, cable reel with trolley locomotives and storage-battery with trolley locomotives hauled coal for 49.8c., 28c., and 11c. respectively. This testimony evoked much unfavorable discussion, many who had storage-battery locomotives and favored their use regarding the figures as overfavorable to that form of operation and not sufficiently detailed for acceptance. When the details were presented at a later meeting W. L. Affelder showed that in some ways, at least, the figures were not significant, for the charges for car repair and road maintenance were unreasonably high against animal haulage.

Some of the members said that the growth in the use of storage-battery locomotives in West Virginia and Kentucky was due to their adoption in small mines where their introduction saved the necessity for wiring the headings. Once introduced the employment of this form of locomotive had been extended. Joseph J. Joy said that in the Pittsburgh district the miner laid his own track and laid it so poorly that it was often impassable for a storage-battery locomotive, and this had made it difficult to introduce that form of haulage. In West Virginia and Kentucky the companies laid the room tracks and consequently they were so laid as always to be equal to the demands of the locomotives. Furthermore, as Mr. Affelder stated, there are not a few gaseous mines around Pittsburgh, and the storage-battery locomotive is excluded from these except where it has been made gasproof.

Coal Men Prefer Motor Generator Sets

In reply to Question No. 4, Mr. Worth, of the West Penn Power Co., said that inquiries had been sent out to discover whether operators preferred the rotary converter, which is the more economical, to the motor-generator set. The outcome of the questionnaire was in favor of the latter for reasons peculiar to the coal industry.

In discussing "Why has not some way been devised to work low coal on the longwall system?" Mr. Claghorn gave his experience with longwall retreating in Vintondale. The retreat was really inbye and not outbye, as it was back toward advance workings, but the method was nevertheless truly retreating longwall. He said that by this means and the use of face conveyors coal was loaded at the face for 21 to 22c. per ton at a time when the miner's wage was 45c. per ton mined.

Others in discussing the Vintondale experience declared that it finally proved altogether too expensive, because the faces, when work was irregular, closed up and had to be reopened at considerable expense. Mr. Hall stated that a strong roof, a heaving bottom, and thin coal gave favorable conditions for longwall retreating when work was reasonably steady. The roof should not break but sag down and meet the heaving floor, otherwise backfilling would be necessary, and that would be too expensive. Only with thin coal could roof and floor meet within reasonable distance from the face without breakage of the roof.

The question from Denver, Col., as to the effect on the

upper of two beds of coal due to the lower being mined first was answered by Inspector Gerard, who said that in the Connellsville region, where the Sewickley was being mined above the Pittsburgh, the two being 90 ft. apart, there was no trouble in the Sewickley bed if the Pittsburgh had been entirely mined. When, however, the Pittsburgh bed was being robbed at the same time as the Sewickley, much trouble was experienced.

Inspector Joseph Knapper said that the Morris Run Coal Co. had been mining in the Lower Kittanning seam for many years. That company was now opening another seam 30 or 40 ft. higher with a sandrock top above the upper seam. This seam arches over the coal, so that the air will travel in places for a distance of 600 ft. along the top of the coal, and, to control the leakage, concrete stoppings above the coal have had to be built.

Inspector Thomas Mather said that in the Moshannon district, the old Moshannon, Lower Freeport or *D* seam was worked out, and work was being conducted in the Upper Freeport, a 35- to 40-ft. interval separating the two. Mr. Mather declared that the upper seam was badly broken in places, and the mining of the lower seam first was highly detrimental.

Early Pillaring of Lower "Seam Does No Harm"

Inspector Richard Maize added that where the Pittsburgh seam is mined first there is no trouble in the Sewickley, which is found in splendid condition. Operated together there is also no trouble. Where, however, the Sewickley is in first mining and the Pittsburgh coal is in second mining, the Sewickley is subject to creeps and squeezes. Conversely, if the Sewickley is withdrawing, the Pittsburgh seam is in continual trouble.

William B. Plank stated that at the Bloomington mine the lower of two seams was removed. It was 36 to 40 in. thick. The upper seam, which lay 50 ft. above, was not affected. It was found that there were no cracks which extended over 15 ft. above the lower seam. Following this, William G. Duncan read an article on "Safety Gates," describing their purpose and the law and compensation regulations relating to them, and later showed several gates installed in various parts of Pennsylvania.

A well-attended banquet ended the day. It was held at McCreery's store and presided over gracefully by President A. R. Pollock. A. R. Hamilton, who was to have spoken, was away from the city and in his place the guests heard from George Otis Smith, director of the U. S. Geological Survey. He spoke of the production of coal as "A Spendthrift Industry," wasteful of natural wealth, capital and labor.

E. E. Bach spoke on the importance of the Americanization program, laying particular stress not so much on nationalization as on the real essentials of good citizenship —English, higher standards of living, contentment and a knowledge of American government and ideals. Luke Barnet made a witty address in brogue, bantering Mr. Smith for his declarations that ours was a spendthrift industry. It was, indeed, he admitted spendthrift one year ago, when every workman wore a silk shirt, but these are days of cotton goods. He advocated the check-off as a means of obtaining the dues of the institute and declared that the storage-battery locomotive would never improve the superintendent's lawn whereas the mule had never failed to do so.

H. Foster Bain, director of the Bureau of Mines, in his address urged that the coal industry endeavor to wean the purchasing public of its preference for lump coal, which cost much more to produce than the smaller sizes and could not be used until broken down by hand. He said that in Illinois there were thirty-six different sizes produced, not all of which, of course, were the product of any one mine. A simplification here was greatly to be desired. E. W. Parker, unexpectedly called on, declared that no one regretted more than the anthracite operator the high cost of anthracite and viewed with no little disquietude the fact that with unchanged wage scales, the price would tend to rise rather than lower as greater depths, dirtier coal and thinner beds had to be attacked. He felt that the consuming public should try to avail itself of the lower prices at which fine sizes of coal could be purchased.

On the second day Captain G. H. Burrell, described and advocated the use of "Carbon-Monoxide Masks for Coal Miners." He said that whenever a fire took place in a mine the foremen and assistant foremen went forward to locate and, if possible, to extinguish the fire, taking with them nothing but flame safety lamps. These lamps protected them against traveling into an atmosphere which was so depleted of oxygen as to be dangerous, for where a flame could burn, a man could obtain all the oxygen he needed and more than he would find necessary to sustain life.

They would not, however, protect him against carbon monoxide, which could not be detected below the lethal limit by any flame and was odorless and so could not be discerned by its smell. The carbon-monoxide mask would afford protection against that gas, and the flame safety lamp against lack of oxygen. Thus the risk that the men in authority who knew the mine well would be injured was greatly reduced, and the risk that the work would have to be conducted by people less instructed and less acquainted with the mine was rendered less imminent.

In the setting of brattices after the breathing apparatus men had re-established some degree of ventilation and in the bringing out of dead or partly suffocated men, the carbon-monoxide gas mask would be useful. Not infrequently will leaks around the temporary stoppings cause unprotected men to be overcome by carbon monoxide and fumes, making the period they can continue at the work short. Sometimes the fall of a brattice or of rock may cause a gust of poisonous gas to assail the men engaged in this work. Though such return air has enough oxygen in it to support life, it has enough poisonous gas to kill men almost instantly.

The mask has a timer to show when the monoxide absorbent would be spent. It can be worked for two hours either continuously or discontinuously. In fact the part which gives out first is that part which dries out the air. In an atmosphere 85 per cent saturated the dehydrating material will continue in service for two hours. On this the mask is gaged. The carbon-monoxide absorbent—the Hopcalite—will totally remove the carbon monoxide up to any percentage for much over two hours; the percentage of carbon monoxide in the mine atmosphere, however, rarely, if ever, gets above 6 or 7, and is usually much lower.

The mask is useful also in fighting fire with ammonia refrigerating systems, would be valuable for shotfirers and fire runners who extinguish fires made in firing shots, and would add much to the safety of those who clean up combustion chambers where carbon monoxide is often held by the dust and emitted when disturbed. Captain Burrell said he had worn the mask in 4.9 per cent of carbon monoxide without any bad result. The presence of the gas may be detected by the heating of the mask which occurs as a result of the absorption of the monoxide.

Heavy Shooting Damages Connellsville Roof

Following this paper A. C. Callen introduced the question from Republic, Pa., which asked "How bad top which arises from the use of undercutting machines and from shooting close to the roof can be avoided." The author of the question declared that in the region where the conditions noted were observed the roof conditions with pick mining were excellent.

A. N. Young said that in the Connellsville field since machines had been installed the number of timbermen had increased, slate dumps had appeared for the first time and timbers 10 ft. long, never before used, came in by the carload. He believed the change to be wholly due to the heavy shooting introduced with mining machines. Short holes were customary before; now long holes are the rule, and the violence of the blast shatters the roof.

One man said he had tried to meet the difficulty by allowing only butt shots to be used and by shearing in the center of the place, but conditions were not improved. Another advocated a buster and two side shots. J. B. Hanford said they had experienced similar trouble but had found that, using black powder, the roof was not disturbed. A certain permissive powder did, however, shatter the roof.

The representatives of that powder company declared that in Illinois black powder was found to shatter the roof and

by using the permissive powder the effect was reduced. W. L. Affelder said that with pick mining it was necessary to make a V-shaped cut and to make it shallow. Accordingly the shothole was shortened, and so the coal when shot was dislodged with less violence and the coal falling free did not allow the powder to do so much damage. Mr. Young said the shots near either rib of the narrow place were supposed to be fired separately, but, of course, he could not assert that they always were.

In answer to the sixth question, J. W. Paul, of the Bureau of Mines, spoke and made further discussion wholly unnecessary. He said that the moisture in the air at the time of an explosion had no effect whatever in reducing its force and that moist air could not prevent its occurrence. Before every explosion in the experimental mine the temperature and moisture content were taken and neither appeared to exercise any influence on the violence of the resulting blast. Moisture in the air of a mine may saturate the dust or may prevent it from drying out. Thirty per cent of moisture in the dust will prevent the dust from exploding. Dust with that much moisture will ball when molded in the hand. The dust on timbers and in bulk, however, will not become wet no matter how saturated the air may be. The upper sixteenth of an inch of dust may become wet, and the whole mass may appear moist and beaded with water globules, but a blast of air from a roof fall will raise the dust below the surface and this will be found to be perfectly dry. The dust must be well wetted down with water to be safe or again it may be wetted by keeping the air saturated throughout the time that the dust is settling on the ribs and floor. In this latter case each increment of new dust is then soaked, and the whole mass is thus made wet and safe, but a moisture saturation of the air on any given day is of no value as a means of protection.

N. S. Greensfelder, engineer of the Hercules Powder Co., then read a paper on "The Scientific Selection of Explosives for Coal Mining." R. Z. Virgin's paper on "Recovery of All Values from Refuse Coal" was not presented.

In the afternoon Question 9 was introduced, in which a man in St. Louis, Mo., wanted to know the main factors to be sought in the selection of a mine official. In the discussion emphasis was laid on the ability of a mine foreman to get along with his men. The speaker declared that the backyard talk of the mine foreman's wife might do more harm than his own inoffensiveness could correct. Stress was laid also on the foreman's freedom from home troubles. A man with a happy home could concentrate more completely on his work.

Would Have Fly-By-Night Mines Inspected

In reply to Question 10, Jack Davies, former chief mine commissioner of Ohio, said he believed that all mines should be inspected regardless of size. Protection should be given to everyone so engaged. This was strenuously objected to by one speaker, who believed that it would be difficult to get mine foremen of such a caliber as would be competent to guard the safety of the workers in a country bank. The bigger mines would get the better men, and the protection thrown around the "country bank" workmen would be a mere delusion and possibly a snare. He said the least able and less competent men workers—that the bigger mines would not employ—gravitated to the smaller mines. To put such mines out of business by stringent requirements such as were in force at large mines would deprive these men of an opportunity to work. These small mines also furnish working places for men who cannot travel to the larger mines and desire to continue to live in the communities where they have home ties, property and seasonal occupation. These mines also serve small coal-consuming communities more satisfactorily than the larger mines at a distance.

It was pointed out that if the men working in these mines were less able and less competent, the more did they need the protection of the law. State Mine Inspector Richard Maize and Francis Feehan, of the State Department of Labor, were against any distinction between large and small mines, and the latter took issue with the advocate of the small mine who said accidents were few. He declared that there were many.

Dr. E. S. Moore introduced the question as to the propriety of sealing off or ventilating sections when entirely worked-out and abandoned. This question, which has long troubled Great Britain and has had much recent consideration in Illinois, now arises in Pennsylvania. It was easily answered a few years ago. Both the American mining public and the law said, "Ventilate, of course." For reasons probably connected with the greater depth of mines and perhaps also with greater dryness, gob fires are now more common, and it is becoming increasingly questionable whether the law proscribing standing gas is, with better stoppings and gob fires, a reasonable enactment. It seems as if some of the mine inspectors are seriously questioning its propriety.

B. J. Murphy related how, in accord with the law, air was forced through the abandoned gobs of a certain mine, a current of 38,000 cu.ft. per minute being employed. One day a gob stink occurred. On the third day after the indication 0.1 per cent of carbon monoxide appeared in the air. Thereafter this gas was found in reduced percentages, but after ten days it again rose to 0.1 per cent. The temperature increased to 64 and 72 deg. and later to 110 and 118 deg. The percentage of carbon monoxide at length reached 0.6 per cent, and it was decided that it was necessary to seal off the area and thirty-five brick seals were erected.

Abandoned Area Never Really Ventilated

Richard Maize said that a heavy current of air would cool the gobs, whereas a smaller current would merely hasten combustion. The trouble is that gobs are never really ventilated. True, the current is supplied, but it cannot be distributed, as the abandoned area cannot be kept in ventilatable condition and rarely is safe or even possible to explore. Consequently it is not ventilated.

James W. Paul asked what firedamp was. Was it methane or methane and air? Some declared that it was understood to be the latter. He said that if it was the latter, a properly sealed area did not contain firedamp, for the air would soon have no oxygen. When some suggested that the law said not firedamp but explosive gas, he said this seemed to make it more clear that a sealed area filled with methane did not contain a prohibited atmosphere. If it escaped into the ventilated roadways it was no longer standing gas, for the air current would make it move. He did not venture to interpret the law. He was in favor of sealing off abandoned workings if it was legal to do so. Of course, no one pays any attention to the law where there is a fire, or possibly it should be said that in case of a fire everybody interprets a mixture of explosive gas that is so situated as to be inexplodible as gas that is not explosive. Fires are quite generally sealed off. What is needed, however, is the right to seal off an area that may fire before a fire is caused by not sealing.

The question from New Zealand was next debated. It runs: "In a mine in which firedamp has never been detected and which is worked entirely with naked lights but in which only permissible explosives are used on account of the dryness of the dust, should the ventilating fan be run continuously or should it be stopped on Sundays, holidays or days when the mine is idle? Edward H. Coxe said that the question seemed to evidence a belief that should the fan be operated on these idle days the dryness of this already dry mine would be increased, with consequent danger to the employees. He thought that if the mine were really free from gas, the fan should be shut down during idle periods.

Richard Maize declared that in summer the air being cooled by entry into the mine would increase rather than reduce the moisture. In the winter the reverse action would take place. On someone questioning whether New Zealand had any winter, E. S. Moore declared that the southern island had heavy snowstorms and the northern island had some snow. Another member declared that almost any unventilated mine was gaseous, and yet another instanced a mine which was not known to be gaseous but developed gas unexpectedly. A man who went in the workings with a naked light set fire to the gas, which continued to burn. The man put it out with his coat and went out and told the foreman. The latter, being skeptical, went in to examine

the place, also taking an open-flame lamp. He also set fire to the gas, and, being unable to extinguish it, set the mine on fire.

Someone proposed that the New Zealander be informed that the meeting did not indorse the shutting down of the fan whether the mine were idle or working. Dr. Moore said that unless this action was questioned, the question should be regarded as answered in favor of a steady operation of the fan and that the questioner should be notified to that effect.

L. C. Illsley, electrical engineer, of the U. S. Bureau of Mines, then read his article on "Explosion-Proof Mine Locomotives," emphasizing the fact that they were only safe if maintained in good condition.

A. F. Strouse read a paper on "Comparative Haulage Costs—Animal and Mechanical," but his address failed to show either haulage costs or when any one form of haulage should be preferred. Jerome K. White read a paper regarding the results obtained with a storage-battery locomotive under unfavorable circumstances. Full details were given and the cost was shown to be about 10c. per ton under the conditions there obtaining.

The visits to the Carnegie Technological Institute and the U. S. Bureau of Mines were unusually well planned and full of interest. At the latter Mr. McCaa's new breathing apparatus was inspected. Mr. McCaa declared that the new British Briggs apparatus hardly met the United States standards. In particular he objected to the use of the hollow frame for the circulation of air, declaring that it was so placed as to be subjected to injury with harmful results. Not only are exhaustive wearing tests being made, but the valves are being tried out by mechanical means to see how many times they can be caused to operate without failure under conditions simulating actual work.

West Virginia Institute Discusses Preparation, Surveys, Layout, Power Cost, Depletion and Depreciation

Downing Advocates Washing Only Dirty Part of Slack and Using Screens That Are No Longer Than Preparation Demands—Scholz Favors Heading Machines, Sidewall Slabbing and Coal Storage in Place

WHEN the West Virginia Coal Mining Institute met at Charleston, W. Va., Dec. 6 and 7, the Governor of the state, E. F. Morgan, was in South Carolina, so the addresses of welcome were made by Grant P. Hall, Mayor of the city, and by A. A. Barnes, of the Chamber of Commerce. J. W. Bischoff, president of the institute, read his annual address and declared that the encouragement of the coal industry had been only too generous and had resulted in overdevelopment with consequent evil results.

Thomas F. Downing, Jr., general manager of the Lundale Coal Co., Lundale, W. Va., read an interesting paper on coal preparation. He suggested that a change in the direction of driving rooms might often prevent the fall of draw slate, whereby the coal was filled with roof impurities. Sometimes, he said, a wide room would give cleaner coal than one that was narrower, for the coal being more easily induced to fall, the roof would not be so shattered by the explosives, and as the coal would fall in large lumps the partings would not be fractured and the impurities in the coal could, for that reason, be more easily removed at the picking table.

He urged that every attempt be made to hold up the top rock until the coal had been loaded and the floor cleaned of slack. Where byproduct coal was desired, the bugdust, he felt, should be loaded separately, because it was the cleanest coal obtained. That, however, probably is a local condition and not of general application.

It was, he said, the custom when designing a tipple to make the screen long enough to cover all eventualities. It was impossible to design a screen of the exact length required, and if it were too short the error could not well be corrected. So to be safe, excessive screening surface always is provided. Any excess, however, is undesirable, as some of the coal tends to drop partly through the screen and then, being unable to pass through it, remains until it is broken down to such a size that it can pass.

Thus there is much unnecessary degradation, to avoid which the manager should spend a day at the screens and find out just how far the screening action continues. This distance will vary with the amount of fine coal to be screened and other conditions, but a maximum can be found, and then the rest of the screen can be profitably veiled. He had formerly a 2-in. step screen 16 ft. long but the coal was completely screened in a distance of 4 ft. The other 12 ft. of screen was wholly detrimental, so he replaced this screen with another 12-ft. screen having a flat surface with round perforations. It used only 8 ft. of this 12 ft. and so he veiled the other 4 ft. He added that the slate, being heavy, slides near the bottom, and with a step screen the slate will fall through. Flat screens with round perforations give better preparation both as to ash and as to size. The larger slate does not go through the screen but goes onto the picking table and is removed, whereas with a step screen it may turn edgewise and go through and, mingling with a size not picked, may go with it to the railroad car.

Coal in first mining may be quite readily cleaned, but in second mining may prove relatively dirty because, owing to the crushing of pillars, the partings which might readily be removed will be broken so small that their removal will not pay. Of course fine coal can be washed, but that results in much loss, much of the fine coal passing away in the wash water. It is better therefore to arrange the work so that washing is not necessary, as water reduces the heat value of the coal, lengthens the coking period and destroys the oven. True, the coal is heavier, and if that is not considered the operator may consider himself compensated by the pay he receives for the water, but as a matter of fact he is really the loser, as he will clearly realize when he views the black water leaving his washery and passing down the valley. What he gains in water he loses in coal, and his customer is thrice loser—in the water masquerading as coal, in the freight he pays on that water and in the heat he loses in driving it away as steam, to say nothing of cold ovens and ruined linings.

Would Not Wash Coal Under One-Eighth Inch

His experience showed that at his mine the finest coal is the purest. He did not feel that at his mines the coal under ⅛ in. in diameter should be washed. He stated also that more preparation expense would have to be met when mechanical loaders were installed, for these machines could make no distinction between coal and binder. They would have to take all or none of the seams—coal, binders, and all. Speed of operation would be so desirable that no care will be exercisable to keep out impurities in loading the coal. With coal-loading machines no cleaning can be done in the mine; all of it must be done at the tipple.

E. E. Jones, of Stotesbury, W. Va., asked how it would do, as the screening surface was of invariable length, to arrange for a change in the speed of the shaker to compensate for the variable character of the coal having to be prepared. Would the slower speed result in the clogging of the shaker with fine coal?

This proposal did not receive much encouragement from

Mr. Downing, who said that it would be necessary to station a man at the screens to regulate the speed according to the need. The variation in the screening area needed was small and to adjust the speed so as to obtain a more perfect adjustment of means to ends would not seem to be so important as to justify the employment of another man. He pointed out that the man who regulated the tipple equipment usually was stationed over the loading booms and away from the screens.

In Great Britain he had seen a bar picking table which combined picking opportunity with screening ability. He thought that if this were used any fine coal made in breaking lumps to remove partings or pyrite would pass through the bars, keeping the coal to standard size without the introduction of additional rescreens. E. D. Knight objected, saying that the impurities would go through the bar screen. Mr. Downing replied that any broken impurity not removed from the picking table or screen goes with the coal to the car.

If this impurity passed through the bar picking table it would go into the car carrying a lesser size. Anywhere its presence is objectionable. The present apron picker does not eliminate the finer parting material. It may be added, however, some large slate turned on edge would be likely to fall through between the bars and escape picking, which latter would not be the case with a solid picking table.

Does Step Screen Let Through Oversize?

In reply to J. L. Dawson, Mr. Downing said that the coal is not uniform in size with a step screen. Some lump falls through to the egg screen and some egg to the nut screen. Starting his mining in the anthracite region he liked to see all his coal without under- or over-size, and he could not get that uniformity with the step screen. He believed that the gas-coal operators would ultimately have to introduce rolls with teeth to crack the lump into egg coal.

Carl Scholz said that J. M. Clark, of Clark & Krebs, had called his attention to the three distinct benches in the Eagle seam, which coal layers vary greatly in their percentage of ash. The top bench is 9 in. thick and it will contain 11 to 16 per cent of ash. The middle bench is about 2 ft. 3 in. thick and has only 1.7 per cent of ash and in some places the percentage falls to 1.3. The bottom coal contains 2.5 per cent ash. By excluding the top coal it is readily possible to produce a coal containing less than 5 per cent of ash.

At the afternoon session R. D. Hall read his paper on "Setting the Stop Watch on the Mine Surveyor," in which he called attention to some of the inaccuracies and delays resulting from using the ground as a foundation instead of erecting the instrument on three appropriately placed stakes. J. W. Reed, of Fairmont, declared that the need for such care in surveys had not been experienced in the Fairmont region, where backsights and foresights were taken within a minute or so of each other before the instrument could change its position. He explained that backflag and foreflag men were always employed and the longest of tapes were used.

In reply it was stated that the need for staking was more evident in wooded country, where progress was slower and the ground less reliable owing to the presence of sticks, roots and stones. The Fairmont field is in a farming country, so the clearing difficulties are avoided and the coal entering the hills to the dip does not leave swamps and in winter supplies no warming ground water to disturb the stability of the instrument. Carl Scholz remarked that the paper explained some of the mysterious actions of a standing transit that in his surveying days he found it hard to fathom.

Carl Scholz then presented his room-and-pillar plan which has been already described in Coal Age. He has temporarily abandoned, however, the idea of taking more than one skip off any one pillar. He first drives up his rooms 12 ft. wide in pairs, the pillar between pairs being 18 ft. wide. These long rooms—they are 500 ft. in length—will be driven during the summer, when the demand for coal is at a low ebb. In the winter the longwall cutters will be used to cut a 6-ft. slab along the room on either side, and the loading machines will load it out. About the same number of men will be employed summer and winter, though in winter their production will be heavier and in line with the greater demand for coal.

Mr. Scholz declared that the heading machines, though not now being used at the Valier mine in Illinois, had given him great satisfaction, having driven 552 ft. in a week when operated three shifts with three men on each shift. The coal had turned unduly hard, and he had temporarily laid the machines off, but he intended to use them in the Raleigh-Wyoming Coal Co.'s shaft. At Valier he had managed in the second year of operation to produce 756,000 tons, which he thought was a record production within such a short time, being roughly 4,000 tons a day. He said that the loading machines could easily load 300 to 400 tons per day. The system he had adopted he termed "storage of coal in place."

Objectors and objections were, of course, many. One wanted to know how the loading face could be divided up among the men employed, but no such division would be necessary with machine loading. J. L. Dawson said that at Logan Mr. Gay supplied a car for each man on every trip to his long faces. There was usually an extra car or two which went to the man who had his car filled first.

Some suggested that the heading machine must make a lot of slack, almost pulverizing the coal. Mr. Powell said that in a 12-ft. place cut in three machine settings the coal produced about 15 per cent more lump than the ordinary method of working with an undercutting machine and powder. It must be remembered that on only the first cut is the coal sheared on two sides. After this cut is made the other two are merely single shears and undercuts.

The pillars between adjacent pairs are 68 ft. wide. There were some present, W. E. Fohl and Josiah Keeley among them, who believed that it would be difficult to split these pillars and bring all of them back, even granting that the 6-ft. core pillar and the two flanking 6 ft. or 7 ft. pillars are left. Mr. Powell said that the center pillar could be split in ten days, and Mr. Scholz said that the splitting and removing of one pillar would be completed before another was attacked. But even this did not make the doubters sure that the plan would be successful. Mr. Keeley declared that he had been impressed by the conservational cry and had been trying to save his pillars but that he despaired of accomplishing that end if the present irregular working conditions continued. The pillars could not be held over the long idle periods.

The question of the legality of Mr. Scholz's method arose, but nothing that was said would lead one to believe that the method contravened in any way the laws of West Virginia. It was pointed out that canvases or doors would have to be hung in the entry between room pairs to drive the air to the face, and Mr. Scholz was prepared both to use this system and to install blowers to assist in the work of ventilating the room roadways.

Bradley Holds That Coal Demand Is Steady

J. D. Bradley, president of the National Coal Association, being invited to speak, said that the coal industry while recently bitterly assailed had been able to summon assistance in combating federal control by showing that not the coal industry alone but all other industries were threatened. Help had even come from the growers of oranges. He advocated better merchandising, the taking on of customers and the holding of them by taking care of their interests at all times, looking for a fair profit and that only.

He did not regard coal as so seasonal as generally represented, nor did the production vary so much from year to year. It was a fairly stable industry and with good management could be carried on like any other business. There were, it is true, too many concerns not able in the present scant times to meet competition, but that was their misfortune rather than that of the industry. He believed more help should come from export trade but that was not possible so long as the railroads did not give a special rate to coal for that purpose. Every other industry had special export rates and they should not be denied to the exporter of coal.

Approximately fifty were present at the Ruffner Hotel in the evening at a banquet given by the Kanawha County Coal Operators' Association in conjunction with the Charleston Chamber of Commerce. E. D. Knight officiated as toastmaster. Among those who responded to the call of Mr. Knight were S. P. Puffer, secretary of the Charleston

Chamber of Commerce; Henry F. Kallenberg, of the International Young Men's Christian Association and T. H. Huddy, of Williamson, W. Va.

In the morning session the following day, R. M. Lambie, chief of the State Department of Mines, read a paper entitled "Mine Fires—Their Origin and Prevention."

Speaking on the subject of mine fires and explosions, Mr. Lambie stated that the state records showed quite clearly that the majority of mine fires of recent origin were electrical in cause. More electrical fires arose from the careless handling of feeder lines near the working face than from any other causes. Owing to the hasty manner in which mining-machine cables are suspended they are important hazards at many plants. Mr. Lambie said that the state department had selected the Gibbs apparatus as its standard, but would readily change if a better apparatus were provided.

In the discussion that followed, Mr. Knight remarked that all companies should make a determined effort to suspend room feeder lines from the roof and between the rows of posts in preference to carrying the cables along the rib, where the surface is most uneven and where really good insulation is impossible. Mining-machine cables are used again and again and consequently often become worn, so that short-circuits make their use hazardous. When the lines are supported from the roof, the insulators may be driven in more solid material, and furthermore in the event of a short-circuit there is nothing adjacent that is combustible.

Should Be But One Type of Apparatus Used

Mr. Keeley urged standardization on a single type of breathing apparatus, although he also believed that no particular make of machine should be definitely selected, as other manufacturers might become disheartened and thus the industry as a whole lose by lack of competition. If companies throughout the state have their men drilled on one type of apparatus members of crews when actually engaged in fighting fires will be less likely to become confused. Furthermore, a team from a nearby company could more efficiently come to the aid of its neighbor if its team members used the same apparatus. When standardizing on one make of machine, fewer spare parts need be carried in stock, and the parts of one company will, of course, fit the apparatus of another.

Perhaps the most interesting paper of the day and of the two-day sessions was then read by Mr. Knight under the subject of "The Cost Per Ton Fallacy as Regards the Determination of Power Source." There are two predominating factors that govern the cost of current per ton of coal produced, namely, the cost per kilowatt-hour of power consumed and the number of kilowatt-hours used per ton of coal mined.

Operators Jump at Conclusions as to Cost

It is quite usual for an operator to assume that because his neighbor is producing coal at a lower cost per ton for electrical power he can obtain similar results by going to the same source for his current. There are three sources available: Purchased Power, the isolated plant or the privately operated central station.

The first fault in this line of reasoning is attempting to apply the remedy before the ailment is discovered. Normally, a high kilowatt-hour cost per ton may mean any one of three things: A high cost per kilowatt-hour, the needless consumption of a large number of kilowatt-hours for each ton of coal produced, or an operation more completely electrified than that with which it is compared. Yet only in the first instance is the power source to blame. Consequently a change based entirely on comparative cost per ton figures is quite apt to raise rather than lower the cost. The better cost per ton that it is hoped to achieve may have been derived despite a higher cost per kilowatt-hour and by reason of a more economical utilization of the current produced. Faulty operation of power equipment, careless handling of mining machines and locomotives and line losses from insufficient or improperly installed copper feeders, all tend to multiply the number of kilowatt-hours required to produce a ton of coal. Thus a mine which is paying a higher rate per kilowatt-hour may achieve a better cost than one where such faults are common practice. Furthermore, other things being equal, a mine that employs gathering locomtives instead of mules, cuts its coal by machine instead of hand-pick and which possesses extensive pumping and ventilating equipment will naturally show a higher cost than one that is not so well electrified. A change of power source based on cost per ton alone takes no account of the above factors.

If the decision to change the power source is based on cost per kilowatt-hour, then failure to procure results cannot be laid at the door of the power source. Most of the old direct-current plants were not equipped with integrating kilowatt-hour meters, and, consequently, all that was known as to cost per ton was derived by dividing the total expenses of a certain period by the tonnage produced over that same period. By reason of failure to install a practically inexpensive piece of equipment, valuable plant operating data were lost. And if a change in power source was made, it was done on the strength of an assumption and not on the facts.

Mr. Knight by the graphic use of figures then showed the important relations assumed by line losses in raising the number of kilowatt-hours consumed. For example in a 1,200-ft. circuit of No. 2-0 trolley wire in a 250-volt system, where the resistance of the wire is 0.2 ohms, it is possible for a motor to use 68 kw.hr. in moving its load. Yet the meter outside will be registering 100 kw.-hr., and it is the latter figure that is employed by the power company in computing the number of kilowatt-hours consumed. Most mine officials do not consider the increase in cost in cases like this. Poor bonding also may cause other losses. Most people think that with ineffective bonds the locomotive merely takes longer to move its load, and they forget that not only is this true but there is a loss of power that should not be overlooked.

Decline in tonnage also raises the cost per kilowatt-hour per ton of coal mined. Mr. Knight then presented the following table to illustrate how declining tonnages had affected costs at one of the plants of his company:

Month	Kw.-hr. Consumed	Tons Mined	Cost per Kw.-hr.	Kw.-hr. Cost Per Ton	Kw.-hr. Consumed Per Ton
April.....	26,130	1,012	0.0214	0.5396	24.83
September...	29,580	9,640	0.0242	0.0764	3.07

Thus it can be seen that most mining plants are equipped to operate most efficiently under a maximum production of coal. This is so because refrigerating plants, pumps, lights and other consumers of electricity need current whether the mine runs or shuts down.

Time being short, the paper was not discussed, and the next speaker, Bernard J. Reis, a certified public accountant of New York City, was introduced. Mr. Reis had chosen for the subject of his paper "Depreciation and Depletion and Other Factors Bearing on Coal Cost." Mr. Reis' paper, while lengthy, was thoroughly enjoyed by the members, who were given an insight into the government methods of valuating a coal property. At the conclusion of this paper the morning session was adjourned for lunch.

At the conclusion of the prepared program, Lee Ott, State Compensation Commissioner, and W. E. Fohl, mining engineer, of Pittsburgh, were called on by the chair for extemporaneous addresses, and both responded.

The reports of the auditing and resolutions committees were then read, after which E. D. Knight was unanimously elected president for the ensuing year. R. E. Sherwood was again elected secretary-treasurer. The following vice-presidents were chosen: R. M. Lambie, E. E. Jones, J. L. Dawson, W. E. Fohl and J. W. Reed. To the executive board the following men were elected: Frank Haas, Josiah Keeley, Carl Scholz and J. W. Bischoff, the retiring president. At the conclusion of the election of officers, the meeting adjourned to meet again in six months at a place to be chosen by the Executive Board. Clarksburg and Huntington were mentioned as possible sites for the convention, and it is probable that the final decision will favor one of these two cities.

Problems of Operating Men

Edited by James T. Beard

Fostering Health and Safety of Miners

Gaseous Mines Often Better Ventilated Than Non-Gaseous Ones—The Various Mining Laws Require Careful Interpretation —Many Suggestions Intended to Promote Safety Prove Costly So Long as They Are Successful in Accident Prevention

I WAS much interested in the excellent letter of Joseph R. Thomas, in *Coal Age*, Nov. 24, p. 846, especially where he refers to the importance of adequate and efficient ventilation in mines generating gas, need of a clear interpretation of the mining laws, the menace of individual judgment, and the common practices followed in violation of law. But why confine this question of ventilation to mines generating gas? The operations that do not give off gas as a rule are the ones that are poorly ventilated. I have worked in many mines where no gas had ever been found and because of this fact the air was so foul that a person could hardly keep an open light burning.

Speaking about mining laws, it is my understanding that such statutes are enacted to promote the health and safety of the men employed, as well as for the protection of mining property. I believe, therefore, that a coal mine, gaseous or otherwise, should be well ventilated, first, to promote the miner's health, and second, his safety. Those of us who have had a reasonable amount of experience know full well that a mine generating gas in dangerous quantities will eventually be efficiently ventilated. In the non-gaseous mine ventilation is in many instances neglected.

Judgment Needed in Interpretation of Mining Laws

I fully agree with Mr. Thomas that judgment in interpreting mining laws is often not exercised when reading them. The Colorado law while in the main an exceptionally good one, is confusing to the ordinary individual unless he stops to analyze the meaning of each section. For example, section 146 of the Colorado statute reads: "In all mines and parts of mines opened after the passage of this act, all doors, entry stoppings, overcasts, undercasts and regulators up to within 500 ft. of the working face, shall be made of or covered with incombustible material, other than corrugated iron. All door casings shall be constructed of concrete, stone or brick laid in mortar or cement."

From a superficial reading of this section, it might appear that all mines opened before the passage of the act are not considered, and that its provisions apply only to parts opened after its passage, so that those mines opened before the passage of the act might legally go on without reconstruction of stoppings. This interpretation apparently is followed in many mines in Colorado, but I believe the lawmakers intended that the law should cover all mines already developed as well as those newly opened, and that after its passage the use of concrete or mortar or other materials approved by the state inspector should be used throughout every mine in the state.

Provision for Fireproof Doors

This section continues: "Provided, that in mines where it is not practical to use concrete or masonry, other suitable methods, approved by the chief inspector in writing, may be employed, which will accomplish the purpose intended, and in every sixth permanent stopping there shall be a fireproof door hung from the top, large enough to permit the passage of a person." This applies to all mines in Colorado, gaseous or otherwise. The statute also provides for "not less than 100 cu.ft. of air per minute per man circulating at the face of every working place," by the use of a split system. This, of course, is intended "to dilute, render harmless, and expel the poisonous and noxious gases from each and every working place in said mines" (see section 120).

It is further provided that: "All other means of removing gases from coal mines are hereby prohibited." The removal of gases by the ancient method of using the miner's coat for brushing out the gas from a working place is thus forbidden. Furthermore no furnaces or steam jets for ventilating purposes may be installed in gaseous mines.

Section 146, just referred to, also specifies: "In all mines in which safety or electric lamps are exclusively used, on account of the presence of explosive gas, no mechanical device operated by electricity or oil motors shall be allowed on the return air course." Unless a person reads this section in full, he will not know that mechanical devices using electric or oil power are prohibited in gaseous mines. For this portion of the act is only entitled "Incombustible Material for Doors, Casings, Stoppings, etc." Reference to mechanical devices should have been added.

Mr. Thomas refers to the question of ventilation engineers. The Colorado law provides that the foreman of each mine shall be a ventilation engineer. But, as Mr. Thomas has stated, the mine foreman needs all the assistance that can be given him, especially in mines generating gas in dangerous quantities. For years I have urged the use of electric cap lamps by all miners, so that there shall be no possible danger of any workman entering a place that may have accumulated gas, and also for the purpose of keeping the mine perfectly safe at all times, even if the air current should be short-circuited from any section.

Favors Frequent Examinations

I have also suggested that brattice cloth be extended to within 20 ft. of the face of every working place that shows signs of inflammable gas. I have further suggested that firebosses or mine examiners go to work at 12 o'clock at night, that each make an examination of every working place in his section, and extend the brattice cloth in every place where this is required. Another inspection should be made at 5 o'clock, and the condition of the mine be reported to the foreman at 7 o'clock. I have suggested also that when the miners go to work they be accompanied by safety inspectors, whose duty it shall be to first examine every place that the fireboss has labeled unsafe because of gas, dangerous roof, timbers shot out, etc. During the day these inspectors should make at least four visits to every working place under their supervision.

Distribution of Duties

These safety inspectors should have charge of the men employed in building stoppings, and see that this work is carried out in accordance with the mine foreman's instructions. Haulage bosses should be employed for getting out the coal, and this work should not be considered as being part of the assistant mine foreman's duties.

I have been subjected to censure on account of my suggestion that firebosses should make their preliminary examinations at 11 or 12 o'clock at night. I accept the disapproval of these men, but the reason for this disapproval is that my suggestion for health and safety would prove costly as long as nobody was burned up or killed by explosions. The question arises, however, is it cheaper to employ inspectors

whose constant endeavor is to promote safety or continue killing and crippling coal miners and paying out compensation.

I hope the time is not far distant when something will be done toward putting into effect the suggestions I have so often made.

ROBERT A. MARSHALL.
Walsenburg, Colo.

Should a Miner Have an Ax and Saw?

If Timber of Proper Length Be Supplied He Will Need Neither Ax nor Saw — Timber May Be Stored Underground and Be Cut to Length Before Being Sent to the Working Face

I NOTE that "Safety First," of Thomas, W. Va., takes exceptions to my letter in *Coal Age*, Sept. 22, p. 460. He admits that dull tools are responsible for a large number of accidents by reason of the working places not being promptly and suitably timbered. Yet he states that my suggestion that the mine timbers be cut the exact length desired would be the cause of the miners not possessing an ax or saw.

After giving this matter careful consideration, I wish to emphasize the following detail. In the deep shafts of Great Britain, if I interpret the statistics correctly, there are less accidents of all kinds, and fatal accidents in particular, than we have in the mines in this country. During the entire eight years that I worked in the Isabella and Hannah pits, also the Crofton and North pits of Northumberland County, I never knew of a coal miner owning an ax or saw, yet note the small number of accidents occurring in that country from falls of roof and coal.

How Miners Cut Timbers

It may well be asked how the miners cut their timbers. Each deputy or fireboss is given a separate switch or flat in the mine and each attends to the timber needs of the coal diggers working in his switch. The deputy, upon visiting a working place, sees to it that that place is well timbered. In fact, he sets timbers for his men, if they are needed, while making his inspection. Before he leaves a place he notices the amount of timber on hand. He also notes the measurement of the place. When his rounds have been completed he comes out to the switch and goes to his timber yard or timber hole, as it is called. It should be made plain that a large amount of timber is kept on hand at the end of the switch, stored in a large refuge hole. Here the deputy saws the necessary timbers to the exact lengths needed for the different working places.

It will be readily seen that it is an easy matter for the deputy to stop the driver at the end of the switch with his empty car and send timber to Tom's, Dick's or Harry's working place. When a prop must be set at the working face by a coal digger he selects one from those on hand, and also a cap piece. He then tightens this prop with his pick. It will thus be evident that the miner has little use for an ax or saw.

I agree with "Safety First" that endless confusion might be caused if the timber had to be cut on the surface and then sent into the different men's places in the mine. I did not mean this system of cutting timber when I wrote the letter referred to. I will admit that a good miner will always keep his tools in excellent condition, and you can always tell a good miner by the condition of his place. A good disciplinarian is a great factor in the safety of a mine, but discipline is not all the remedy. Discipline will not reduce the large number of fatal accidents if it is forced upon all throughout the mine. Safety inspectors as a general rule have to spend much of their time in looking after the drivers and getting out coal. Consequently I still insist that timber men are the ones who should make a daily investigation in the interests of safety. If the practice that I have roughly outlined above was to be put into general effect I feel certain there would be a decrease in fatal accidents throughout the coal mines of America.

Poston, Ohio. JAMES W. TAYLOR.

Some Further Suggestions on the Mining of Large Coal

Would put drilling and firing in hands of company men trained for such work — Better mental equipment would insure more painstaking work —More lump and less slack a natural result.

THE discussion of "Mining Large Coal" presented in the Dec. 8, 1921, issue of *Coal Age* is one of absorbing interest. Here in the West it is particularly so. In the East the chief demand is for steam coal; it is there that the larger industries are located, such as steel mills, large power plants and the like, all burning small fuel on automatic stokers or manufacturing coke from it. The domestic demand also to a great extent is educated to the use of nut, stove and pea sizes.

In the Rocky Mountain region the states are large and the population small; industrial plants are few and far between. One of the largest industries, the copper mines and smelters of southern Arizona, is so far from the coal mines and so close to the oil fields that the latter fuel is used both under boilers and in oil engines of the Diesel type. The coal mines consequently must rely on domestic consumption. The domestic consumers here demand—and get—the large lump; the larger it is, the better they like it.

Mr. Jones discusses the driving of rooms on the face cleats. This unquestionably produces larger lumps than can be obtained by other methods and also (a point that Mr. Jones does not mention) it produces a larger percentage of lumps. He realizes the importance of the proper location of shotholes and suggests their inspection by two experienced miners. I would make an even more drastic suggestion: I would take the drilling and firing of shots completely out of the miners' hands, putting company men, experienced in the work and trained for it, on the job.

Labor conditions in the coal industry in the past have been such that any innovation in the working conditions of the men, such as the drilling and loading of shotholes by the companies, has been frowned upon as being likely to disturb the highly delicate equilibrium prevailing. However, a shake-up is taking place, and possibly it is time for the innovation mentioned.

The majority of miners are in reality laborers—unskilled. Their mental equipment adapts them to shoveling, but not to the drilling and shooting of coal to the best advantage so far as producing the largest amount of lump is concerned. Company men, on the other hand, can be instructed in the best methods of drilling and can be made to follow instructions. With any one of the several types of portable electric coal drills now on the market two men can put in shotholes at the rate of one every one to three minutes, depending on the nature of the coal. By putting this work in the hands of such trained men, not only is one of the most vital operations brought directly under the supervision of the mine management but a larger percentage of lump results. At present slack is unsalable, while lump brings around $4 per ton. A saving of even 2 per cent in the amount of large coal in the output of a 1,000-ton mine means 20 tons, or $80 per day.

While this letter is a discussion of the production of large coal it is well to mention another advantage inherent in electric drilling by company men, namely, that fewer workmen are needed underground. Take the same 11,000-ton mine as mentioned above, for example. Suppose it employs 100 loaders averaging 10 tons each. A half hour of each man's time is consumed going to and coming from his working face. Another hour is consumed in drilling the three holes which the average place requires. The net loading time is thus six and one-half hours. If company men with electric drills are employed, the per man output will be

$$\frac{7\frac{1}{2} \times 10}{6\frac{1}{2}} = 11\frac{1}{2} \text{ tons.}$$

At this rate only eighty-seven loaders will be needed to obtain the assumed output. Three holes will be placed in each of the 100 working faces, making 300 holes in all. A pair of drillers can put in and load 100 holes per shift. Consequently three drills and six men can do the job. This, then, increases

the total number of men to ninety-three altogether, effecting a saving of seven, or 7 per cent.

To revert to the original discussion, the various manufacturers of screening equipment urge the need of careful handling of the coal both on and from the tipple, and the avoidance of all possible degradation. They are correct in this matter. Much breakage can be eliminated by proper design of dumps, chutes and shakers. The place to stop breakage, however, is at the point where the greater part of it occurs—underground. Operators in increasing numbers are realizing the possibilities here involved. CHARLES M. SCHLOSS.

Denver, Col.

Should Miners Be Physically Competent?

Inspectors and Firebosses Particularly Should Possess All Their Faculties—Advancing Age Not Necessarily a Bar, Provided a Man's Physique Is Equal to His Requirements

I HAVE read with much interest the letter of John Walls, Sr., of Bayview, Ala., in *Coal Age* of Dec. 1, 1921, p. 888, and I desire to commend Mr. Walls for his able exposition of this important question. As miners we have been told repeatedly that marsh gas had neither color, taste nor odor. In a pure state, I believe, it has none of these attributes. Nevertheless while acting as a fireboss I have many times perceived that firedamp existed in a working place, before making an examination. This was because of the taste and odor of the gas.

I have known gas to come from the floor of a working place, and as it slowly ascended to the roof to diffuse, especially when there was a good supply of air reaching the faces. In such a place the odor would indicate that gas was diffusing. Furthermore, when a door is left open too long, firedamp accumulates. Any fireboss who does not possess a sufficiently keen sense of smell to detect its presence under such conditions, is, in my opinion, in no position to be on the alert for danger.

Physical Fitness Seldom Required

Mr. Walls states: "As far as my knowledge goes, none of our state mining laws requires a physical examination of candidates for certificates of competency." This may be true but I believe that the Board of Examiners in Colorado does take into consideration the physical condition of candidates for official mining positions. It is highly essential that a fireboss or mine foreman should possess an acute sense of smell, for there are more things that he should be able to detect thereby than gas. There is, for instance, the mine fire and the burning of insulation on electric wires, as well as the dangerous spontaneous combustion in the gob.

Sometimes a deficiency in one sense is compensated by the acuteness of another. Thus miners who have faulty hearing, as a rule, become acquainted with roof conditions by putting their hands to the roof when sounding. I remember when I was fourteen years old, driving a pony in a shaft in Scotland. A deaf and dumb miner was here employed who always placed his hand against the roof when sounding. I do not know how he might have fared if the roof had been higher than his reach. I do not know what real effect color blindness has on the efficiency of a fireboss. From my own experience, when my sight became weak with age and I found that I was unable to make the same test as in former years, I gave up firebossing and devoted my time to other lines of mining work.

I would recommend such a law as that enacted in Great Britain and as mentioned by Mr. Walls. I believe in the physical examination of candidates for certificates of competency. I would also favor a law prohibiting the employment of cripples, who might be subject to danger arising from their own physical deficiency. I have seen, however, men who had lost one leg yet were still first-class miners, also those who had lost one hand or forearm who with the aid of a hook could put out a fair share of tonnage. Some coal operators in Colorado have already adopted a physical examination for applicants for work because of the Compensation Act, and if they desire to use discrimination in selecting employees, it is exercised along these lines. Thus the Colorado Fuel & Iron Co. has what is called the forty-five year age limit. Much objection has been raised to this practice, the miners claiming that if every coal operator adopted it a man would be compelled to remain at the mine where he was working when he became forty-six years of age. However, at present only one coal operator in the state uses this forty-five-year limit of age.

This company feels that when an employee has reached the age of sixty-five years he should be pensioned. It is also believed that an employee should give his employer twenty years of service in order to be considered for a pension. Quite a large number of coal miners are splendid workmen and can give a fair day's work in exchange for their wages after they have reached fifty years of age or even fifty-five. Such men, however, cannot get employment with the above-named company, because of their being over age. Any coal miner who has given the company satisfactory service for ten or fifteen years before reaching the age of forty-five and has left this firm's employment for a period of, say, five years, provided he can pass the prescribed physical examination, may be employed even if he is fifty years of age.

Here is how this company views the whole matter. Suppose a miner commenced to work for some other company when he was twenty years of age, and gave that employer twenty-five years of his best in service. When he is forty-six years old he hears of the Colorado Fuel & Iron Co.'s pension, and seeks work with this firm. If put to work he could give only nineteen years' service before reaching the age limit adopted by this company. Thus of a total of forty-five years of usefulness between the ages of twenty and sixty-five only nineteen could be given the company that would pay this man's pension. There is thus nothing unjust. It might, however, work some hardship upon miners if all coal operators adopted it. Under such circumstances coal miners would be compelled to remain with the company for which they were working when they reached their forty-fifth year. They might conceivably be subjected to unfair treatment because of holding radical views.

I have expended much thought on the forty-five-year age limit, and I would like to hear others take up and discuss its basic idea. WESTERN MINER.

Ability Unappreciated

In seeking positions of responsibility with mining companies inquirer finds educational qualifications unable to compete with ability to mix and tell funny stories.

THERE have been many discussions in *Coal Age* relative to the necessary qualifications of mine foremen and other officials in the mining industry. I am one of those everyday individuals who got an education in the common schools. I started work in the mine at 12 years of age, have lived an absolutely clean life, am not given to seeking popularity in any way, but rather persistently strive at all times to live within the spirit as well as the letter of the law and to keep inviolate any and all contracts entered into. I hold a certificate as deputy mine inspector, state mine rescue and first aid, this latter from the U. S. Bureau of Mines, and a first-grade mine foreman's certificate. I am a citizen of the United States and hold a teacher's certificate for mining subjects. I have the approval of most county and state officials. I also qualified from the state Normal School in mining.

I have made application to many mining companies for various positions of responsibility but am compelled to sit back and see men fill these positions who are recognized as being popular largely because they can tell funny stores and enter easily into the society of gamblers and drunkards. At the same time, they are unable to figure out any simple technical question, on ventilation for instance. Some of these men can hardly read or write.

Why is it that such individuals are given preference over other men who have made mining a lifelong study and are fully recognized as being competent to hold responsible positions?

WESTERN INQUIRER.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

CONDITIONS in the United States today indicate that the year 1922 as a whole will be more satisfactory to business than the year just ended, according to a review of business conditions just issued by the National Bank of Commerce in New York. "Our forecast," the review continues, "is that profits will depend more on economy of operation than on expansion of volume. With the many favorable factors now operating, business men should not fear to make plans for the new year, but they should plan with care and conservatism, and with constant effort toward reduction of costs.

"Financial improvement continues. Progress has been made in reduction of excess stocks of manufactured goods. Accumulations of raw materials have been reduced. The rate of production in the major industries has shown little change during the closing weeks of the year. Losses in some lines have been offset by gains in others, the net result being that the gains over the low level of the earlier months of 1921 have been held.

"The last twelve months have witnessed great progress toward stable financial conditions in business. . . . The Federal Reserve system once more proves to be a system designed to care for increases and decreases in the volume of credit, with the requisite elasticity to do this easily. . . .

"Notwithstanding the consistent improvement in financial conditions, recovery in manufacture and trade has been slow. Unemployment in the chief countries shows little decline from the high point reached early in the year, and it may well reach new high figures during January and February, when normally there is an increase in the number of those out of work in North America and Europe. Manufactured goods continue to move slowly and uncertainly into the channels of consumption."

Car Loadings Recover Slightly

Loading of revenue freight totaled 742,926 cars during the week ended on Dec. 10, compared with 747,454 cars during the previous week, or a reduction of 4,528, according to reports by the American Railway Association. This was a decrease of 95,027 cars compared with the corresponding week last year and was 19,014 cars less than were loaded during the corresponding week in 1919. An increase over the previous week of 533 cars was reported for coal, the total being 137,836 cars, while coke, with a total of 6,638 cars, showed a gain of 293 over the same period.

Building Active in Large Cities

Building permits issued at 107 cities in the United States during November, exclusive of those for alterations and repairs, reached an aggregate value of $131,421,250, contrasted with $152,823,417 in October. Although the total for November is smaller than that of any month since June, due to the seasonal falling off in operations, a very favorable comparison is still made with returns for the same period of 1920. Due to sharp restrictions in construction activities last year the total value of November permits was only slightly in excess of $61,100,000, or about half of the present figures.

Tin Plate Mill Runs at Capacity

The tin plate mill of the American Sheet & Tin Plate Co., at Sharon, Pa., a United States Steel subsidiary, began to operate at capacity Monday, Dec. 19, six more hot mills being started. Employment was afforded to 300 additional men, making a total of 2,100 on the payroll. Steady work is assured. It is said the company has obtained another tin plate order from Japan. This is the first time in over eight months that the mill has run at capacity.

Railroads Lay Off More Men

Operating forces of the Chicago, Milwaukee & St. Paul R.R. were reduced approximately 50 per cent Saturday, Dec. 17. Mechanical and clerical employes were laid off for an indefinite period. When the seven shops of the road closed 12,000 men were sent home. An order explains the reduction is an economy measure. Clerks were not as hard hit as the shopmen. The former are merely dismissed for from one to two weeks, when they will be taken back on full time. Even officials are included. They have been asked to sacrifice a week's pay. A 10 per cent reduction in the forces maintained in the 400 roundhouses of the road is made.

Four hundred men have been thrown out of work by the closing of the Boston & Albany locomotive repair shops in West Springfield, Mass., for two weeks beginning Dec. 22. No reason for the shutdown is announced. The car repair shops will continue in operation.

A reduction in working forces on the New York, New Haven & Hartford R.R. went into effect Saturday, Dec. 24. The railroad repair shops at Readville, Mass.; East Hartford and Norwich, Conn., as well as the shops in New Haven, Conn., were virtually closed by the road. The order affects more than 1,000 men in the Readville shops and about the same number in New Haven.

Paper Mill Closed a Year Reopens

The Oakland paper mill, at Manchester, Conn., a branch of the American Writing Paper Co., reopened Dec. 19, after having been closed for a year. The company hired all its former employees. It was said that the mill now has enough orders on hand to remain in operation for some time.

President Sees Good Times Coming

Confidence in "the return to good times" is expressed by President Harding in a letter to the editor of the St. Paul *Pioneer Press and Dispatch*, on the occasion of the paper's anniversary. "I am glad," said President Harding's letter, "to be able to express to the people of the great Northwest my firm conviction that conditions are improving and that the country has set its foot forward on the way to the return to good times."

Tire Plant Resumes on Full Time

Announcement has been made that the mills of the American Tire Fabric Co. of Newburyport, Mass., which had been closed more than two months, reopened on full time Tuesday, Dec. 27. The mills employ nearly 500 hands.

Aided by Private Funds, Unemployment Conference Will Probe Irregularity of Work in Bituminous Mines

By Paul Wooton
Washington Correspondent

PRIVATE funds in sufficient amount to make possible a comprehensive study of intermittency of employment in bituminous mines have been placed at the disposal of the President's conference on unemployment, Secretary Hoover of the Department of Commerce announced Monday, Dec. 19, 1921. This will be the first of a series of surveys which are to be carried out under the direction of Edward E. Hunt, secretary of the conference, in co-operation with the Department of Commerce.

The diversity in operating conditions in different fields and in different mines, the wide difference in transportation conditions, the possibilities for storage and the varying character of markets make necessary a much more detailed study of such local conditions than has been made heretofore. Some of the subjects which will be given consideration during this survey are the following:

Overdevelopment of production facilities; necessity of being in a position during normal times to meet increases in the demand caused by seasonal changes and by changes in the industrial situation; overdevelopment fostered by usual methods of mining, under which the cheapest coal is mined in the early years of the mine, thus enabling new mines to undersell temporarily those longer established in the same district; overdevelopment resulting from war and post-war conditions; opening of inefficient mines; abnormal increase in development in established mines; temporary conditions caused by a combination of transportation difficulties and abnormal export demand; oversupply of labor caused by an excessive number of operations and by the operation of car-assignment rules in times of car shortage; lack of correlation between tipple capacity and developed capacity underground; lack of correlation between coal-cutting capacity and mine transportation facilities; inefficient management, resulting in mine disability; lack of adequate equipment; inadequate force of company men as compared with the miners paid on a per-ton basis; stoppage of work through vacation strikes; abstention from work during organized strikes; sporadic absenteeism.

Harmful Elements to Be Studied

Elements entering into the harmful effects of present conditions in bituminous mining are to be studied along the following lines:

Waste of capital through forced abandonment of unliquidated investment in production facilities; waste of capital through virtual destruction of coal resources by making future recovery unduly expensive; waste of capital through excessive demands on railroads for transportation facilities; waste of labor through intermittency of employment and through voluntary abstention from work; undue strain on railway facilities by seasonal demand and by abnormal traffic loads after strikes or "vacations"; preferential treatment given mines having private cars and to mines furnishing railway fuel; storage facilities at docks, for railroad fuel, and at points of consumption.

Competition with other fuels also will be studied. This will deal with competition coming from the sale of Canadian coal in New England and the Northwest, with that from fuel oil, natural gas and hydro-electric installations.

An effort will be made to study the remedies which have been put forth to benefit this situation. This study will include such proposals as compulsory closing of hopelessly inefficient mines; requiring the product to meet certain standards of preparation; standards of mining methods to be followed; establishment of legalized pooling of coal resources of an entire field; establishment of a coal labor board or some form of compulsory or voluntary arbitration to prevent stoppage of production through labor disputes: reform of car-distribution rules.

The improvement of transportation facilities both on rail and water and the handling facilities at docks are slated for consideration. An effort will be made to suggest improvements in the method of distributing coal through wholesalers, brokers and retailers. The utilization of the low-grade product, unfit for shipping, by conversion near the mine into electricity also will be taken up. Particular attention is to be given the development of new markets both abroad and by special preparation to fit certain industrial uses.

D. T. & I. Denied Reduction in Coal Rates; West Virginia-Ohio Case Similar

UNUSUAL significance attaches to the opinion of the Interstate Commerce Commission in denying the proposed reduction by the Detroit, Toledo & Ironton R.R. of rates on coal in that this case is closely related to the pending West Virginia-Ohio case. Extracts from the opinion, which was written by Commissioner Esch, are as follows:

"For many years differences in the rates between the Ohio and the inner crescent groups have depended upon differentials which, as a result of a controversy between the shippers from these competitive districts, were fixed by us after an exhaustive investigation in Bituminous Coal to C. F. A. Territory, 46 I. C. C., 66. This rate adjustment is again before us in No. 12698, Southern Ohio Coal Exchange vs. Chesapeake & Ohio Railway Co. et al.; and as the result of a petition filed by certain carriers, including the Detroit, Toledo & Ironton, we have instituted an investigation, No. 12851, In the Matter of Intrastate Rates on Bituminous Coal within the State of Ohio, with respect to the propriety of increasing the intrastate rates on bituminous coal within the state of Ohio to the basis of the interstate rates.

"The reduction contemplated by the suspended schedules is merely a part of a general reduction in the interstate and intrastate rates of respondent on all commodities. All other reductions in its interstate rates have been allowed to become effective. The total coal tonnage originating with respondent is small compared with the total coal tonnage produced in the Ohio and the crescent districts.

"The financial condition of respondent at this time might warrant the proposed reduction, provided the issue could be determined solely upon that basis. But, as we have frequently said and as shippers themselves have frequently urged, a proper rate relationship between competitive groups, particularly on such a commodity as coal, is in many respects of greater importance to the shipping public than the measure of the rate itself. The suspended schedules involve only respondent's local coal rates, which are but a few of the many coal rates, joint and local, interwoven in the rate structure from the mines already described. Thus viewed we would not be warranted in permitting the establishment of rates which would disrupt the rate relationship fixed by us and which has existed for many years.

"The proposed rates, if allowed to take effect, would substantially widen the differential heretofore fixed by us between rates from the affected Ohio mines and the inner crescent. The rates from competing mines within the Ironton and Jackson groups to Toledo, Detroit, and other points of destination shown in the suspended schedules have also for many years borne a fixed relation. As already observed, with the exception of mines in the Ironton group which take rates 10 cents higher, competing mines in southern Ohio take the same rates to Toledo, Detroit, and other points of destination shown in the suspended schedules.

"The interstate commerce act is not only designed to cure violations thereof, but also to prevent them, and in Sus-

pension of Rates on Packing-house Products, 21 I. C. C., 68, decided June 2, 1911, we asserted the power to suspend proposed reductions in rates in any case where such suspension would operate to prevent an apparent discrimination. Undue prejudice and preference may be brought about as readily by reducing one of two related rates as by increasing the other rate.

"We are of the opinion and find that the proposed reductions without corresponding reductions in rates from mines within the Jackson and Ironton groups served by respondent and other carriers under joint rates and also corresponding reductions from mines in other Ohio groups and mines in Pennsylvania, West Virginia, Kentucky and Tennessee served by respondent and other carriers under joint rates, would result in undue preference of mines on respondent's line in the Jackson and Ironton groups and in undue prejudice to other mines in those groups, to mines in other Ohio groups, and to mines in Pennsylvania, West Virginia, Kentucky, and Tennessee, served by respondent and other carriers under joint rates."

In Sharp Exchange of Telegrams Watkins Ends Long Dispute with Brophy

AFTER much bickering with District No. 2 of the United Mine Workers for the past nine months in an effort to bring the union to an understanding that the mines cannot be operated under the existing wage scale, the Pennsylvania Coal & Coke Corporation, one of the largest soft-coal operating concerns in central Pennsylvania, has finally broken with the president of the district organization, John Brophy. On Dec. 17, T. H. Watkins, president of the coal corporation, received a telegram from Mr. Brophy accusing the coal company of bad faith. That Mr. Watkins has decided to break is evident from the answer contained in a telegram which he sent to Mr. Brophy under date of Dec. 19.

Mr. Brophy's telegram to Mr. Watkins, under date of Dec. 17, follows:

"In spite of the fact that your company are signatories to a contract which has until March 31, 1922, to run, for the last several months you have been making veiled and open attempts to bring about the breaking of the contract. Your agents are now openly working to induce miners to sign papers requesting a return to the 1917 rates, a clear evidence of bad faith and an unwillingness to carry out your contractual obligations.

"You must know that reducing wages is not the solution for the present stagnation of business. Slack work is not a local condition. It is nationwide, and union and non-union fields alike are affected. A lower wage in union fields is not going to create a demand for coal; it will only force a still further reduction in the non-union fields and wages and living conditions to a still lower level.

"Your bad faith is further evidenced by the action of your company and others in arranging to shut down certain mines at the holiday season in an effort to break the spirit of the miners and induce them to accept work at lower rates and on a non-union basis. And now at Amsbry, Pa., you have served five days' eviction notices on five families whose only offense is that the breadwinners are local officers in the miners' union and resist your efforts to force them to accept lower wages.

"With winter upon us, with no other homes available, during the Christmas season a five-day eviction notice is nothing short of inhuman. The United Mine Workers insist on your complying with the provisions of the joint agreement and upon fair treatment of employees. If argument will not prevail, we shall use every means in our power to compel your observance of your obligations under the contract. We await your answer."

Under date of Dec. 19, Mr. Watkins sent the following reply:

"Your telegram of Dec. 17 relative to our policies would not warrant a reply if it was not so evidently another attempt on your part to fasten your union's absurd and pauperizing wage policy on the workers of this district. You are now seeking an opportunity to appeal through prejudice and fear, since you have no longer an appeal to reason. The responsibility for the terrible situation into which District No. 2 has been drawn is being placed by all thinking men where it belongs, and that is on the ignorant and stubborn policies of the district and the national officials of the U. M. W. of A.

"You had notice nine months ago from me and my associates of the depths of misery into which you could drag central Pennsylvania unless you met us and made a reasonable modification of our present wage scale. Instead of meeting us you arrogantly refused even to discuss a situation which was as vital to the men you pretend to represent as it was to us. We and they together are reaping the result of your folly. Instead of heeding our warning you have deliberately concealed from your members the fact that more than 70 per cent of a normal weekly production of soft coal has been mined during this entire year in the United States. You have deliberately blinded them to the fact that they could have had their full share of the nation's business this year and next year by accepting a moderate wage reduction.

"We have lost six million tons of our business this year to the non-union fields in addition to the amount lost on account of the general depression. Unless a reduction is secured within thirty days I warn you that you have condemned the men in this field to fifteen more months of the worst privation the district has ever known. Our only chance to secure orders and work for them lies between now and March 31, when the sales-contract season closes for the succeeding year. It is a pity you have no conception of the present situation and know so little of how coal is marketed.

"You allude to five families in Amsbry who have been asked to vacate our houses. No tenant of any of our dwellings has ever been or ever will be removed under the circumstances which you so unscrupulously picture. On the other hand, no tenant who persistently connects himself with an illegal traffic in liquor or interferes with the peaceful or social pursuits of his neighbors will be tolerated for long in our dwellings or employed by the company. I am glad to say that we are now able at least to shelter, rent free, in our houses, several hundred families deprived of work by the rule or ruin tactics of your organization. They cannot buy necessities with war-time wage rates. I have been fighting for nine months to get them pay envelopes.

"This company has observed every rate and condition of the contract to which you refer despite the many times it has been broken by union leaders and committees. Last week I notified our people at twenty of our idle mines that I had exhausted every effort to secure orders for them at the present scale and had abandoned all hope of starting work again until a reduction in wages was agreed to. They were entitled to know this, so they could decide how and where they would live next year. I now notify them that if any of the men at our idle mines come to me and ask for work at reduced rates, which because of the reduced cost of necessities permit them to maintain the accustomed standard of living, then I will do everything in my power to secure orders for them and help them all I can, which is more than you are doing. In view of the tone of your telegram and the threats made against me and my company, I do not care to receive any further communication from you."

Argument on Appeal from Reading Plan Of Segregation Set for Jan. 16

ARGUMENT on the appeal of certain common stockholders from the Reading segregation plan as approved in the District Court in Philadelphia will be heard by the U. S. Supreme Court Jan. 16, 1922. Announcement that the date would be advanced was made in Washington, Monday, Dec. 12. The petition filed in the Philadelphia District Court in behalf of certain common stockholders of the Central Railroad of New Jersey to set aside the sale of that railroad's holdings in the Lehigh & Wilkes-Barre Coal Co. to the Reynolds syndicate does not constitute a separate action at law but was entered as part of the general Reading segregation proceedings.

Coal Industry Will Testify in Rate Reduction Hearing

Reopening Delayed Till Jan. 11—National Coal Association to Present Bituminous Operators' Case—Cushing and Cochrane for Wholesalers

By Paul Wooton
Washington Correspondent

TESTIMONY from the coal industry in the rate reduction case has been assigned by the Interstate Commerce Commission for Jan. 19 and 20. Under this arrangement the representatives of the coal industry would follow immediately after the railroads' witnesses, preceding those of the other industries which will present arguments for specific commodities. An effort is being made to effect a rearrangement of the schedule so as to allow the coal testimony to be taken at a later date. It is a more difficult task to gather the necessary information from the coal industry than from any other industry which is to be heard, and for that reason it is thought probable that the commission can be induced to change the assignment so as to allow more time for the collection of the necessary data.

The case of the bituminous producers is to be presented by the National Coal Association. This was decided at a meeting of the association's railroad relations committee in Washington Dec. 21. Some are of the opinion that arguments should be made by representatives of the different districts, but in view of the emphasis which the commission places upon its disinclination to consider the matter from a local standpoint it was decided to leave the presentation entirely in the hands of the national association. The hope was expressed that the industry's entire case would be presented by one witness. J. D. A. Morrow, vice-president of the National Coal Association, was selected for this task. He will be assisted, however, by an advisory committee composed of J. G. Bradley, president of the association; E. C. Mahan, chairman of the railroad relations committee; John Callahan, traffic manager for the association, and Rush Butler, the association's chief counsel.

Bituminous Operators to Take Broad Economic Line

The manner in which the case of the bituminous producers is to be presented has not been worked out in detail. It is certain that it will follow the broadest economic lines, as there is great difference in opinion among coal producers as to just what should be done in the matter of rate reduction on coal. The efficiency of the transportation machine is a matter of such moment to the coal industry that some operators greatly fear that even a 10-per cent reduction when applied to a commodity moving in such volume as does coal would deplete the carriers' revenue to the point where all concerned would suffer. Operators who furnish relatively small amounts of railroad fuel and who are more concerned with rates of freight take a different view. They point out that it is a fallacy to conclude that reduction of rates means a reduction of revenue. They contend that it has been demonstrated clearly by the experience of the last year that rates can be made so high as to diminish revenue and that by lowering the cost of transportation, streams of traffic will be unfrozen and while the rate of profit to the railroads will be less, the aggregate revenue will be greater.

The reopening of the hearing has been postponed from Jan. 9 to Jan. 11. The commission has announced the following allotment of time: direct testimony of carriers, Jan. 11-14; cross examination of carriers' witnesses, Jan. 16-18; coal and coke, Jan. 19 and 20; ore, furnace materials, and iron and steel articles, Jan. 21-23; sand and gravel, brick, lime, cement, gypsum and asphalt, Jan. 24-25; lumber and forest products, Jan. 26-27; fertilizer and materials, sulphuric acid, phosphate rock, Jan. 28; testimony of public and shippers as to general aspects of the case, Jan. 30 to Feb. 4; vegetable oil and soap, Feb. 8; grain, flour and agricultural products, Feb. 9; live stock and packing-house products, Feb. 10; petroleum and petroleum products, Feb. 11; canned goods and wholesale groceries, Feb. 15; fruits and vegetables, Feb. 16-17; milk, cream and dairy products, Feb. 18; beverages and beverage containers, and waste material, Feb. 20; other commodities, Feb. 21-22.

The rate hearing has been considered by the executive committee of the American Wholesale Coal Association and George H. Cushing and Ira C. Cochrane have been designated to represent the wholesalers. The commission has consolidated with this case the individual petition already filed by the Wholesale Coal Association. Mr. Cushing will contend that 1917 rates should be the basis used in the calculation of rate and service charge adjustments. He will contend that the public will benefit most if the reduction is confined largely to the heavy basic commodities. As there is some difference of opinion as to what constitutes a basic commodity, Mr. Cushing in his presentation will define it as follows: "In a transportation sense, a basic commodity is a product of the earth in the form in which first offered commercially for rail transportation."

Coal Bids Asked for Ohio Institutions

BIDS will be opened at Columbus, Ohio, Jan. 4 by Russell V. Johnson, State Superintendent of Purchases, for 24,800 tons of coal for state institutions, as follows: 9,000 tons of mine-run or nut, pea and slack for the Ohio Penitentiary, f.o.b. at institution; 11,000 tons of mine-run or nut, pea and slack for the Columbus State Hospital, Columbus, f.o.b. at institution; 1,300 tons of mine-run or lump for the State House, Columbus, delivered to the basement; 3,500 tons of mine-run or nut, pea and slack for the Longview Hospital, Carthage, near Cincinnati, f.o.b. institution.

Food Costs Fell 1 Per Cent in November

FOOD costs for the average family in the United States were 1 per cent. lower in November than in October, according to Labor Department estimates. The compilation of the estimates was made from reports of prices of forty-three food articles to the department's Statistical Bureau by retail dealers in fifty-one cities.

No Selection of a Secretary has been made as yet by the Smokeless Coal Operators Association. It is understood that the selection of a successor for E. J. McVann will not be hurried and for the present the association will not maintain a Washington office. Mr. McVann declined re-election so as to be able to devote his entire time to the practice of law in Washington.

Cut in Export Coal Rates Delayed by Opposition from New England

OPPOSITION from New England has blocked, at least temporarily, the plan to put into effect an immediate reduction of export rates on coal. The committee which is considering the whole export situation met Dec. 22 at the offices of the Interstate Commerce Commission in Washington, at which time it was revealed that the opposition to the proposed rate reduction has caused the railroads to hesitate in putting through a plan that was generally favored. The effort has not been abandoned and will receive additional consideration at the hands of the railroad executives concerned. W. V. Hardie, director of traffic for the Interstate Commerce Commission, was selected as the committee's chairman. He explained that the Interstate Commerce Commission has no authority to act in a case of this kind without hearings and without complying with the other formalities of such procedures, which would take weeks, if not months.

Who Was Victor by the Chicago Decision In the Borderland Coal Case?

LIKE the Battle of Jutland, there are many views of what happened to the Borderland suit and to Judge Anderson in the Circuit Court of Appeals in Chicago, chronicled in these columns last week. Whose victory is it? The following is from a news story sent out from Charleston to papers in a union field the day following that on which the Chicago judges handed down their decision; among other things it is based on a formal statement given out by Mr. Olmstead, chairman of the labor committee of the Operators Association of the Williamson Field:

Though superficially regarded as a modification of Judge Anderson's ruling, actually the appellate court has broadened the scope of the case, explicitly stating as facts beyond legal disproof points hitherto bones of contention. A significant feature of the court's decision, operators' counsel declared, is that it virtually warns operators of the Central Competitive Field, who today stand indicted in Judge Anderson's court, that they are liable to heavy fines and imprisonment for their part in the "gigantic conspiracy" between them and mine workers' officials, when they appear for trial in January.

Comment here was to the effect that the decision really is of vast political significance because of this feature, in that the Circuit Court of Appeals virtually offers the central field operators a loophole by which to escape federal prosecution through immediate abolition of the check-off.

"The court explicitly states," said operators' counsel, "that it finds evidence of a 'gigantic conspiracy' between the United Mine Workers of America and operators of the Central Competitive Field. It virtually commands Judge Anderson to restrain the mine workers' officials from collecting money outside the state for organization purposes in West Virginia, from buying arms or in any way interfering with the peaceable operation of the mines in this state. Furthermore it declares that while the check-off cannot be prevented if it is voluntary on the part of the workers, if it is involuntary it is part of the 'conspiracy.' And we have all the evidence necessary," counsel added, "to prove that the check-off is involuntary and therefore is illegal."

The authority given Judge Anderson to prohibit further efforts to organize Mingo County and other dependent coal fields of the state means, moreover, that the tent colonies at Lick Creek and other points near Williamson must go and that all other warlike efforts of the miners to organize the field must cease.

More Bituminous Miners Worked, for Less Pay, in November Than in October

EMPLOYMENT conditions in November, 1921, as tabulated by the U. S. Department of Labor through the Bureau of Labor Statistics from reports by representative establishments in 13 manufacturing industries and in bituminous coal mining indicate, in comparing the figures of November, 1921, with those of identical establishments for November, 1920, that in 8 industries there were increases in the number of persons employed, while in 6 there were decreases. The largest increase, 74 per cent, is shown in the woolen industry. Men's ready-made clothing shows an increase of 54.1 per cent and hosiery and underwear an increase of 38.3 per cent. The most important decreases are 33.1 per cent in iron and steel and 25.2 per cent in car building and repairing. There was a decrease of 10.6 per cent in bituminous coal mining.

Five of the 14 industries show increases in the total amount of the payroll for November, 1921, as compared with November, 1920, and 9 show decreases. The most important percentage increase, 58.2, appears in the woolen industry. Iron and steel show a decrease of 64.2 per cent and both car building and repairing and paper-making a decrease of 38 per cent. The decrease in bituminous coal mining was 34.4 per cent.

In comparing November, 1921, with October, 1921, 5 industries show increases in the amount of money paid to employees and 9 show decreases. The largest increases are 7 per cent in paper making and 6.2 per cent in iron and steel. Silk shows a decrease of 13.5 per cent and automobiles a decrease of 8.5 per cent. There was a decrease of 6.2 per cent in bituminous coal mining.

Armed Pickets Keep Men Away From Mines

SERIOUS disorders followed the attempt of the management of the Panama mine, near Moundsville, W. Va., to operate that mine when the men went on strike to determine who should be employed by the management. The mine had been closed down for a time and had resumed operations. On Dec. 14 the strikers planted pickets to prevent anyone from going to work in the mines. Many of them, having firearms, attempted to assault miners when they arrived at the plant in taxicabs. Women armed with bricks were conspicuous among the pickets. Deputy sheriffs were posted near the mine to protect the workmen, but the state police on their arrival restored order. Several foreigners were arrested on Dec. 14 for assaulting workmen and three others on the following day for interfering with workmen, one of the three being a woman. Later a policeman was assaulted because he had arrested the woman.

Seeks Early Decision on Constitutionality Of Kansas Industrial Court Law

ATTORNEY GENERAL HOPKINS of Kansas has requested the U. S. Supreme Court to advance for early argument the case brought by the United Mine Workers Union of Kansas attacking the constitutionality of the Kansas Court of Industrial Relations law. The case is No. 451 on the docket and unless advanced will not be heard for months and probably not until the next term.

The Attorney General contends that the administration of the law has been hampered by the mine-union leaders, who are declared to be agitating and urging disregard and disobedience of the law, and openly defying the law. He says laws similar to the Kansas law have been under consideration by various states, that such an act is being urged upon the national Congress, and that it is important that the court pass an early opinion as to its constitutionality.

Would Reduce Prices to "Proper Levels"

ATTORNEY GENERAL DAUGHERTY has directed the Bureau of Investigation of the Department of Justice to investigate retail prices, including those on fuels, in an effort to reduce them to proper levels. While no details as to the investigation were announced the Attorney General said retail prices are too high in many places. Co-operation of the Department of Commerce and the states in reducing prices will be sought.

Hall and Aitchison Renominated to I. C. C.

PRESIDENT HARDING has renominated Commissioners Hall and Aitchison for new terms as members of the Interstate Commerce Commission. It had been rumored that one of these commissioners would retire.

ANALYSES OF SOUTH SOMERSET COUNTY COALS. — In the article entitled "Analyses of South Somerset County Coals," Nov. 10, 1921, vol. 20, p. 757, errors in interpretation and subsequent bracketing make the following corrections necessary: Merchants No. 3 mine should be credited to the Merchants Coal Co.; Consolidation No. 112 to the Consolidation Coal Co.; John Wills Nos. 2 and 3 to the John Wills Coal Co.; Penn Mar Mines Nos. 2 and 3 to the Brothers Valley Coal Co.; Linmer and Coronet No. 3 belong respectively not to the Ursina Fuel Co. or the Black Coal Co. but some other parties not known to the State Geological Survey.

Frelinghuysen Again Urges Action On Coal Stabilization Bill

Disclaims Intent to Regulate the Industry—Would Throw Light of Publicity on Stocks, Requirements and Reasonableness of Prices

SENATOR FRELINGHUYSEN, of New Jersey, delivered a speech in the Senate Dec. 22 urging Senate action on his bill aimed to stabilize the coal industry through the gathering and publication of information by the government as to coal production and prices. The Senator was bitter in his attacks on the National Coal Association, charging it with lobbying against the bill and saying that the cost of administration of the proposed legislation would not exceed that paid by the association to its lawyers to fight legislation in Congress.

"Turn on the light" was the theme running through the Senator's address, he insisting that the government and the country were in the dark as to stocks, requirements and reasonableness of coal prices.

He criticized anthracite prices, saying that for the country as a whole they had advanced in price 52c. a ton from July 15, 1920, to July 15, 1921, although other prices had been falling. While willing to concede reasons advanced for high prices by the coal interests, he insisted that the public had no means of testing their truth, which would be possible with systematic quarterly collection of statistics by a government department.

Extracts from the Senator's speech follow:

"When I last addressed the Senate on the day the seasonal coal-rate bill was sent back to committee, I said the coal question would not down. It has not downed. I was convinced then that the situation was critical. Nothing has since occurred to weaken my conviction. The coal question is right here today, staring us in the face.

Denies Purpose of Bill Is Regulatory

"I said of Senate bill 1807 (stabilization bill) that it was meant simply to turn on the light. To call it regulation is to pervert the English language. Its only purpose is to throw the light of publicity and understandng on an industry which I and my associates on the Interstate Commerce Committee had come to realize did not know itself. The bill was opposed by an organized lobby of the coal interests, who were afraid of the light and who wanted the people to continue to walk in darkness.

"To say that the Government of the United States is in the dark about these day-to-day facts of the coal supply is to charge that government with criminal negligence, but I can prove the charge on four counts.

"There is only one thing that we know regularly about the coal supply, and that is the production. But production alone will not tell the story. We must know also what the relation of production is to requirements.

"I say we are in the dark about stocks. About once a year, when the situation looks desperate, some department does make a hurried, inadequate investigation of the amount of coal in storage. In fact, such a hasty stock taking has just been made by the Department of Commerce. But the issuance of these sporadic reports may do as much harm as good.

"I say we are in the dark about requirements. Forecasting requirements is simply a matter of patient keeping of records, but the records are not being kept. We do not know what the current rate of consumption is.

"I say we are in the dark about prices. Except for the retail prices quoted by the Department of Labor, we have no official records of what prices are being asked.

"And lastly, we are in the dark concerning the reasonableness of the price. One reason why production has fallen off so tremendously is that buyers are puzzled and uninformed. They are waiting for the price to come down. They will not trust the siren song of the coal man. When the coal operator advises them to 'Buy now, the price is down to rock bottom,' they put his statement down to propaganda. The whole matter turns on a question of fact; on what is the present cost of producing coal. But the buyer can't find out. I can't find out. You can't find out.

"Now it would be a simple matter to find out about these things as provided in the publicity bill. All that is needed is to turn on the light. All that is needed is to designate some government agency to do the work. Why the total cost of administering the bill would be less than what the National Coal Association pays its lawyers to fight legislation in this Congress.

"So much for what the public does not know about bituminous coal. Turn, now, to anthracite. So far as hard coal is concerned, the figures show plenty of coal produced and transported. They show that up to the end of October, 74,400,000 short tons of anthracite coal had been produced. This compared favorably with the record for preceding years. That much we know about the hard-coal supply. But we are in the dark about other things of the simplest and most elementary sort. Will anyone explain why, with a supply ahead of last year, the retail price of anthracite is higher today than it was a year ago?

"I do not wish to be unjust to the coal men. I know what the explanations are that they offer for advances in the price of anthracite. The high cost of materials, a dull market for steam sizes, an increase in wages last summer, the increase in freight rates; these oft-repeated explanations are familiar to every member of this body. The point I am making is that the public has no means of testing the truth of the explanations.

"We do not know because we are not permitted to know. We cannot find out what the costs are because the National Coal Association has put out the eyes of the government by the injunction in the Maynard coal case.

"We may recall that if increased freight rates are an element in the increased price, that increase has gone largely into the pockets of the anthracite coal-carrying roads, which own the mines, and that these roads were already among the most prosperous in the country.

"We do know, according to the *Baltimore Sun* of June 7, that the Philadelphia & Reading Coal & Iron Co. made profits of $6,672,000 in 1920, as against $2,464,000 in 1916, an increase of 170 per cent. We know that the Lehigh & Wilkes-Barre Coal Co., having for the last ten years or more paid 13 per cent regularly, on March 5, 1921, paid a cash dividend of 150 per cent.

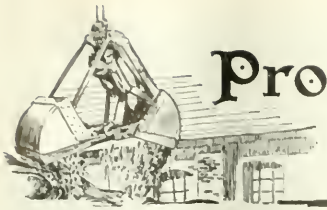
"The Delaware, Lackawanna & Western Coal Co. paid 10 per cent annually from its inauguration in 1909 until 1912. In 1913 it paid 30 per cent and in 1914, 20 per cent. In 1915 it paid 60 per cent. In 1916 it paid 20 per cent. In 1917 it paid 100 per cent—60 per cent in cash, and 40 per cent in Liberty Bonds and notes of Great Britain. In 1918 it paid 40 per cent, the 30 per cent extra being in Liberty Bonds. In 1919 it paid 10 per cent, and in 1920, 10 per cent cash and a stock dividend of 75 per cent.

"I say to you that the question of whether a gigantic combine is demanding extortionate prices for a necessity of life is one that no democratic government can ignore and live."

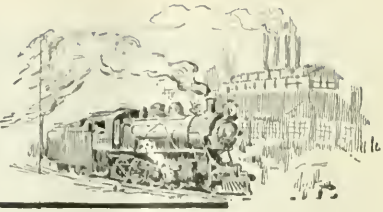
Wholesale Prices in November Recede Slightly from October Level

A SLIGHT drop in the general level of wholesale prices is shown for November, as compared with October, according to information gathered by the U. S. Department of Labor through the Bureau of Labor Statistics. The bureau's weighted index number, based on 327 commodities or price series, stands at 149, compared with 150 for the preceding month.

The largest decreases took place among farm products, particularly cotton, wheat, rye, cattle, hogs, sheep and poultry. Clothing and metals also were cheaper than in the month before. No change in the general price level was reported for the groups of foods, chemicals and drugs, house-furnishing goods, and miscellaneous commodities. In the groups of fuel and building materials prices averaged higher than in October.



Production and the Market



Weekly Review

DECEMBER production of bituminous coal the lowest at this season for many years and prices on the spot market just about what the buyer offers mark the end of a year's coal trade that can best be epitomized in the words of the old song "Soft and Low."

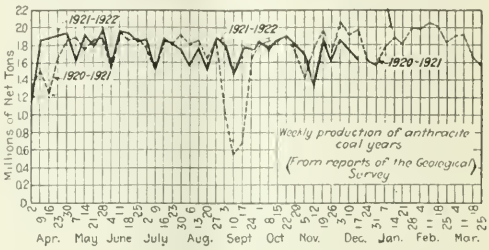
The week's output (Dec. 12-17), barely 7,000,000 tons, is the third in a row of what is expected to be a longer series at that level. No report or opinion on the condition of the coal trade, either hard or soft, carries much hope or expectation of better demand without a period of hard winter weather.

Coal is not the only business that languishes by reason of the continued mildness of the weather. Several branches of the clothing industry and rubber footwear, like the retail coal business, are waiting for hard and continued frost. In the Middle West they are saying that six weeks of real winter will be required to deplete the retailer's stock of coal and bring him into the market. The largest producer of domestic coal in Illinois has closed down, or will soon do so.

Consumption Unreasonably Low; Sag Temporary

Now there is nothing unusual in the non-operation of mines in the summer, but it is very unusual in the winter. This one incident practically paints the picture for the whole coal industry today—anthracite as well as bituminous coal; more coal above ground than consumers need. Consumption of coal is low, lower in fact than many suspect, but the sag is temporary. As evidence of this is the fact that for several weeks there has been more business in January deliveries than in December.

Coal Age Index of spot prices of bituminous coal gained one point this week, going from 83 to 84. Definite suspension of production in even the non-union fields and the falling off in supply of fine coal consequent on diminished call for domestic sizes have pulled the steam market part way out of the hole. The gains are in part sentimental, but they are real nevertheless and by no means local; Clearfield, Pocahontas, Cambria, Somerset, Fairmont, Kanawha, southern Illinois and Hocking all contributed some strength to the market.


1921-1922
1921-1922
1920-1921
1920-1921
Millions of Net Tons
Weekly production of anthracite coal years
(From reports of the Geological Survey)
Apr. May June July Aug. Sept Oct Nov. Dec. Jan. Feb. Mar.

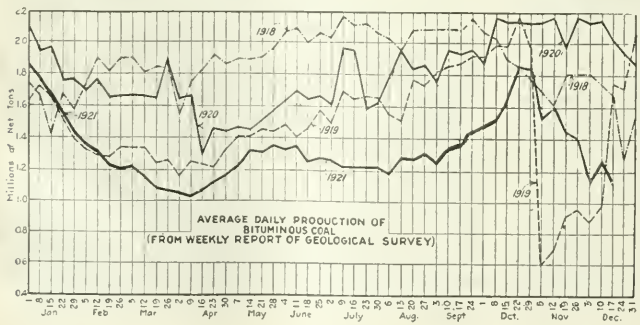
Anthracite production is falling off for the same reason as that of bituminous coal—the warm weather and overstocked bins in retail yards. Company prices are firm but independent prices are weakening, especially on the less-favored family sizes.

BITUMINOUS

Production again declined during the week ended Dec. 17, according to the Geological Survey. The total output was 7,046,000 net tons, as compared with 7,298,000 in the previous week. Loadings on the first two days of Christmas week indicate a further decrease in production for that period.

Production for the first 296 days of the year was 393,548,000 net tons, the lowest for that period in any of the last five years. On Nov. 1 commercial consumers had a reserve of 47,000,000 tons, but since that time production has been less than consumption. Buyers have had several factors in mind in curtailing their orders, but the first of the year will see the removal of the war tax on freight and the passing of the inventory period, which is always a reason for cutting down on current orders. Coal men see in this the re-entry of the buyer in the market, at least to the extent to which he has depleted his reserve in the last sixty days.

The trade also expects that caution will prompt con-



Estimates of Production

(Net Tons)

Week Ended	1921	1920
BITUMINOUS COAL		
Dec. 3 (*b*)	7,105,000	12,812,000
Dec. 10 (*b*)	7,298,000	12,865,000
Dec. 17 (*a*)	7,046,000	12,156,000
Daily average	1,174,000	2,026,000
Calendar year	393,548,000	533,363,000
Daily average calendar year	1,330,000	1,793,000
ANTHRACITE		
Dec. 3 (*b*)	1,845,000	2,070,000
Dec. 10	1,703,000	1,933,000
Dec. 17 (*a*)	1,611,000	1,998,000
Calendar year	85,495,000	85,607,000
COKE		
Dec. 10 (*b*)	112,000	374,000
Dec. 17 (*a*)	125,000	334,000
Calendar year	5,286,000	20,275,000

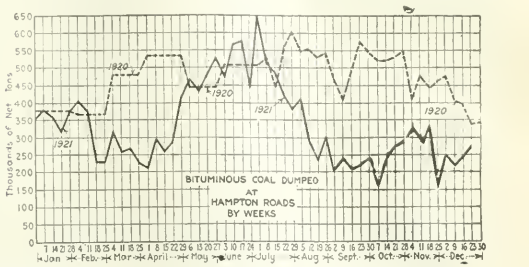
(*a*) Subject to revision. (*b*) Revised from last report.

sumers to anticipate any labor disturbance over the new wage scale by providing additional stocks in the interim. Inquiries for future tonnage are increasing but operators are not generally inclined to tie up their coal over the first quarter of 1922, feeling that during that period they may have an opportunity to recoup their losses by holding their coal against spot offers.

Retailers obtained only a slight increase of business from the recent colder weather. As has been said so many times, the householder is not buying in the usual quantity, being inclined to go through the winter on a hand-to-mouth basis. Retail yards are jammed with high-priced coal, which is hard to work off especially when it is considered that stocks can now be replaced from the mines at figures much lower than existed when the dealer bought heavily. Some of these low spot prices are being reflected at retail by the smaller firms who were financially unable to stock up two months ago, which works to the further disadvantage of the average retailer.

New York and Philadelphia houses have postponed their selling efforts until the new year, when they feel that buyers may "lay off" the stock pile. Cleveland reports "nothing doing," but the heavy draught on stock piles presages an early return of demand. The Cincinnati market is featureless but for the strength in steam coals. Accumulations at that gateway have been pared down and the lack of distress coal permits more stable quotations. The Northwest is experiencing sub-zero temperatures, bringing a rush of small domestic orders, but industrial fuels are still sluggish.

New England trading is very ragged. Receipts by water and rail are now about equal, the latter being largely railroad contract fuel, which is the mainstay of all-rail shippers. Coastwise business is taking whatever spot tonnage can be found, as present rail rates are too far out of line to permit competition with water-borne coals. Marine houses are scratching for business and 75c. freights from Hampton Roads are not unlikely.



Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

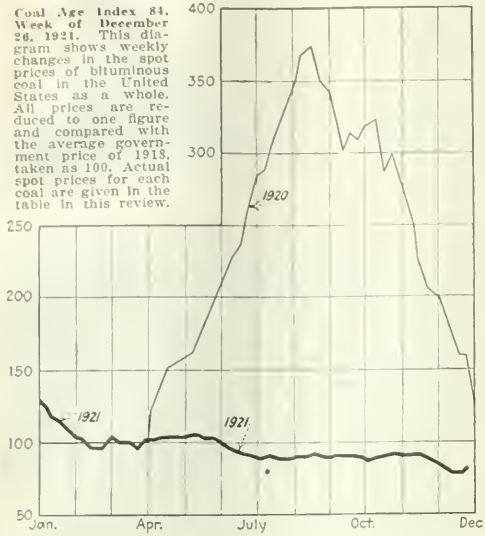
Low-Volatile, Eastern	Market Quoted	Nov. 28 1921	Dec. 12 1921	Dec. 19 1921	Dec. 26 1921†
Pocahontas lump	Columbus	$4.35	$3.60	$3.60	*$3.45@3.70*
Pocahontas mine run	Columbus	2.35	2.20	2.15	*2.10@2.25*
Pocahontas screenings	Columbus	1.60	1.65	1.55	**1.50@1.75**
Pocahontas lump	Chicago	4.00	3.10	3.10	2.50@3.75
Pocahontas mine run	Chicago	2.35	2.25	2.25	**2.00@2.75**
Pocahontas lump	Cincinnati		3.25	3.25	3.00@3.50
Pocahontas mine run	Cincinnati		2.25	2.10	2.00@2.25
Pocahontas screenings	Cincinnati		1.40	1.40	**1.50@1.75**
*Smokeless mine run	Boston	4.80	4.80	4.80	*4.40@4.75*
Clearfield mine run	Boston	1.80	1.80	1.80	**1.80@2.35**
Cambria mine run	Boston	2.35	2.35	2.35	**2.25@2.70**
Somerset mine run	Boston	1.85	1.85	1.85	2.00@3.00
Pool 1 (Navy Standard)	New York	3.00	3.00	3.00	**2.90@3.20**
Pool 1 (Navy Standard)	Philadelphia	3.15	3.00	3.00	2.75@3.25
Pool 1 (Navy Standard)	Baltimore	2.60	2.30	2.35	*2.35*
Pool 9 (Super. Low Vol.)	New York	2.35	2.40	2.20	**2.20@2.40**
Pool 9 (Super. Low Vol.)	Philadelphia	2.35	2.35	2.30	2.10@2.50
Pool 9 (Super. Low Vol.)	Baltimore	2.40	2.10	2.15	**2.10@2.25**
Pool 10 (H. Gr. Low Vol.)	New York	2.05	2.05	2.00	1.85@2.15
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2.10	2.05	2.00	1.90@2.10
Pool 10 (H. Gr. Low Vol.)	Baltimore	2.10	2.00	2.00	*2.00*
Pool 11 (Low Vol.)	New York	1.85	1.80	1.70	**1.70@1.80**
Pool 11 (Low Vol.)	Philadelphia	1.85	1.85	1.70	1.60@1.80
Pool 11 (Low Vol.)	Baltimore	2.05	1.75	1.75	**1.85**
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.75	1.55	1.55	*1.40@1.60*
Pool 54-64 (Gas and St.)	Philadelphia	1.70	1.70	1.55	1.45@1.70
Pool 54-64 (Gas and St.)	Baltimore	1.70	1.45	1.50	*1.40*
Pittsburgh se'd gas	Pittsburgh	2.65	2.70	2.65	2.60@2.70
Pittsburgh mine run (St.)	Pittsburgh	2.15	2.15	2.10	2.10@2.20
Pittsburgh slack (Gas)	Pittsburgh	1.40	1.55	1.55	**1.60@1.70**
Kanawha lump	Columbus	3.10	2.90	2.85	2.75@3.00
Kanawha mine run	Columbus	1.85	1.85	1.80	**1.80@2.00**
Kanawha screenings	Columbus	1.00	1.00	1.05	**1.05@1.25**
Kanawha lump	Cincinnati		2.50	2.65	**2.75@3.00**
Kanawha mine run	Cincinnati		1.50	1.55	*1.55@1.50*
Kanawha screenings	Cincinnati		1.15	1.25	*1.10@1.25*
Hocking lump	Columbus	3.20	3.05	2.95	**2.85@3.20**
Hocking mine run	Columbus	2.00	1.95	1.90	**1.90@2.00**
Hocking screenings	Columbus	$0.95	$1.15	$1.15	**$1.10@$1.25**
Pitts. No. 8 lump	Cleveland	3.25	3.15	3.00	2.85@3.15
Pitts. No. 8 mine run	Cleveland	2.05	2.05	2.00	*1.90@2.00*
Pitts. No. 8 screenings	Cleveland	1.35	1.55	1.60	**1.65@1.75**
Midwest					
Franklin, Ill. lump	Chicago	3.65	3.80	3.80	*3.25@4.05*
Franklin, Ill. mine run	Chicago	2.75	2.75	2.90	2.75@3.00
Franklin, Ill. screenings	Chicago	1.85	1.80	2.05	**1.90@2.25**
Central, Ill. lump	Chicago	3.35	3.35	3.10	2.75@3.50
Central, Ill. mine run	Chicago	2.35	2.50	2.50	2.25@2.75
Central, Ill. screenings	Chicago	1.25	1.70	1.80	**1.85@2.10**
Ind. 4th Vein lump	Chicago	3.35	3.35	3.35	3.00@3.75
Ind. 4th Vein mine run	Chicago	2.75	2.75	2.75	*2.40@3.00*
Ind. 4th Vein screenings	Chicago	1.70	1.90	2.15	*1.80@2.25*
Ind. 5th Vein lump	Chicago	2.80	2.80	2.80	**2.60@3.25**
Ind. 5th Vein mine run	Chicago	2.45	2.45	2.45	2.15@2.75
Ind. 5th Vein screenings	Chicago	1.35	1.55	1.65	**1.75@2.00**
Standard lump	St. Louis	2.85	2.80	2.60	**2.75@3.00**
Standard mine run	St. Louis	1.95	1.95	1.90	*1.90*
Standard screenings	St. Louis	0.95	1.25	1.25	**1.25@1.50**
West Ky. lump	Louisville	2.75	2.75	2.85	*2.50@3.00*
West Ky. mine run	Louisville	1.90	1.75	1.75	1.50@2.00
West Ky. screenings	Louisville	1.00	1.05	1.40	**1.75@1.90**
South and Southwest					
Big Seam lump	Birmingham	3.65	3.65	3.65	3.25@4.00
Big Seam mine run	Birmingham	2.00	2.00	2.10	1.90@2.30
Big Seam (washed)	Birmingham	2.30	2.30	2.15	2.00@2.30
S. E. Ky. lump	Louisville	3.10	3.15	2.85	2.50@3.25
S. E. Ky. mine run	Louisville	2.10	1.75	1.70	*1.40@1.60*
S. E. Ky. screenings	Louisville	1.10	1.00	1.15	**1.40@1.50**
S. E. Ky. lump	Cincinnati		3.15	3.15	3.00@3.25
S. E. Ky. mine run	Cincinnati		1.55	1.40	*1.25@1.40*
S. E. Ky. screenings	Cincinnati		.95	1.15	**1.10@1.35**
Kansas lump	Kansas City	5.00	5.00	5.00	5.00
Kansas mine run	Kansas City	4.25	4.10	4.10	4.00@4.25
Kansas screenings	Kansas City	2.50	2.50	2.50	2.50

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in heavy type, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	Dec. 12, 1921 Independent	Dec. 12, 1921 Company	Dec. 19, 1921† Independent	Dec. 19, 1921† Company	Dec. 26, 1921† Independent	Dec. 26, 1921† Company
Broken	New York	$2.61	.....	$7.60@$7.75	.....	$7.60@$7.75	.....	$7.60@$7.75
Broken	Philadelphia	2.66	$7.00@$7.50	7.75@ 7.85	$7.50@$7.75	7.75@ 7.85	$7.50@$7.75	7.75@ 7.85
Egg	New York	2.61	6.50@ 7.25	7.60@ 7.75	6.50@ 7.25	7.60@ 7.75	**7.00@ 7.25**	7.60@ 7.75
Egg	Philadelphia	2.66	7.25@ 7.75	7.75@ 7.85	7.25@ 7.75	7.75@ 7.85	*7.00@ 7.25*	7.75@ 7.85
Egg	Chicago	5.63	8.00*	7.15*	7.50*	7.15*	*7.50**	*6.95**
Stove	New York	2.61	8.25@ 8.50	7.90@ 8.10	8.00@ 8.25	7.90@ 8.10	8.00@ 8.25	7.90@ 8.10
Stove	Philadelphia	2.66	8.50@ 8.75	8.00@ 8.35	8.50@ 8.75	8.00@ 8.35	*8.25@ 8.50*	8.00@ 8.35
Stove	Chicago	5.63	8.50*	7.40*	7.75*	7.40*	*7.40**	*7.20**
Chestnut	New York	2.61	8.25@ 8.50	7.90@ 8.10	8.00@ 8.25	7.90@ 8.10	8.00@ 8.25	7.90@ 8.10
Chestnut	Philadelphia	2.66	8.50@ 8.75	8.05@ 8.25	8.50@ 8.75	8.05@ 8.25	*8.25@ 8.75*	8.05@ 8.25
Chestnut	Chicago	5.63	8.25*	7.40*	7.75*	7.40*	*7.60**	*7.20**
Pea	New York	2.47	4.25@ 5.00	6.05@ 6.45	4.75@ 5.50	6.05@ 6.45	*4.50@ 5.00*	6.05@ 6.45
Pea	Philadelphia	2.38	4.25@ 5.00	6.15@ 6.25	4.25@ 5.00	6.15@ 6.25	**4.50@ 5.00**	6.15@ 6.25
Pea	Chicago	5.63	6.10*	5.80*	6.10*	5.80*	6.10*	*5.60**
Buckwheat No. 1	New York	2.47	2.25@ 2.75	3.50	2.25@ 2.75	3.50	2.25@ 2.75	3.50
Buckwheat No. 1	Philadelphia	2.38	2.25@ 3.00	3.50	2.25@ 3.00	3.50	2.25@ 3.00	3.50
Rice	New York	2.47	1.60@ 1.75	2.50	1.60@ 2.00	2.50	1.60@ 2.00	2.50
Rice	Philadelphia	2.38	1.75@ 2.00	2.50	1.75@ 2.00	2.50	1.75@ 2.00	2.50
Barley	New York	2.47	0.75@ 1.00	1.50	1.00@ 1.25	1.50	**1.00@ 1.50**	1.50
Barley	Philadelphia	2.38	1.00@ 1.25	1.50	1.00@ 1.25	1.50	1.00@ 1.25	1.50
Birdseye	New York	2.47	.....	2.50	.....	2.50	.....	2.50

*Net tons, f.o.b. mines.
†Advances over previous week shown in heavy type, declines in *italics*.



Coal Age Index 84, Week of December 26, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.

Hampton Roads dumpings for all accounts were 286,862 net tons in the week ended Dec. 22 as compared with 256,327 in the preceding week. The recent cut in bunker prices has caused a slightly better demand, but many ships still prefer to coal up on the cheaper overseas markets.

Lowered wages in certain non-union fields have failed to stimulate production, as the market has all the coal it can absorb. A slight return in demand would bring the additional orders to these mines, as there is no hope for union operations competing on the present scale. Miners are extremely dissatisfied over working conditions and in more than one section are making clandestine overtures to the operators, seeking lower rates and better working time.

A total of 23,171,449 net tons were dumped at the Lower Lake ports last season—22,412,380 cargo and 759,069 vessel fuel—as compared with 23,667,138 tons in 1920, 22,750,392 in 1919 and 29,388,242 in 1918. The tonnages and relative proportion of the coal moved to American and Canadian points were almost the same as in 1919. As before, 79 per cent went to American ports. Lake Superior American destinations took an extra 500,000 tons, which was compensated by a like decrease in the movement to Lake Michigan.

ANTHRACITE

Production of hard coal reflects the domestic sluggishness. During the week ended Dec. 17 the output was 1,611,000 net tons, compared with 1,703,000 tons in the preceding week. A year ago the week's output was 1,998,000 tons.

The recent spell of cold weather saved the anthracite market from going absolutely flat. At that, the increase in business was small, household buying resembling that in the domestic bituminous market. Price cuts are appearing in the retail centers, in Philadelphia the eagerness to obtain orders causing softening of prices in the form of waiving carrying charges. The companies are running heavily to storage and are also cutting down their working time. Independent quotations have softened further as an alternative to closing down. The steam sizes are in slightly better position, but are still extremely difficult to move.

COKE

Beehive coke production increased to 125,000 net tons during the week ended Dec. 17. The furnace coke market showed a slight spurt during Christmas week, clearing the tracks of bargain lots. A desire to provide stock against the usual holiday tie-up of coke plants caused the market to come to life temporarily. Interest in first-quarter contracts is being shown, but in the Connellsville region some operators have about decided to ship coal and not force the coke market to lower levels by too active solicitation of contracts.

Foreign Market And Export News

Coal Paragraphs from Foreign Lands

GERMANY — Production of coal in the Ruhr region during the week ended Dec. 12 was 1,631,000 metric tons, according to a cable to COAL AGE. This is a decline of 150,000 tons from the previous week.

ITALY — The price of Cardiff steam first is weaker, being quoted at 38s. 9d., according to a cable to COAL AGE. The quotation on the Genoa market in the middle of December was 39s.

SPAIN—A coal crisis which threatened as a result of a strike has been avoided by an agreement under which the railroads will consume 85 per cent Spanish coal on their systems. Thus miners will be given a five-day week. The Asturian market is still depressed. Nominal prices at the pithead, in pesetas are: Screened, 65; large, 60; small gas, 42; small steam, 38 and metallurgical coke, 90.

BELGIUM—There is a better demand for all coals and prices are more easily maintained both for domestic and industrial sorts. The price of coke is the main feature for discussion. The latest proposal is to equilibrate the prices of German Reparation and Belgian coke so as to give an economic average which will enable the metallurgical industry to purchase.

HOLLAND.—Quotations on the Rotterdam market are: British coal, 16.75 gulden and 29s. per gross ton c.i.f. No business is being done in American coal.

INDIA—There is a dull demand for coal and the Bombay market has been uncertain, owing to the trade union congress at Jharia.

AUSTRALIA — Exports of coal from Newcastle (N.S.W.) during November were 314,000 tons.

Canada and Mexico Took Bulk of November Coal Exports

Exports of bituminous coal barely exceeded 1,000,000 tons and were less than one-third of the November 1920 figure, as shown in the following table. Of the total of 1,078,767 tons, nearly 900,000 went to Canada and Mexico while in the same month last year these countries took less than one-half of the tonnage exported. Chile and Uruguay failed to import any coal last month, as was the case with France and Switzerland. On the other hand, a total of 10,320 tons went to Egypt, a market not represented in last year's figures.

NOVEMBER EXPORTS AND IMPORTS
(Gross Tons)

	November 1920	November 1921
Exports:		
By rail to		
Canada	1,459,373	890,652
Mexico	21,543	8,702
Total	1,480,916	899,354
By vessel to		
West Indies	44,715	20,111
Panama	3,644	9,627
Cuba	117,976	28,014
Total	166,335	57,752
Argentine	107,048	26,943
Brazil	115,295	21,226
Chile	84,150	..
Uruguay	34,087	....
Total South America	340,580	48,169
France	741,437	....
Italy	214,778	47,897
Netherlands	195,391	....
Sweden	39,126	3,720
Switzerland	22,173	....
Total Europe	1,212,905	51,617
Egypt	....	10,320
Other Countries	366,400	11,555
Total bituminous	3,567,136	1,078,767
Total Anthracite	333,625	329,380
Total Coke	85,443	30,347
Imports from		
United Kingdom	304	6,310
Canada	82,220	100,466
Japan	1,016	1,451
Australia	5,008	16,824
Other Countries	2,000	246
Total Bituminous	90,548	125,397
Total Anthracite	1,285	532
Total Coke	2,538	3,432

British Output Gains as Export Call Improves

Prices Are Holding Firm—More Collieries Resume Operations with Better Demand—American Coal Fast Vanishing from Markets Obtained During British Depression

BRITISH production took an upturn during the week ended Dec. 10. According to a cable to *Coal Age*, the output was 4,855,000 gross tons, as compared with 4,693,000 tons during the preceding week. Prices for export are generally being maintained and in some cases even advanced. Exports from South Wales are increasing and inquiries are being received from the Far East, including India and Japan. Deliveries are prompt and running over into 1922. The Argentine railways are inquiring for 100,000 tons.

On behalf of the Indian Government an inquiry is being made for 250,000 tons of Welsh and Monmouthshire coals for shipment to Indian ports within the next twelve months. So far, the average monthly shipments from South Wales to India from September to November have been 100,000 tons, and it is stated that the extra shipment of 20,000 tons per month to complete the contract can easily be undertaken by the trade.

Shipments from the Tyne are steadily improving. At the Tyne Commissioners Meeting at Newcastle recently it was reported, that 1,117,484 tons were shipped in November, an increase of 361,584 tons over November last year.

The Swansea port's trade figures for November were the highest for the past three years. The total imports and exports amounted to 434,000 tons, compared with 332,000 tons in the same period last year. Coal exports totaled 260,000 tons, being an increase of 94,000 tons.

During November South Wales exported around two million tons of coal, which is an increase of 100,000 tons over the September figure. It is expected that this level will be surpassed during the next few months, since the entire export business is recovering. Of the total of 2,000,000 tons, France took 650,000 and Italy 325,000; the South American market absorbed 170,000, while British coaling depots took 250,000.

Increased production at lowered mine wages has been accomplished but certain other factors are in need of revision. Lower transport rates and dock dues are imminent. The most serious deterrent to the export coal trade is rail and dock charges. Only insignificant relief has been afforded by a reduction of the latter; railway rates are also to be reduced by 25 per cent, but this is likewise short of what is required and it is evident that a differential in freight rates, favoring export tonnage will have to be made before coal houses can expect to permanently regain their lost trade.

The improvement in the north of England continues. Employment is now more regular so that the wage cuts are somewhat compensated by more work. Several collieries which have been idle for months are resuming and others which have been on short time are now at full pressure.

French Industrial Demand Poor; Production Slowly Increases

The first large shipment of German coal imported into Marseilles is reported. Imports of coal from Germany, have been rather small, but 14,182 tons arrived from the Ruhr district in one shipment in November.

Demand for manufacturing coals remains poor, and stocks at the mines on Nov. 1 amounted to over 800,000 tons. On the other hand, several of the collieries have booked considerable orders for domestic.

In October, the devasted collieries produced 564,151 tons, as compared with 510,045 tons in September, while the other collieries in the Pas-de-Calais raised in the aggregate 712,572 tons, as compared with 705,410 tons in the preceding month.

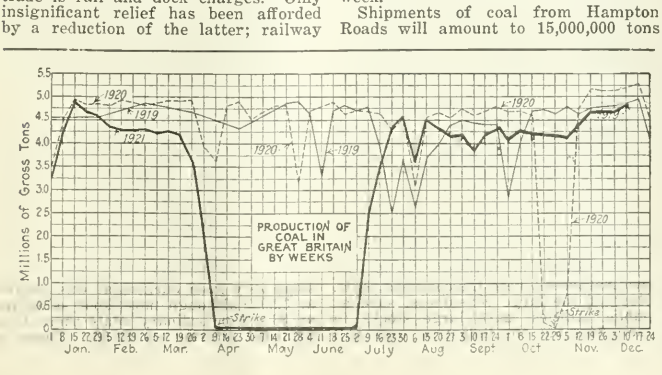
Hampton Roads Tonnage Reduced

Business was unusually dull, with stocks reduced to a minimum due to the usual Christmas shutdown in the mines. No demand for any coals as seen in the market. C.i.f. quotations for high-volatiles were stronger while low-volatile coal declined.

Dealers were "marking time," expecting little revival of business until after Jan. 1. New England coal was moving, to some extent, with bunker business fairly active. Some improvement in general shipping recently has had a tendency to increase this feature of the trade.

Freight rates were unchanged coastwise, and slightly reduced, on the spot, for foreign cargoes, which showed a very slight improvement during the week.

Shipments of coal from Hampton Roads will amount to 15,000,000 tons in 1921, as against 21,000,000 tons for 1920. The 1919 record was slightly over 12,000,000 tons dumped at all piers. The Newport News piers have shown a decided falling off this winter, while the Norfolk & Western and Virginia have practically held their own.



Pier and Bunker Prices, Gross Tons

(Foreign Bunker Quotations by Cable to Coal Age)

	Dec. 17	Dec. 24†
PIERS		
Pool 9 New York	$5.40@$5.50	*$5.25@$5.50*
Pool 10, New York	5.25@ 5.35	*5.00@5.25*
Pool 9, Philadelphia	5.50@ 5.60	*5.50*
Pool 10, Philadelphia	5.25@ 5.45	*5.00@ 5.40*
Pool 71, Philadelphia	5.75@ 5.90	*5.50@ 5.75*
Pool 1, Hamp. Rds	4.65@ 4.75	*4.50@ 4.75*
Pools 5-6-7 Hamp Rds	4.15@ 4.25	**4.30**
Pool 2, Hamp. Rds	4.45@ 4.55	4.50
BUNKERS		
Pool 9, New York	5.70@ 5.90	*5.55@ 5.80*
Pool 10, New York	5.55@ 5.65	*5.30@ 5.55*
Pool 9, Philadelphia	6.00	*5.50@ 5.85*
Pool 10, Philadelphia	5.65@ 5.75	*5.35@ 5.50*
Pool 1, Hamp. Rds	4.75	4.75
Pool 2, Hamp. Rds	4.60	*4.50*
Welsh, Gibraltar	40s. f.o.b.	40s. f.o.b.
Welsh, Rio de Janeiro	65s. f.o.b.	65s. f.o.b.
Welsh, Lisbon	45s. f.o.b.	45s. f.o.b.
Welsh, La Plata	62s.6d. f.o.b.	62s.6d. f.o.b.
Welsh, Marseilles	125fr. f.o.b.	125fr. f.o.b.
Welsh, Genoa	40s. t.i.b.	40s. t.i.b.
Welsh, Madeira	42s.6d. f.a.s.	42s.6d. f.a.s.
Welsh, Teneriffe	42s.6d. f.a.s.	42s.6d. f.a.s.
Welsh, Malta	45s. f.o.b.	45s. f.o.b.
Welsh, St. Michaels	60s. t.i.b.	60s. t.i.b.
Welsh, Las Palmas	42s.6d. f.a.s.	42s.6d. f.a.s.
Port Said	51s.6d. f.o.b.	51s.6d. f.o.b.
Belgian, Antwerp	40s. f.o.b.	40s. f.o.b.
Alexandria	45s.	45s.
Bombay	38 rupees	38 rupees
Capetown	42s.6d.	42s.6d.

C.I.F. Prices, American Coal

(In Gross Tons)

	—Dec. 17— Low Vol.	High Vol.	—Dec. 24†— Low Vol.	High Vol.
French Atlantic	$8.75	$8.50	*$8.65*	**$8 85**
West Italy	**8.75**	**8.50**	*8.70*	**8 85**
The Plate	8.90	8.65	*8.80*	**8.95**
Havana	6.75	6.50	*6.70*	**6.95**

These quotations are purely nominal and as far as can be learned, no business is being done in these markets.

Current Quotations British Coal f.o.b. Port, Gross Tons

Cardiff:	Dec. 17	—Dec. 24†—
Admiralty, Large	26s.	25s.6d.@26s.6d.
Steam, Smalls	19s.	19s.6d.
Newcastle:		
Best Steams	24s.6d.	**25s.**
Best Gas	22s.3d.	*21s.6d.@22s.6d.*
Best Bunkers	22s.	*21s.6d.@22s.*

† Advance over previous week shown in heavy type, declines in *italics*.

Export Clearances, Week Ended Dec. 22, 1921

FROM HAMPTON ROADS

	Tons
For Africa:	
Am. S.S. Callabas, for St. Lucia	2,501
For Brazil:	
Br. S.S. Camanu, for Pernambuco	3,005
For Colombia:	
Nor. S.S. Lom	237
For Cuba:	
Am. S.S. Corona, for Guantanamo	3,286
Br. S.S. Sheaf Field, for Havana	2,318
Br. S.S. Berwindale, for Havana	7,783
Am. S.S. Mariana, for San Juan	3,194
Br. Schr. Truro Queen, for St. Johns.	636

Hampton Roads Pier Situation

	Week Ended Dec. 15	Dec. 22
N. & W. Piers, Lamberts Point:		
Cars on hand	1,559	1,415
Tons on hand	76,061	74,937
Tons dumped	121,650	118,798
Tonnage waiting	8,300	7,250
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	1,095	907
Tons on hand	54,750	52,250
Tons dumped	70,852	69,998
Tonnage waiting	1,800	.....
C. & O. Piers, Newport News:		
Cars on hand	1,184	827
Tons on hand	59,200	41,350
Tons dumped	36,362	67,331
Tonnage waiting	.....	915

Reports From the Market Centers

New England

BOSTON

For the Slump in Hampton Roads Prices — Pennsylvania Shippers Find Little Business — Coastwise Freights Reflect Trade Dullness — No Improvement in Anthracite Demand.

Bituminous—Almost from day to day the market gives fresh evidence of its unsatisfactory character. Following closely the reduction in bunker prices at Hampton Roads, certain of the agencies are offering Navy acceptable grades as low as $4.40 per gross ton t.o.b. vessel. Quotations on cars Providence and Boston for Inland delivery have not yet been made on the low basis mentioned, except where factors have been forced to dispose of coal on demurrage. For the most part, a range of $6.25@$6.50 on cars is still quoted, although this is not to be taken as a sign of any firmness in the current market.

On the contrary, trade continues on the same ragged basis that has prevailed now for several months. The absence of low quotations on cars is due only to extremely light inquiry. What orders are heard from are placed by small buyers. Were there any comprehensive business in sight, the purchasing officer would certainly be in position to make a trade that from his standpoint would compare favorably with any "bargain" price hitherto reported. Reserves are large, especially with the railroads, and it would be a hardy individual who could now see any sign of reaction during January or February.

Both rail and water deliveries have sagged further the past fortnight, although figures indicate that tonnage is about equally divided between the two routes. The proportion of railroad supply coal increases as commercial coal drops off, thereby bearing out the trade impression that more than any other one factor the contracts placed by the railroads in the spring have maintained rail movement at the level that has obtained thus far. The percentage of railroad fuel has increased from 18.5 per cent early in the coal year to about 35 per cent during November.

Pennsylvania shippers continue their active scratching for business, but results are meager. Only in scattered instances are mines in central Pennsylvania working more than two days per week; the great majority are completely shut down. At the Philadelphia and New York piers the tonnage dumped is almost nil. Bunker business at both ports is smaller than ever and to an extent Hampton Roads shippers are sending cargoes to New York with bunker requirements in view.

In every port there is a surplus of tonnage and owners are driving hard to place boats. While no material concessions in rate have yet come to light, the trade knows that any reasonable offer would be promptly accepted. It is quite possible we shall have 75c freights quoted from Hampton Roads to Boston. This would put the water rate, from port to port, on the basis that obtained ten years ago.

Anthracite—All sizes are now easy to get. Practically all the shippers are looking for orders, and there is little in sight for January.

Retail demand shows no improvement. Not only are householders buying small lots, when they buy, but there is real ground for anxiety in the price situation, notably in Boston. Dealers throughout this territory have more than comfortable stocks. Egg and pea are still difficult to move and independent shippers continue shading prices to place current output.

Tidewater—East

NEW YORK

Anthracite Continues Dull—Independent Premiums Disappear—Steam Coals Better and Surplus Grows Smaller—Bituminous Demand Quiet—Buyers Holding Off until after Jan. 1.

Anthracite—This market has responded to the change in weather conditions, so far as the better grades of anthracite are concerned. Independents report that the demand shows improvement. The cut in production has aided in keeping prices where they are.

The piers are well filled with all sizes and there has been considerable of the steam coals loaded in boats. Much coal is being placed in storage, while railroad sidings are filled with loaded cars.

Sales agents and shippers are anxiously awaiting the new year to see if the removing of the war tax will have have any effect on buyers. It is not expected that there will be any change in the local situation because of it but to points where the freight rate is around $4 and higher it is expected to result in an improvement.

Some of the companies continue to break down their egg. Stove and chestnut are moving steadily but most of the retail trade now insist upon getting it straight and not with other sizes. With the companies hardly able to move their output the independents cannot be expected to receive any more than company circular for their coals. In fact some of them are not receiving full circular for either stove or chestnut.

Steam coals are in better demand. Independent quotations are, however, below company circular. It was reported that some distress coal in loaded boats was offered last week on a basis of $1.75 f.o.b. mine.

Bituminous—With little prospect of increased buying ahead the situation shows no improvement. Curtailed mining has aided in maintaining prices with a slight improvement in one or two instances where the coal was short. Most of the large consumers, such as public utilities, have large stocks in their bins but the industrial user will soon be in the market for at least necessary requirements.

The proposed cut in export coal rates is looked upon as one means of attempting to solve the foreign trade question. It is believed that if the reduction is made American coal exporters will have an opportunity to compete with the English.

This market is still in the grip of low prices. Demands centers almost entirely around the better grades while the fair and inferior coals are hard to move. There is considerable fuel on the local docks while many loaded bottoms dot the harbor. At times these cargoes are offered at prices below general quotations.

The holiday spirit hit the coal trade early in the week and most houses withdrew their salesmen until after the first of the year. With the mines producing less coal than is consumed it is felt that after Jan. 1 buyers must get busy and replenish their stocks.

High-volatile ¾-in. lump was quoted $1.95@$2.10, while ¾-in. lump gas ranged $2.45@$2.60. Other quotations included low-volatile slack, $1.35@$1.50; high-volatile slack $1.55@$1.75, and gas slack $1.85@$2.10.

PHILADELPHIA

Cold Weather Helps Anthracite—Buying Still Light—Independent Prices Shaded Again—Bituminous Demand Negligible—Tide Trade almost Vanished.

Anthracite—With lower temperatures there has been a slight response on the part of the consumer. The time was when such weather would have brought an avalanche of orders. However, there is another way of looking at this, for without the spell of severe cold the business would have gone utterly flat.

After this experience, almost all in the trade are now convinced that the winter will be one of moderate business, with the dealer always able to get coal of some size from his shipper. Buying has not been sufficient to prevent the shutdown of many collieries, and while the companies have thus far lost little time, there is no doubt that the last week of the year will see many of their mines closed. At this time the big producers are storing heavily of pea and egg, and it will only be a short time when stove will become troublesome.

Independent shippers made extreme efforts to market their surplus coal before curtailing production, and as a result even lower prices than last week were quoted on occasional lots. Egg was to be had at $7.25, a full 50c under company price. Quotations on pea were more variable. Several independents who have been asking company price for this size all along, have adjusted prices to their regular customers, ranging $5.50@$5.75.

Retail prices remain weak, so much so, that the dealers charging $14.50 for stove and nut are quite few, and most quotations seem to be drifting toward $13.75. Some are cutting the price by waiving the carrying charge, which usually amounts to 40c, and the consumer in seeking coal often makes a bargain on this basis.

Steam coals have not improved, and some very good buckwheat was offered at $2.90, although most spot sales are at $3. For ordinary coals there is a plentiful offering of $2.50. There is

some expectation of a stiffening in steam coals by the first of the year should there be a continued suspension of mining.

Bituminous—Buyers seem to have gone to the extreme in their determination not to buy any more fuel before the first of the year. Usually most consumers have been much concerned to keep up their stocks as the winter advances, but the reverse now is the rule, and this practice is probably traceable as much to an expected freight reduction as to any other factor.

Prices remain about as last week, and while there is not the least sign of strength, there is just a probability there would be further lowering were it not for the increased number of mines which have closed down.

The Tide situation offers no encouragement. Even bunkering has slumped, as so many vessels are taking advantage of cheaper fuel on the other side.

BUFFALO

Bituminous Trade Grows Less Active—Stocks Adequate—Miners Offer to Take Wage Cut—Anthracite Slow—Independent Prices Soft.

Bituminous—Demand is still light and prices are far from strong. Reports of coal offered at badly-slashed prices continue and it appears that from this time on all the coal the consumers can buy is about what they use, for their storage space is full. The expected buying against the April suspension is apparently about all done, so that the shippers do not look for much improvement for quite a long time. They do not expect prices to sag any further, for they are at bottom now.

No particular improvement in consumption is taking place. Operators and miners are looking into the prospects of the new wage scale. A Buffalo operator advises that he is considering an offer from the miners to go back to the scale of 1917, which he thinks will run close to 50c. a ton less than the present scale. The point in question is whether the mine, being now closed down indefinitely, will start up and give the men regular work.

Prices are still weak, from light demand, running about $2.75 for Youghiogheny gas lump, $2.50 for Pittsburgh and No. 8 steam lump, $2.25 for Allegheny Valley and all mine run, $1.50@$1.75 for slack, adding $2.36 to Allegheny Valley and $2.51 to other coals for freight.

Anthracite—The situation remains quieter than usual at this time of the year. Nobody will buy more than is needed. Even large consumers are now taking coal by the single load. The idea is that they are not well supplied with money. If this weather is not enough to stimulate buying nothing can do it.

At present independent anthracite is selling at about a dollar under the circular and mines are running at a slow rate. Much attention of an uncomfortable character is directed to the standard mines. Some of them are suffering from strikes and others are running on part time. Report has it that little or no work will be done in most of them during the holidays.

Coke—The trade does not improve materially. Half of the furnaces are in operation, with one shutting down for want of business. Coke ovens in connection are kept running enough to supply them, so that the jobbers do not get many orders. They quote 72-hr. foundry at $4.15, 48-hr. furnace at $3.15 and stock at $2.75 to which add $3.64 for freight.

BALTIMORE

Holiday Season Finds Trade Very Dull—Three Clearances for Export—More Seasonable Winter Aids Anthracite.

Bituminous—The holiday period comes with the coal trade very much down in the mouth as to the immediate business and near-future prospects. Unlike other years, no one is especially concerned with the fact that mine holidays will cut down the production until after the first of the year. There is more than enough coal to go round and prices are still weak.

Best steam can be had on line business at $2.25@$2.40 f.o.b. mines. Occasionally on sharp bunker trading the same coals are passing hands on a mine basis of $2@$2.20 per net ton. Lower-grade coals are a drug on the market.

After the worst export lull for many months, the first half of December having seen but one vessel cleared from this port, a three-ship spurt added a little tone during the past week. These vessels carried away a total of slightly more than 13,000 tons of coal on export account. The trade is hoping for some readjustment of the foreign exchange, as this is blamed largely for present conditions.

Anthracite—Business has been stimulated to some extent by more seasonable weather. The demand is not in any sense a rush, however, and the reserve in yards and the fairly good flow from the mines is able to take care of any emergency. Coal men are not now anticipating any serious complications, unless unusually cold weather sets in, as the low consumption to date has taken care, in considerable measure, of the fall-off from normal of early deliveries.

Inland West

DETROIT

Coal Users Manifest Little Interest in Offerings—Receipts Continue Light—Anthracite Market Quiet.

Bituminous—Not very much coal business is being done here. Buyers seem to have become so accustomed to an attitude of aloofness that offerings of high quality stock fail to awaken any of the old-time buying interest. Very little coal is coming into Detroit, aside from the small amount that is being delivered to apply on contracts.

In some instances users of steam coal are requesting that shipments be held back until after Jan. 1, that they may have the advantage of whatever saving may be possible in consequence of the discontinuance of the war tax on freight.

The market condition harmonizes with the sluggishness in nearly all lines. This dullness is in some measure intensified by the usual pause in activities that precedes the holiday period and by the fact that in various establishments operations are reduced to facilitate taking the annual inventory.

Most of the coal now coming to Detroit is said to be from the unorganized districts of West Virginia. Shipments from union producers are practically discontinued, with most of these mines out of operation.

West Virginia 4-in. lump is quoted $3; 2-in. lump, $2.50; egg, $2.25; mine run, $1.75; slack, $1.25. Three-inch lump from Ohio is offered at $3; egg at $2.25; mine run at $2; slack at $1.50. Pittsburgh No. 8 inch and a quarter is quoted $2.35; 3-in. lump, $2.25; mine run, $2; slack, $1.75. Smokeless lump and egg is $3.50; mine run, $2.25; slack, $1.25.

Anthracite—Sales to householders are not attaining the volume shown in previous years. Stocks in yards of dealers are still cumbersome.

CHICAGO

Market at Standstill—Less Distress Coal—Retailers Overstocked—Steam Firm, in Anticipation of Early Demand.

The Chicago market is no better or no worse than it has been during the past three weeks. In short, the coal industry remains at a standstill. The cold weather which came a few days ago has not as yet stimulated sales. The public continues to be absolutely uninterested.

Smokeless is coming in fair quantities but shippers are having great difficulty in attempting to get their prices back to where they were a month or so ago. It is quite possible to buy good Pocahontas prepared at prices ranging from $2.50 up, and these prices are not made on distress coal but on tonnage which is to move forward regularly from the mines.

Very little consignment coal from the East has come in since the severe lesson learned by some Eastern operators three or four weeks ago, when whole trainloads of coals had to be sacrificed at figures below cost. Present prices on smokeless are about right when compared with prices obtained for other coals from other fields.

Retail dealers are in an unhappy frame of mind as they are finding, during this cold weather, no better luck in disposing of their coal than in last July. The only coal purchased recently by the retailers has been coal on demurrage, and this always demoralizes the market, so it can be imagined that Chicago is not a very good place at this time in which to dispose of domestic coal.

Steam prices continue to hold firm. Some quotations have strengthened during the past few days. Contrary to general opinion, the stockyards have been operating steadily in spite of the strike. It is generally thought that all of the large industries will come into the market after the first of the year in anticipation of a coal strike in the spring. Consequently, those having steam coals to dispose of are holding the market firm.

Prices on arthracite have also been holding firm at circular, although we heard of one or two instances where some of the independents have cut their prices very sharply in order to move embarrassing tonnages. Price-cutting tactics, however, have been found to be unsuccessful. West Virginia and eastern Kentucky coals have practically stopped coming in and no change in this state of affairs can logically be expected until a prolonged spell of very cold weather.

COLUMBUS

Trade Continues Quiet—Domestic Curtailment Strengthens Screenings—Consumers Reserves Heavy—Retail Prices Weaker.

As the year comes to an end the coal trade is in a state of quietude. There is neither demand for domestic nor steam grades and everyone is playing a waiting game. Coal men as a rule, however, are optimistic and it is believed that better things are in store.

Retailers are selling only a small percentage of the normal tonnage. Domestic buying is from hand to mouth. Retail stocks are large and until they are moved there will not be any appreciable demand for replenishment. Some retail price weakness has developed. Hocking lump is $5.75@$6.25, while West Virginia splints are $6.25@$6.75. Pocahontas is steady around $9@$9.50; anthracite is $14.50@$15.

Steam purchasers are waiting until after the first of the year. Buying for railroad fuel is up to about the usual standards but other lines are slow. Many manufacturing concerns have suspended during the holiday period and this naturally reduces the fuel consumption. Because of the reduction in lump production screenings are stronger and a considerable amount of mine run is being crushed for mechanical stokers. A survey of the situation shows that there are some heavy reserve stocks among the larger steam users.

Production is at a low point. In the Hocking Valley the output is below 15 per cent and the same is true of Pomeroy Bend, Cambridge and Crooksville.

ST. LOUIS

Cold Weather Stirs Domestic Business—Some Improvement in Steam—Usual Holiday Dullness.

A cold wave has stimulated domestic business to some extent on the cheaper grades. Buying is largely from hand to mouth on account of the industrial depression and scarcity of ready cash.

The most peculiar situation is one that shows practically no movement at all of smokeless or anthracite and the deliveries of coke have suddenly dropped off from what they were a month or two ago. Dealers are loaded to the limit with storage coal and it is going to take considerable cold weather to clean up these stocks.

The general sentiment everywhere is to wait until after the first of the year, and this attitude is likely to cause an advance in the mine price if the demand exceeds the supply.

The Mt. Olive price has been cut from $7 to $6.50 retail. Several dealers have cut their Standard price from $5 to $4.75, resenting the attitude of the Mt. Olive shippers in cutting the mine price after the dealers had laid in a heavy supply, causing a loss.

Retail prices are per net ton, in full loads: Carterville, $7.50@$7.75; Mt. Olive, $6.50; Standard, $4.75@$5; Smokeless, $12.25; anthracite stove, $15.75; chestnut, $16; grate and egg, $15.50.

CINCINNATI

Low Production Increases Slack Price—Less Distress Coal—Retail Prices Sag.

Outside of a slight upturn in the price of nut and slack, both low and high-volatile, the market has been dull and featureless in the face of the fact that production has dropped to its lowest ebb and the accumulation at this gateway has become practically nil. What activity there is to the market is built on a false foundation for those who see a little rise in price know full well that when the mines resume and the buyer's market again obtains, what little advantage has been gained will be wiped out entirely.

Most of the wholesale houses have called in their salesmen for the holidays as no one shows any disposition to talk of prices for the coming season. There have been fewer rejections this week than for some time past. This is traceable to the fact that there is not the variety of coal on wheels to pick and choose from.

Southeastern Kentucky offerings are not playing the part they did and firms that have had underbidding circulars out are now playing the other side of the game and raising their prices with each upturn of the market. Bituminous nut and slack, while it could be bought spot at $1@$1.10, was quoted at $1.35 and smokeless $1.50@$1.75. Mine run lagged and sold $1.15 up for bituminous and $2 for smokeless. Lump was in poor demand, smokeless at $3@$3.50, gas $2.25@$2.50 and splint $2.75@$3.

Retail prices took another sag, due to the increased handling of spot coal. Smokeless lump is quoted $8.50@$9; mine run $7@$7.25, screenings $6; bituminous lump is $7@$7.25, mine run $6 and slack $4@$5.

CLEVELAND

Markets Dead Until After First of Year — Stocks Being Depleted — Slack Prices Advance as Output Falls—Pocahontas Off and Anthracite Up at Retail.

The scarcity of slack has become more pronounced as the process of curtailing production of prepared sizes gathers momentum. As a result the price is moving upward and now ranges $1.80@$2. Production is declining and the December output will be the lowest for the year. The trade is looking for improvement in demand early in January to be followed by a period of marked activity in the event of developments pointing to a strike in April.

Predictions of improvement next month are based upon the belief that stocks accumulated in the fall have been greatly reduced. Some snappy weather combined with a pick-up in industrial activities expected in January will force consumers into the market, for moderate supplies at least. Operators are not seeking contracts now for next year. Many of them are confident that the possibility of a strike will give them an opportunity to recoup some of the losses they have been experiencing for the greater portion of the current year.

The sentiment in this district is that coal miners will be compelled to accept a much deeper wage cut than they are looking for at present. This, together with the probability of lower freight rates, will mean considerably lower coal prices. It is recognized the price of coal at present is higher than it should be to fit into the general scheme of readjustment but it is far too low, based upon wage and production costs. Some distress coal is still appearing but much less than was true a few weeks ago, because mines have stopped producing.

The retail [illegible] has been featured by increases in hard coal prices and declines for Pocahontas. Large dealers are quoting $10.50 for shoveled Pocahontas lump and $8.50 a ton for mine run. These are declines of about 50c. Large companies are receiving contract coal and their prices naturally are higher than many small concerns who have been enabled to take advantage of distress coal on the market. Big dealers generally are respecting their contracts, as against the time when they will need the regularly delivered supplies. Anthracite stocks are ample. Stove and chestnut is quoted at $14.50 and egg and grate at $14.25. The retail trade is expecting benefit from the colder weather which is now appearing.

Northwest

MILWAUKEE

Market Extremely Quiet—Mild Weather Favors Buyers—Competition in Soft Coal Prices.

Mild weather favors the grouch of consumers, who give orders reluctantly and sparingly. The Milwaukee road has laid off over 4,000 shopmen temporarily because of the business depression. The falling off in shipments of coal is given as a reason for the present dullness.

Milwaukee is well stocked with coal, and this knowledge adds to the backwardness of buyers. Low temperature is the only thing that will bring about a change. Then there will be a scramble and congestion of delivery service.

The balk at the price of anthracite has helped the trade in domestic soft coal and coke and competition is beginning to develop. One firm is advertising Elkhorn at $10 per ton, delivered, and another firm is offering Old Hickory at $9.75. Pocahontas is held at $14.25.

The last cargo of the season arrived Dec. 15. Receipts for December aggregate 56,968 tons of anthracite, and 7,000 tons of soft coal, making the season's cargo receipts 1,022,645 tons of the former, and 2,574,074 tons of the latter, or 3,596,719 tons in all, an increase over the 1920 record of 347,737 tons. These figures are subject to slight revision.

The close of the season finds the yards full to overflowing with soft coal, and the anthracite sheds likewise crammed. In addition there are six cargoes of anthracite afloat, amounting to 39,778 tons, and five cargoes of soft coal, aggregating 42,850 tons. These will be drawn upon during the winter, or in the spring will serve to tide over any delay in the supply should the expected wage scale trouble materialize.

MINNEAPOLIS

Sluggish Market Continues—Price Cuts Necessary to Induce Purchasing — Steam and Domestic Consumption Light —Dock Shipments Decline.

There has been no continued cold weather calculated to maintain consumption at a liberal volume. As a result, the coal business has been dragging for weeks, with only a temporary variation.

It would be possible, if there were to be prolonged cold weather for the next month, to create a demand for coal, and a market price that would allow a profit. But unless something

of the kind occurs, the competition and heavy stocks in the Northwest mean that there will be little chance for business at a profit to the wholesalers.

Efforts to get steam business have resulted in concessions in every direction and a general demoralized market. Prices have not been maintained and the extent of the cut seems to have been in range with the urgency of desire for the sale, giving a considerable spread on similar grades.

The industrial demand has shown no real sign of picking up. There is now and then a little suggestion of improvement, but it is usually offset by a change for the worse in some other direction. The big handicap to activity in this section is the general depression in agriculture. And when the farmer's buying power is restricted to the limit it cuts down in all directions. The railroads are operating light and have a much reduced consumption of coal.

The volume of coal moving off the docks has been less during the past month than normal, and the tonnage moved by retailers both in the cities and in the interior is also lighter. There is no question that people are holding down on their consumption as much as possible, and are deferring their purchases until the last minute.

It is confidently expected that the strike in the spring will give a little demand at full prices for a small tonnage, how much will rest somewhat with the extent of the suspension. But under the best of circumstances, there will not be any heavy tonnage because the coal movement in the spring is never heavy. The strike will hardly frighten people into buying beyond their immediate needs. They have faced crises, real and alleged, for several years past and have found that some way is provided to fill urgent needs, so will not be stampeded into much buying when spring is coming on.

DULUTH

Domestic Greatly Strengthened by Cold Weather — Industrial Coals Continue Sluggish — Central Heating Plant Planned.

Shipments from the docks have improved materially within the last week. Dealers say that shipments right now are above normal for this time of the year, although the first two weeks in December were lifeless.

Touches of sub-zero weather have done much to bring the shipments of anthracite to normal. Bituminous is still below usual levels, as large manufacturing concerns are not operating.

Prices are firm with the exception of buckwheat, which has dropped from $8.50 to $6 at the docks, being offered at $8.50 retail. Several dealers have combined to urge the use of a mixture of buckwheat and nut for heating purposes. Nut is selling retail at $15.50.

Endeavoring to heat the whole central part of the city from one source a company has been formed with the idea of building a central heating plant here, which will cost $1,500,000. Difficulty is being experienced in obtaining a franchise, but it is thought that if this is not granted the city will go into the matter as a municipal project. Fully two-thirds of those business houses which would be served by the heating plant are known to be strongly in favor of some such project.

Fires on local docks, which were proving most troublesome have been put out now, and there is thought to be no further danger. Most of the coal destroyed was railroad fuel.

West

SALT LAKE CITY

Retail Business Fair — Stocks Are Heavy—Operations Hard Hit—Prices Firm.

Dealers report a very fair business although sales are not what they ought to be at this season. Operators are doing the smallest winter business in years. Foreign competition and high freight rates are upsetting their connections on the Coast, while locally the dealers are not buying much.

Prices seem to be firm. Production in Utah for the first eleven months of the year was 3,637,999 tons, compared with 5,346,950 for the same period in 1920.

DENVER

Retail Stocks Heavy — Production Drops — Miners Face Wage Reduction or Less Work.

Operations are at the lowest period in the history of the state for this time of the year. December production is as low as that for June. Many mines are on half-time.

Weather conditions have much to do with the general trend of things. There is a surplus of 65,000 tons in yards in Denver that dealers bought at the top price, and it looks as if they would lose money before it is put in the consumer's bin.

More than 5,000 miners are out of work. Union officials contend that the closing of the mines is only another way of crippling their ranks, in the wake of the recent strike.

Lignite mines, almost as hard hit as bituminous fields, are working intermittently. Louisville lump is bringing $9.25 while a year ago it retailed for $10.15. Weld County lignite lump is $8.50 and tapers to $6.15, while a year ago it was $8.90. Wages have not been reduced in these mines. Bituminous lump from the Trinidad district and Walsenburg field is $10.50, a dollar less than last year. Rockvale is $11.

South

BIRMINGHAM

Trade Extremely Sluggish—Price Cuts Fail to Help Retailers—Production at Low Mark.

The coal trade is just about as dull as it is possible for it to be. Consumers of commercial coal appear to have irrevocably decided not to buy any more fuel this year. At any rate they are consistently pursuing this policy.

In an effort to create some interest in the retail market, local domestic dealers last week made reductions of from $1 to $1.50 per ton on nearly all grades, but this concession had little effect in moving the large stocks on hand. The weather continues warm and there will be little demand as long as this condition exists, and the wholesale market will also remain stagnant.

Production now is around 200,000 tons per week, which is about two-thirds of normal. However, a large proportion of this tonnage is from the mines of furnace companies and is used for coking purposes, as commercial mines are operating only one to three days per week when running at all, and many have suspended entirely. If it were not for the activity of the furnace interests the employment situation in the coal fields would be much more critical.

LOUISVILLE

Demand Slow for All Grades—Many Mines Down—Destitution Among Miners.

Like the little boy who was told "There ain't no Santy Claus," the coal trade is well aware of the fact that "There ain't no business." A few orders are coming in for a car or two here and there, and are being fought for, but there is no big industrial demand, and many retailers, with big piles in their yards, are much worried. Some of them have lump on hand that cost $3.50@$3.75, whereas good coal can be had at $2.50@$2.75 today.

Reports indicate that many miners are out of work, with some suffering as a result, where workers are unable to secure enough money to keep their families from want. In the Birmingham district a number of blast furnaces plan to open early in the year. This probably means that furnaces at Pittsburgh, Youngstown, Chicago, and elsewhere will get busy shortly.

The retailers are poor prospects for any business unless a long period of severe weather sets in. Quotations of local retailers vary 75c.@$1 a ton, some of the small dealers, who are buying from hand to mouth, quoting best eastern Kentucky lump around $7@$7.25 a ton, while the companies which are stocked with high-priced fuel are asking $7.75@$8 and cannot see their way clear to cutting the price.

Southwest

KANSAS CITY

Retail Trade Stimulated by Colder Weather—Price Cuts Continue—Holiday Sluggishness in Wholesale Trade.

This territory has had more seasonable weather lately and there has been a little improvement in the retail movement. However, it will take several weeks of cold weather to cause any material increase in demand at the mines.

As a result of a few producers cutting prices, all Illinois figures continue on a low level for domestic grades and the dealers who stocked up on the higher prices that prevailed a month ago are disgusted, to say the least. The operators have advocated the early buying of coal and have turned right around and by their own actions disapproved this policy. There has been no noticeable change in the mine prices for Kansas.

North Missouri lump is $4.75, mine run $3.50, washed slack $3.75, raw slack $2.50. Arkansas lump is $7.50, mine run $3.75@$4.25, slack $2.50@$2.75. McAlester Oklahoma lump is $8.50, nut $7, slack $2.50. Springfield Illinois lump is $2.50, egg $2.25, slack $2, with some quotations at $2.25. There is a strong demand for slack and light call for lump and egg. Franklin County lump is $4.25, egg $4.05. Demand is light as only low-priced coals are being called for.

News From the Coal Fields

Northern Appalachian

PITTSBURGH

Gas Slack Demand Improves — Non-Union Fields Have Surplus Capacity—Little Interest in Check-Off Decision.

Demand for gas slack has been improving slowly, while otherwise there is practically no change in the market. Only a great increase in consumptive demand would produce any important reaction in the Pittsburgh district, for the reason that the non-union fields, which have been getting the bulk of the business on account of lower costs, are themselves in need of additional orders. In the past 30 days Connellsville prices have been showing a softening tendency, yet that region is likely to try to market more coal in future than in the past.

The refusal of the Appellate Court at Chicago to uphold Judge Anderson's injunction against the check-off has proved of little interest in Pittsburgh coal circles, except that it removes the possibility of a strike. Operators continue of the opinion that they should abolish the check-off in the next wage settlement, but there is a small contingent suggesting that continuance of the check-off might be used for trading purposes, to secure concessions otherwise impossible.

Prices remain largely nominal except for the advance in gas slack: Steam slack, $1.30@$1.40; gas slack, $1.60@$1.70; steam mine run and ordinary gas, $2.10@$2.20; ¾-in., $2.60@$2.70; Panhandle, 1¼-in. domestic, $2.75@$3; high-grade gas mine run, $3.

EASTERN OHIO

Year-End Sluggishness Prevails—Slow Depletion of Heavy Stocks—Industrial Improvement Seen with New Year—Production Parallels Demand.

Operations were curtailed further during the week ended Dec. 17. The output amounted to 275,000 tons or 44 per cent of potential capacity. This registers a decrease of 18,000 tons under the preceding week. However, figures given out by the Pittsburgh Vein Operators' Association indicate that their mines worked approximately the same percentage this week as last.

Due to the continued mild weather and, at least, no increase in the volume of traffic on the railroads, the proportion of the tonnage mined for railroad fuel is just about holding its own at somewhere between 35 and 40 per cent of the total field output on the present scale of operations.

The "no-market" situation is assuming larger proportions and is now conservatively estimated to be causing a loss of at least 55 per cent of capacity tonnage. There are many factors which are apparently militating against any immediate revival in the coal trade. Most prominent among these are the usual seasonal dullness and the inventory period. With the sub-normal consumption of both steam and domestic coal, stocks laid in during October and early November have not yet been depleted to the point necessitating replenishment. Another excuse for not placing orders at this particular time is the elimination of the war tax on freight charges, effective Jan. 1.

There are few changes in the industrial situation, reports indicating a slight lessening in activity. The steel industry is feeling the effect of the year-end lull, but Akron rubber factories are showing gains and many plants are increasing production and re-employing men.

A survey of the situation reveals that many large industrial plants which have been closed down completely or operating on a low schedule expect to resume or increase their operations shortly after the first of the year. Considerable optimism prevails as to the outlook within the next few months.

Spot prices, with the exception of slack, have softened slightly during the week. Because of the decreased quantities of prepared sizes being produced at this time spot slack is selling $1.65 @$1.75.

CONNELLSVILLE

Two Contracts for Furnace Coke—By-product Coke Preferred—Spot Market Stagnant.

The first contracting for furnace coke for the first quarter of the new year has occurred, two small contracts, each for a single blast furnace, having been closed at $3.25 and $3.40 respectively, these prices representing substantially the expectation the trade has entertained recently, and agreeing precisely with the market range quoted in this report a week ago.

The Youngstown Sheet & Tube Co., which has lately been supplying three furnaces, at Sharpsville, Lowellville and Girard, with coke from its byproduct operation, recently expressed doubt whether it would care to continue the arrangement after Dec. 31, having in mind the possible requirements of its own furnaces, but has now been soliciting a renewal, and at least one of the contracts has been continued.

The spot market continues practically dead and is quotable as follows: Spot furnace, $2.90@$3 contract furnace, $3.25@$3.40; spot foundry, $3.75@$4.50.

The *Courier* reports production in the week ended Dec. 17 at 62,780 tons by the furnace ovens, and 35,050 tons by the merchant ovens, a total of 97,830 tons, an increase of 8,920 tons.

UNIONTOWN

Slight Spurt in Coke Market—Bargain Lots Cleared up—Coal Is Sluggish.

While the coal market shows no improvement there was a noticeable spurt this week in furnace coke which, however, is not considered significant. The Christmas season has always seen an active demand in expectation of delayed shipments after the holiday but the spurt this year was not so pronounced as formerly. It did, however, remove bargain coke from tracks and standard quality is now firm at $2.75@$3, with the latter figure being the selling price in most sales.

In well-informed circles it is stated that $3.25 has been made the price of coke contracts placed for delivery after the new year. It is noted also that all contracts are being made for a three-months' period. They will expire at the time the wage scale ends in the union districts and it naturally follows that any suspension of production will bring consumers into the unorganized fields for coal with a resultant reaction in the coke market.

The end of the old year approaches with the coal market extremely sluggish and prices indifferent. Steam is quoted at $1.40@$1.50 and byproduct at $1.65@$1.85.

CENTRAL PENNSYLVANIA

No Hope for Union Mines on Present Wage Basis — Destitution Increases Among Miners—Market at Standstill.

As the old year draws nearer the end, operators see but little hope for a revival of business, especially in the unionized section of the field. Many producers with contracts expiring and facing an inevitable reduction without the ability to meet it are closing down.

The situation in northern Cambria County is especially acute. Mines in the vicinity of Barnesboro, Hastings, Spangler and other points, are closed and the miners are facing starvation. While operators are not serving eviction notices, they are unable to get rental for the houses and in many instances are helping the destitute families.

Operators figure that the individual miners are not responsible and hope for a break in the union lines which will permit the men to return to their work. At Juneau, Indiana County, an attempt was made to put the Ritter & Winslow Mine into operation and the men were met by a small army of women before they reached the mine. A clash occurred but no one was injured and the men returned to their homes and the mine remains closed.

UPPER POTOMAC

Poor Market Cuts Tonnage Despite Lowered Production Cost—Contracts the Mainstay.

Although more mines were operating during the week ended Dec. 17, as a result of the lower mining rate to which about 1,000 miners had agreed, yet operations were by no means general. On the contrary, most of the mines were still out of commission because of lack of orders.

ANTHRACITE

Market Breaks—Production Is Curtailed—Heavy Storage at Mines.

The coal market seems to have gone to pieces. It is difficult to move any size and as the storage yards are practically loaded to capacity a large number of the companies have been forced to close.

With the exception of two or three of the large companies all of the mines have been working only on half-time. The eight collieries of the Lehigh Valley Coal Co., which have been out on a strike for a week are still idle. Taking it all in all there was approximately a 60 per cent reduction in output during last week.

The Scranton Coal Co. issued orders for suspension of work at nine collieries for one week, effective Dec. 21. The Hudson Coal Co. is understood unofficially to have given assurance that there will be no suspension during the remainder of this month. The Hudson is thus the only important producer in the Scranton field operating regularly.

FAIRMONT AND PANHANDLE

Pre-Holiday Sluggishness Is Pronounced—R.R. Fuel Tonnage Slipping —Screenings Are Strengthened by Scarcity.

FAIRMONT

The closing of the year is bringing even lower operating time than during recent months. The spot market is virtually non-existent, although slack coal has been strengthened by the slim domestic production. Railroad fuel business, which has constituted the bulk of production, has slumped materially.

NORTHERN PANHANDLE

Although there was a production of approximately 65,000 tons, yet the demand was extremely sluggish during the week ended Dec. 17. Such mines as were able to hold their railroad fuel business worked on a 75-per cent basis. The low commercial production was destined for the West, Buffalo and Canadian territory.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Mines Remain Closed—Wage Cuts Fail to Aid Production—Screenings Only in Demand.

A small number of mines are working two or three days per week in Harlan and it is understood that most of them are using the 1917 scale. Even so, they are not able to find a market for their coal and as a usual thing they run one day and it takes two or three to clean up the track, although the coal is being offered much lower than was the case a short time ago.

All the mines on Straight Creek remain closed. The market remains in an inactive state, and what few inquiries come in are for screenings. Prices on this grade have risen, some being quoted as high as $1.40. Good block is $2.75@$2.85 and egg is $2.25, while mine run is around $1.60.

Middle West

SOUTHERN ILLINOIS

Cold Weather Stimulates Domestic Market—All Sizes Still Heavy—Tendency to Cut Prices — Good Winter Market Anticipated.

Cold weather has helped conditions in the Carterville field, but it is going to take at least three weeks of this kind of weather to get things moving right. There was a noticeable movement of lump in scattered shipments, while the other sizes did not respond so quickly.

Steam is easy, with no unusual demand as yet, but operators anticipate a shortage about the first of the year. Many users are inquiring for January shipment and some few orders have been placed for February. Railroads are not carrying as much coal ahead as would be ordinarily expected.

Some mines are getting as low as one and two days a week. The general average, however, is three days and under. Screenings are in fairly good movement. The independents are getting as low as $3.25 for lump and egg, $2.75 for No. 1 and No. 2 nut, while their mine run and screening prices are in line with association figures.

Conditions in Duquoin and Jackson County are somewhat similar except that some mines are selling at prices below the independents in the Carterville field, while others are getting close to the Association prices. Mt. Olive domestic has responded to some extent to the cold weather but this is up one day and down the next if the temperature rises. Nearly all the steam is going on contract and the railroad tonnage is unusually good.

In the Standard field everything is dragging. The best demand is for screenings. Domestic responds quickly to weather conditions. Railroad tonnage is good, everything considered, while working time averages two or three days.

A fairly good movement of standard is noted to Chicago for steam purposes and some little domestic is moving West.

WESTERN KENTUCKY

Some Quiet Wage Cutting Reported—Screenings Much Higher and Hard to Get.

Demand for prepared sizes has been off, due in part to reductions in wages in eastern Kentucky without like reductions in this field, which is under wage agreement. It has been hard to supply demand for pea and slack and prices have climbed steadily to $1.75 and even $1.90.

It is reported that a few mines have made arrangements with miners, promising them work at lower wages, which would enable them to secure business in competition with fields which have cut wages. However, it would be hard to trace down these rumors.

Fine screenings are so scarce that on the Louisville market it is reported that the Standard Oil Co. refused to pay the price and started burning fuel oil under a number of its stills, demand for fuel oil being poor and price weak. Screenings costing $1.75 at mine, with $1.40 freight and war tax, would figure about $3.15 a ton on board cars at the oil company's plant.

Western Kentucky is in a quandary as a result of the price cutting in eastern Kentucky, made possible by wage reductions there and which is beginning to be felt, although this field has been able to compete fairly well as a result of an advantage in freight rates to Louisville.

MIDWEST REVIEW

Retailers Inactive — Steam Market Strengthens—More Mine Closings—Labor Is Dissatisfied.

At last the Middle West has been treated to a few days of seasonably cold weather. It will take more than a few days of cold to bring about any improvement in the coal market. Six weeks of zero weather might help, but nothing less. A recent bulletin from the weather department contains the interesting fact that the temperature in the Middle West for the last sixteen months has been in excess of the average temperature ever since the records were kept.

Retail dealers are very inactive. They claim they are encountering vigorous competition from "snowbirds" who are shipping in a few cars of coal and unloading the cars on to wagons, offering it direct to the householder at reduced rates. Owing to the fact that they have no bins, teams or equipment to speak of, they are able to sell considerably cheaper than the retailer. In a time like this operators ought to be careful to ship only to legitimate dealers, as in doing otherwise they are not only hurting their own game, but the whole industry.

Some of the largest mines in Illinois and Indiana, producing, perhaps, the best grades of coal in the whole territory, are planning on closing immediately and remaining closed indefinitely. A few of the smaller mines in the territory producing off-grade coal, are still operating in a haphazard manner, but if these mines do not stop running soon their creditors will step in and make them discontinue. Incidentally, the air is full of rumors of companies who are going to wind up their affairs and end their business after the first of the year. This applies both to wholesalers and operating companies. A number of firms attracted to the coal industry during the past two years, on account of the opportunities to profiteer, are also going to discontinue business as they have lost all they had previously gained.

On account of curtailed running time, the miners are faced with poverty and want in some of the producing districts. Great numbers of them are planning to leave their occupation and seek work in other industries, while there are still others, who are unable to get work in other lines but declare that as soon as the situation changes and industry booms they will get a job in a factory as they have had all the hard luck due them in one life while engaged in mining coal.

Middle Appalachian

LOW-VOLATILE FIELDS

Consumers Use Excess Stocks—Market Very Weak—Contract Orders Held—Tide Movement Nil.

POCAHONTAS AND TUG RIVER

There was some improvement in market conditions in the Pocahontas region because of increased contract requirements. Western shipments were much in excess of the Tide and Eastern movement. As a rule, mines worked about three days.

Lower production in the Tug River field reflected the continued market dullness. The output was not in excess of 55,000 tons for the week, much of which went to allied steel companies in the West. Spot sales were extremely scarce, especially in the prepared grades, contracts alone sustaining production.

NEW RIVER AND THE GULF

Although lowered mining rates in some New River sections resulted in a slight production increase, there was not enough business available to insure regular operations at such mines. It was apparent that demand could not absorb much increased production regardless of lowered prices, as coal had accumulated in the markets to such an extent that at no point was it easy to make sales.

There was no improvement in the Gulf region, consumers using up excess shipments forwarded in recent weeks. The old hope was also prevalent that there would be an early reduction in freight rates, although operators expect no such reduction before next April. Contract orders were about all that enabled mines to operate.

HIGH-VOLATILE FIELDS

Market Can't Absorb Extra Tonnage Made Possible by Lowered Wages—Domestic Call Low, Causing Screenings to Rise.

KANAWHA

Production was not over 20 per cent of capacity during the week ended Dec. 17. This represented the output at mines still having contract orders, almost invariable idleness prevailing at operations not provided with contract business. There was a slight demand for nut and slack, which caused the price to harden to $1@$1.35.

LOGAN AND THACKER

Production was scaled down to less than half the November rate. Idleness was growing, notwithstanding the fact that mines were in a position to meet declining prices through a lowering of mining rates. Prices had so little to do with the lack of business, however, that they failed to count, as buyers were simply not in the market.

Williamson mines were not operating more than one-third of normal. There was so little spot demand that contract orders were about all that enabled mines to run. Shipments were being made almost exclusively to Western markets.

NORTHEASTERN KENTUCKY

The market depression had cut down production to not more than 20 per cent of capacity. There was a growing scarcity of screenings with a curtailment of prepared sizes.

VIRGINIA

Production was being maintained close to 55 per cent of capacity, mainly because of the fact that so many contracts remained intact. There was little or no spot market outlet, however, the low prices offered retarding production among the smaller mines with free coal to sell.

News Items From Field and Trade

ALABAMA

The first lap in the construction of the **government coal terminal** was completed recently and the substructure officially turned over to the government's representative. With the exception of a few minor details the construction work on the terminal has been completed. The machinery is designed to remove the coal from the barges, transfer it to the storage bins and then reload it onto the ships and do the same with iron ore bound up the river.

ALASKA

A large movement of coal from the Alaskan R.R., including shipments for the Navy from the Matanuska coal field, is predicted by the **Alaskan Engineering Commission** in its annual report. It estimates that 150,000 tons of coal a year will be shipped at a freight rate of $1.20 a ton.

COLORADO

Four-fifths of the land necessary to close a deal that will bring a standard gage railroad outlet to the San Juan Valley, in southwestern Colorado, has been subscribed, according to reports from Durango. If the deal is finally consummated between land owners in that valley and Los Angeles capitalists, it will not only provide an outlet for crops but develop the coal fields. The railroad will be constructed at or near Ballup, N. M., a Santa Fe R.R. point, to connect with Durango, a Denver & Rio Grande R.R. point. The agreement involves the transfer of about $2,500,000 worth of land for stock.

ILLINOIS

George Barker of the Maynard Coal Co. of Columbus was in Chicago recently, reporting a very dull market in Ohio.

The Schillers Coal Co. has taken a lease on the Oxford coal fields, and representatives of the company have been looking after the drilling of the test holes.

J. L. Farepaogh of the Lake Forwarding Department of the Northwestern Fuel Co. at Cleveland, was a recent visitor in Chicago.

Fred E. Koek, of Chicago, has been appointed to the sales force of the Harrisburg Collieries Co. He was formerly traffic manager of the Chicago Coal Merchants' Association.

The Springfield Utilities Co. at Springfield, is storing 10,000 tons of coal near its plant. This action is being followed by many such concerns throughout the state in anticipation of a coal famine in case of a sudden and severe change of weather conditions or of the blocking of the check-off system in the mines.

E. H. Erwin, for the past two years general sales manager for the O'Gara Coal Co., Chicago, has resigned his position to accept one of a similar nature with the Harrisburg Colliery Co., Old Colony Bldg., Chicago. He has been connected with some of the most prominent operating companies in Illinois and at one time owned and controlled a mine himself.

INDIANA

The existence of two separate concerns, the **Daugherty Coal Co.,** a corporation at Terre Haute, engaged in the wholesale coal business, and the **Daugherty Coal & Supply Co.,** a partnership engaged in the retail coal business, was recognized recently in Superior Court. The recognition took the form of a decree in which the affairs of the Daugherty Coal & Supply Co. were released from receivership and returned to the partners, James J. Daugherty and Lambert J. Loyd. On May 10, 1921, Ludwig Wild filed a suit against the Daugherty Coal company, alleging nonpayment of a note for $1,000. Shortly after this the United States Trust Co. was appointed receiver for the Daugherty Coal company, and through some oversight they took over the property of the Daugherty Coal & Supply Co. along with that of the Daugherty Coal company. By the ruling the Daugherty Coal & Supply Co. will resume its business entirely free of any receivership, and its property, which has been in the hands of the receiver, will be turned back to it.

KENTUCKY

The St. Bernard Coal Mining Co., is installing a new mining plant in Hopkins County, near Shamrock, to be known as the North Diamond Mine, which it is claimed will be the largest producing pit mine in western Kentucky. An all-steel tipple will be installed.

In connection with the retail department at Louisville of the **St. Bernard Coal Mining Co.,** a new two-ton Nash truck has been added, and the company expects to motorize delivery within a year or so. It is also planned to install car dumping pits, conveyors, loaders, etc., and get away from the large volume of hand labor now necessary in connection with the Louisville operations.

Max Barker and A. G. Stith were in Pineville recently, visiting properties on Straight Creek in which they are interested.

The Elkfield Coal Co., Garth, recently organized, is planning for the installation of considerable machinery on its tract of coal property, to include locomotive, coal cars, electrical machinery, mining equipment and tools, etc. The company proposes to develop a tract of over 100 acres. J. G. Bowman is president, and R. Q. Young, manager.

The Elkhorn Coal Co., of eastern Kentucky, having struck some good gas wells while drilling for oil, has a deal on to sell the Louisville Gas & Electric Co., some 6,000,000 cu.ft. of natural gas daily.

Denver Cornett recently visited the plant of the Cornett-Lewis Coal Co., at High Splint, Harlan County.

The Southern Mining Co., Williamsburg, capital $30,000, has been chartered by T. B. Mahan, N. B. Perkins and F. E. Gatliff.

D. S. Riddle, of the Riddle Coal Co., Chattanooga, was in Pineville for a day or so recently.

MISSOURI

A steam shovel is being installed at the coal deposits of the **Central Missouri Coal and Mining Co.,** near Holt Summit. The company has a lease on coal bearing lands in that vicinity sufficient to keep them busy for several years and it is not improbable that they will be shipping their product out in trainloads within the next few months in the event it is possible to get a switch built to the coal pits, which are about a mile from the track.

The work of sinking the shaft for the coal mine at Mosby has been started. **The Mosby Coal Co.** filed articles some time ago; capital stock $150 000; term of existence 50 years. The company has 2,294 acres leased for the mineral rights.

NEW YORK

The Edison Medal, "for meritorious service in electrical science or electrical engineering or electrical art" has been awarded for the year 1921, to **Cummings C. Chesney,** chief engineer and general manager of the Pittsfield Works of the General Electric Co. This award was made to Mr. Chesney for his work in the development of transmission apparatus, generators, condensers, transformers and converters during his association with the late William Stanley of the Stanley Electric Manufacturing Co., of Pittsfield, Mass., which concern was amalgamated some years ago with the General Electric Co. Mr. Chesney is one of the pioneers in electrical discovery. He made plans for the first successfully designed, advanced types of alternating current generators for high voltages.

CUMMINGS C. CHESNEY

Chief engineer and general manager, Pittsfield Works, General Electric Co.

The Gano-Moore Coal Mining Co., is a new corporation which will absorb the business of the Gano-Moore Co., and Courtright, Dimmick & Cunningham, Inc., and will purchase seven coal mines located in southern West Virginia. The new company will have a capital stock of $6,500,000, 7½ per cent preferred participating stock and $3,000,000 of common stock. The Gano-Moore Co. is now located at 44 Beaver St., New York, with offices in Philadelphia, Norfolk and Newport News, and has foreign offices in Rio Janeiro, Buenos Aires and London. The main office of the new corporation will be at 44 Beaver St., with branch offices in Philadelphia, Norfolk, Newport News, Huntington, Cleveland, Detroit and Chicago, as well as foreign offices in London, Rio Janeiro and Buenos Aires. The officers of the new company are M. R. Gano, president and chairman of the board of directors; vice-presidents, W. H. Cunningham, H. C. Matlack and F. D. Dimmick; secretary and treasurer C. C. Gano, and fiscal agent, R. T. Garfein. Besides these the board of directors will consist of Alfred Ogle, who is chairman of the Indiana Coke & Gas Co., the Ogle Coal Co., president of the Vandalia Coal Co., and the Monon Coal Co.; vice-president of the National Coal Association; and Frank Enslow, vice-president of the Huntington National Bank.

OHIO

The Monarch Coal Co. of Cincinnati has closed out its business. H. L. Monarch called a meeting of the company's creditors and declared that it was useless to continue. An arrangement was made to close up its affairs.

Judge Peck, Cincinnati, has refused a motion for a new trial in the jury award of $12,500 to **Bryden Bros.** of Piedmont, W. Va., who sued the **Reliance Coal & Coke Co.**, on a breach of contract in failure to accept coal for the Baltimore Manufacturing Co., of Baltimore.

The offices of the **Pittsborgh & Bessemer Coal Co.**, of Columbus, will be moved from the Ferris Bldg., into new quarters in the Rowland Bldg., now nearing completion.

The Reliable Coal Co., of Columbus, made no opposition to paying back a sum of money paid for coal delivered to the Ohio State School for the Blind under a contract which was declared illegal. The demand of Auditor Tracy for the return of the money was complied with immediately.

The Emmons Coal & Mining Co. of Philadelphia was awarded a verdict of $14,290 in its counter-suit for $20,000 against H. D. Everett, doing business as the **Western Coal Co. of Cincinnati**, in the trial before Judge J. W. Peck of the United States District Court. Everett sued for $4,000, alleged to be due in payment for coal delivered to Tidewater. The Emmons company sued on a breach of contract alleging that deliveries that should have been made early last summer had not been effected. Everett's attorneys have given notice of an appeal.

Alex Bonnyman, president of the Blue Diamond Coal Co., **Abner Langford**, general manager of the Banner Fork Coal Co., Kentenia, Ky., **W. C. Howes**, president of the St. Paul Coal Co., Betsylayne, Ky., and **Ed H. Mahan**, president of the Southern Coal & Coke Co., were recent visitors from the South in the Cincinnati market.

The Cambridge Stripping & Mining Co., has been incorporated to mine coal in the Cambridge field. Incorporators are Chad Chalfont, D. M. Wilson, F. W. Tobin, O. C. Hall and G. W. Hall.

W. A. Tobman, formerly treasurer and purchasing agent of the Theodore Kundtz Co., is now associated with the R. A. Woods Coal Co., Cleveland, as vice-president. Mr. Tubman was formerly secretary of the Cleveland Purchasing Agents' Association and is well known in northern Ohio business circles.

A compromise has been effected in the threatened suit and countersuit of the **Monro Warrior Coal Co.** and the **Ohio & Kentucky Fuel Co.**, of Cincinnati. About $20,000 was involved with a trial date set in the United States district court, but both parties agreed to an amicable settlement.

PENNSYLVANIA

The Stillwater Mine, at Forest City, has been purchased by Martin O'Toole, of the Avoca Coal Co., Robert Nolan, State's Tire Co. and P. R. Jordan, rock contractor. The mine was owned by the Delaware & Hudson Co. and was operated for some years by John W. Kirby & Sons, of Scranton. The mine is equipped with a breaker and is said to contain 100,000 tons of minable coal.

Since the Workmen's Compensation Act went into effect in 1916, there have been 148,546 accidents in the bituminous coal mines of Pennsylvania. Data at the **Department of Labor and Industry** show that during the past two years 41,600 persons were injured in the bituminous mines. Of this total 737 accidents proved fatal. These figures do not include the accidents of the past two months during which time 70 fatalities occurred in the bituminous mines. From Jan. 1, 1920, when the Bureau of Rehabilitation of the Department of Labor and Industry began operations, to Dec. 1, 1921, the bureau has offered its services to 2,185 industrial cripples, and of these 1,639 registered with the bureau. Five hundred and sixty-three were rejected because they could not be located or because they later notified the bureau its services were not required.

The Conemaugh Coal & Mining Co. has acquired a tract of coal property in Kiskiminitis Township, near Apollo, totaling about 1,584 acres. The property will be opened up immediately, and extensive production is planned. J. W. Fletcher is president.

The Crescent Mine of the **Pittsburgh Coal Co.** near Brownsville, at the edge of the coke region, which has been working about half time, is now in full operation.

Hudson Coal Co. officials announce several changes among the colliery superintendents. **Edward Manning**, for years superintendent of Laflin Colliery, has been promoted to a similar position at Greenwood workings, succeeding **Samuel Oakley**, who has been made superintendent at Marvine colliery. **Thomas Coates**, inside foreman at Baltimore No. 5, has been promoted to superintendent of the Laflin Mine.

The Fuel Service Co., Alvan Markle, Jr., treasurer, has notified the Secretary of the Commonwealth that its capital stock has been increased from $50,000 to $100,000.

The Elizabeth Mine was flooded when the Loyalhanna Creek overflowed its banks in South Latrobe. It is doubtful if operation of the mine will be possible for the rest of the winter.

The Scientific Selection of Explosives for Coal Mining was the subject of a paper delivered at the annual meeting of the Coal Mining Institute of America, at Pittsburgh, recently. Readers desiring to possess a free copy may do so by addressing the Advertising Department, Hercules Powder Co., Wilmington, Del.

VIRGINIA

The Heaton Coal Co., Tacoma, is planning for the installation of new electrical equipment, including motors and other apparatus, at its property.

George W. St. Clair, of Tazewell, president and general manager of the Virginia Smokeless Fuel Co., was in Norfolk recently. He was one of the signers of the petition to the court asking that the Norfolk & Western be restrained from collecting $500,000 demurrage charges until the I. C. C. can ascertain if the demurrage tariffs have been properly applied.

WASHINGTON

The College of Mines, University of Washington, holds its twenty-sixth annual winter mining session during the twelve weeks from Jan. 5 to March 22. This session is open to any interested man who can read and write English. The expenses will be limited to a tuition fee of $15, laboratory deposits to cover materials actually used and the cost of the necessary text books.

WASHINGTON, D. C.

The Census Bureau reports that the number of coal mine employees in Iowa decreased from 13,990 in 1910 to 12,809 in 1920. In Alabama the number of coal mine employees increased from 1,739 to 2,294.

In his annual report, **Secretary of Labor Davis** recommends the assignment of special representatives of the conciliation service to the twelve major basic industries, including coal, who would study conditions with a view of preventing industrial disputes. The Childrens' Bureau of the department conducted a survey of conditions affecting children in the bituminous coal districts in West Virginia.

According to the annual report of the **Secretary of Interior** the Government has withdrawn from entry in Western states 39,690,119 acres of coal land.

Secretary of Interior Fall has settled all outstanding claims against the old Fuel Administration and announces that his authority thereunder has been terminated under the act of Congress authorizing the Interior Secretary to close out the claims. Under this authority the Secretary settled 541 claims, awarding $88,123. One claim of $10,000 was disallowed. The Interior Department still retains the records of the Fuel Administration and the Bituminous Coal Commission, to which he says frequent reference is made upon request.

WEST VIRGINIA

A new West Virginia coal corporation is to be known as the **Wilson-Smith Coal Corporation**, with headquarters for the time being at Charleston. Pennsylvania and New Jersey people are largely interested in this concern as follows: William Burlson, Howard H. Roberts and F. B. Smith, of Blossburg, Pa.; S. S. Schofield, of Pottstown, Pa.; W. V. Wilkinson, of Haddon Heights, N. J.

Sale of the property of the **American Gas Coal Co.**, now in the hands of a receiver, is urged by the **Reilly-Peabody Fuel Co.**, of Pittsburgh, in an answer filed in the suit against the American company. The Reilly-Peabody company has a claim of $140,000 secured by a deed of trust covering a tract of 300 acres in Grant District in addition to 85 acres purchased from the New England Fuel & Transportation Co., and to 12 acres. Under its deed of trust the company claims that it has first lien on the American Gas Coal property. It contends in its answer that inasmuch as the property is running down even though in the hands of a receiver, it ought to be sold so as to protect the interest of all parties and all creditors.

Announcement is made of the consolidation of the **Wood-Morton interests** in the Charleston section with the **Fort Dearborn Coal Co.**, **W. F. Harman and associates** of Tazewell, Va., operating extensively in Norfolk & Western territory becoming identified with the consolidated properties. Companies controlled by W. S. Wood and Quin Morton which are merged under the terms of the consolidation are the Wood Coal Co., Leevale Coal Co., American Eagle Collieries Co., Hopkins Fork Coal Co. and Imperial Smokeless Coal Co. W. F. Harman and his associates control the Yukon Pocahontas Coal Co., Sayers Pocahontas Coal Co., Harman Pocahontas Coal Co., Johns Branch Coal Co., Kennedy Coal Corporation and War Creek Pocahontas Coal Co. There are now seven directors as follows: George F. Stahmer, Harry M. Hall and William F. Fitzgerald, of Chicago; W. F. Harman and W. T. Gillespie of Tazewell, Va.; W. S. Wood and Quin Morton of Charleston.

The fourth annual convention of Y. M. C. A.'s in coal-mining communities was held in Charleston on Dec. 7 and 8, under the auspices of the advisory committee of this body, of which J. G. Bradley, of Dunbar, is chairman. The general secretary reported that a new building is in course of construction at Mt. Hope, which was built at a cost of $110,000. Dr. Henry Kallenberg, of New York spoke on "Health Education in Coal-Mining Communities." J. Blaine Wittes, of Parkersburg; Carl Scholz, vice-president of the Raleigh-Wyoming Coal Co., and G. W. Bischoff, general manager of the West Virginia Coal & Coke Co. also addressed the meeting. J. G. Bradley presided at the dinner session. Charles R. Towson, senior secretary of the industrial department; J. O. Brunscott, secretary of the Burnwell Association, J. A. Page, secretary of the Decota Association and L. E. Black made addresses at the dinner.

A decision has been handed down by the United States Circuit Court of Appeals, sitting in Philadelphia, affirming a jury award of $2,5,000 rendered last April as the outcome of suits brought by the **New River Collieries Co.**, to recover a balance alleged to be due for coal commandeered by former Secretary of the Navy Daniels. The action was tried before United States District Court Bodine in Trenton.

Robert Talbott, Fairmont, of Robert Talbott & Co., coal operators, has donated an acre and a quarter of land at Lowesville, Monongalia County for the erection of a public school house in Grant district and a similar sized tract for the erection of a Roman Catholic Church at the mining settlement.

ONTARIO

A group of shareholders of the **Nukol Co.**, which is in financial difficulties, gathered in Toronto recently in the belief that they were to meet the directors. They were told when they found that the had not been engaged and that the directors had other business to attend to. The shareholders contended that it was understood that the meeting was to have been held but the directors claimed that all the business had already been transacted.

J. L. Good, sales manager of the National Coal Co., Cleveland, Ohio, was a business visitor in Toronto recently.

NOVA SCOTIA

Nova Scotia mines operated by the **British Empire Steel Corporation** produced 3,297,946 tons of coal during the first nine months of the present year. It is estimated that the total output will be about 4,400,000 tons.

Traffic News

Complaint has been filed with the Pennsylvania Public Service Commission by the **Pittsburgh Terminal Railroad & Coal Co.** against the Pennsylvania, Delaware & Hudson, Lackawanna, Erie, Lehigh Valley, Reading and other railroads against refusal of through rates on coal.

The Chaffee Railroad Co., owning a branch line from Vindex, Md., to Chaffee, W. Va., which reaches large coal and timber areas, has been authorized by the I. C. C. to operate the property. The line connects with the Western Maryland, which protested against the granting of the application. According to the report, the Western Maryland will oppose giving the branch line a division of joint rates. The Western Maryland contended much of the territory served by the Chaffee could be served by it.

The operating headquarters of the **W. C. & W. R.R.** has been moved to Mt. Vernon, Ill., the northern terminal of the road. The road touches many mines in Perry and Jefferson counties and is one of the largest coal carriers in that district.

The I. C. C. has denied a motion of the Director General of Railroads to dismiss the complaint of the **Pennsylvania Power & Light Co.**, which alleges that charges on anthracite from producing points to Haute, Pa., were illegally assessed.

The commission has reopened for further argument the complaint of the **Meyersdale Smokeless Coal Co.**, in which it recently found that the refusal of the B. & O. and the Director General of Railroads to furnish cars to the company at Casselman, Pa., for coal was prejudicial to the coal company and preferential to competitors.

In the complaint of the **Ideal Fuel Co.**, the commission decides that the rate on coal from Herrin, Ill., to Chicago during Federal control was not unreasonable.

In the complaint of the **Charleston, S. C., Mining & Manufacturing Co.**, the commission decides that the rates on coal from Virginia and Kentucky to Florida were legally applicable.

The Kentucky State Railway Commission reserved its decision after a public hearing in Newport on the protest made by the Hazard, Appalachia and Harlan Coal Operators' Associations as well as consumers from Cynthiana north to Covington against the advance in the freight rates on southeastern Kentucky coal from $1.56½ a ton to $1.90. Mr. Lloyd, of Louisville, speaking for the plaintiffs, declared that it was all hosh to say that there was no competitive rate to be reckoned with on account of river transportation and pointed out that coal from Jackson, Ohio, was laid down in Kentucky at a lower rate than from Hazard, though the distance was much greater. Mr. Nekamp, speaking for the northeastern Kentucky operators, said that he was not opposed to a reduction in freight rates but questioned the effect of a differential as an incentive to competition.

In a report to the Senate on settlement of railroad claims, the Railroad Administration says capital stock of the Hudson Coal Co. amounting to $5,387,500 is collateral for obligations of the Delaware & Hudson R.R., and that $260,100 of the capital stock of the Wilhonding Coal Co., is collateral for obligations of the Pennsylvania.

The I. C. C. has assigned for hearing at Birmingham Jan. 10, the case involving rates on coal from Illinois mines to destinations in Arkansas, Louisiana and Texas. Hearing in the case involving rates and terminal charges on coal to Gulf ports has been assigned for New Orleans Jan. 11.

The commission has suspended until April 15 proposed reduction of 5c. per ton on coal from Alabama, Illinois, Kentucky, Tennessee and Virginia mines to Gulf ports when for bunkerage, for export, or when for points in Florida and Texas accessible by water, but an increase of 20c. per ton when handled through tipple for other purposes.

The I. C. C. has assigned for hearing at Birmingham Jan. 10 the case involving rates on coal from Illinois mines to destinations in Arkansas, Louisiana and Texas.

While the hard and soft coal trades will not be affected by the newly reduced freight rates which come into effect on the Canadian roads the first of the year, coke dealers will benefit by a slight drop in the rates by reason that coke took a special commodity advance several months ago. Coal was given a special treatment of from ten to fifteen per cent at that time and so will not be further affected now.

Association Activities

Chicago Coal Merchants' Association

Seven hundred coal men in Chicago were recently haled into court. A judgment and fine amounting to $5 was imposed on each defendant. The suits were brought by the Chicago Coal Merchants' Association in behalf of its annual banquet, Dec. 12. The charge was "Being a Good Fellow and a Coal Man." A summons was sent to all the defendants, reading:

"You are hereby summoned to personally be and appear before this August Body with your office employees on the 12th day of December in the year of Our Lord One Thousand Nine Hundred and Twenty-one at the hour of six thirty p.m., in the ballroom of the Hotel La Salle to plead guilty to the charge of being a darn good fellow and a coal man, and have you then and there your most jovial mood and a feeling of good fellowship."

Western Kentucky Coal Operators' Association

A meeting of the association was held in Louisville Dec. 14, general marketing and production angles being discussed, especially the effect of the wage scale reductions in eastern Kentucky. Unless a new wage agreement can be reached with the mine unions in western Kentucky it is anticipated that the field is going to have trouble in meeting competition, although it has an advantage right now of 50c. to 60c. per ton in the freight rate to Louisville.

Northern West Virginia Coal Operators' Association

A joint board meeting of operators' and miners' representatives of the Northern West Virginia Coal Operators' Association was held at Fairmont on Dec. 10 for the purpose of settling difficulties which have arisen between operators and miners in different instances in the field. The operators were represented by A. Aisle White, of Clarksburg, Everett Drennen, of Elkins; Brooks Fleming, Jr., of Fairmont and E. S. McCullough, labor commissioner. The miners were represented by M. L. Haptonstall, of Charleston, acting president of the district; Frank McMartney, district board member; Ralph Aiello, district board member and Charles H. Batley, international organizer.

Smokeless Coal Operators' Association

Holding their annual meeting in New York on Dec. 8, the smokeless operators of West Virginia, acting as members of the Smokeless Coal Operators' Association, elected their officers for the coming year.

The roster of new officers includes: E. E. White, of Glen White, president; O. M. Deyerlie, of Bluefield, first vice-president; R. E. Grose, of MacDonald, second vice-president; George R. Collins, of Charleston, treasurer.

The newly elected board of governors includes the following: T. E. Houston and O. M. Deyerlie, Pocahontas District; W. P. Tams and P. M. Snyder, Winding Gulf District; S. A. Scott and G. H. Caperton, New River District; John Steinbugler and George Wolfe, Tug River District.

The membership committee consists of the following: Sam Patterson for the Norfolk & Western territory; W. E. Beale for Virginian territory and George Wolfe for Chesapeake & Ohio territory.

Production, transportation and consumption problems were considered at length by the association at its annual meeting.

Obituary

William G. Deck, superintendent of the Rouse and Lester mines of the Colorado Fuel & Iron Co., is dead after a long illness. He is succeeded by J. L. McBrayer, acting superintendent.

William G. Johnson, president of the West Wheeling Coal Co., and prominent in the coal industry of eastern Ohio, died recently. Mr. Johnson is survived by three brothers, one of whom is Thomas H. Johnson, president of the Valley Grove Coal Co., of Ohio.

W. F. Blaisdell, who was first vice-president of the Curtis & Blaisdell, at one time one of the largest retail coal concerns in Manhattan, died Dec. 16, aged 73 years. For the past ten years Mr. Blaisdell made his home in Port Washington, but for thirty-five years previously had lived in Brooklyn.

Robert H. McKean, manager of the Credit Department of the McGraw-Hill Co., Inc., died at his home on Dec. 17, 1921. Mr. McKean's services began with the *Engineering & Mining Journal* in April, 1902, as assistant in the accounting department. About a year after the purchase of the *Engineering & Mining Journal* by the Hill Publishing Co., Mr. McKean was appointed manager of the *Journal* which position he held until he was elected a director and secretary of the Hill Publishing Co. After the consolidation of the Hill Publishing Co. with the McGraw Publishing Co. he became manager of the combined credit departments and held this position until his death.

James Scott McCracken, a former well-known coal dealer in Toronto, died a few days ago in Vancouver, where he had been living. Deceased was born at Brockville in 1840 and had been living in the West for some years.

As a result of a fall at his home, **Colonel J. S. Cunningham**, well-known coal man of Charleston, W. Va., died a few days ago, following an operation. He had been a resident of Charleston since 1902, when he came there as a representative of some coal interests. He was rated as one of the foremost experts of the country in coal formation and production.

Thomas J. Scully, mayor of South Amboy, N. J., and father of John Scully, head of the Scully Towing and Transportation Co., of New York, died on Dec. 13. He was well known among the coal trade.

Coming Meetings

American Institute of Electrical Engineers will hold its midwinter convention in New York City, Feb. 15, 16 and 17. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

American Institute of Mining and Metallurgical Engineers will meet on Feb. 20 to 23 in New York City. Secretary, F. F. Sharpless, 29 West 39th St., New York City.

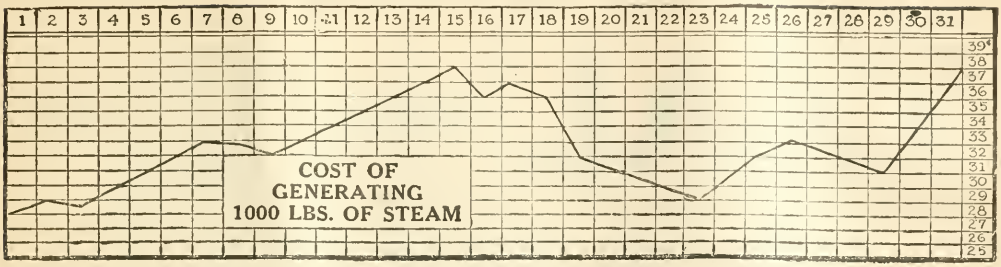
The American Institute of Consulting Engineers, Inc., will hold its annual meeting Jan. 16, 1922, at the Engineers' Club, 32 West 40th St., New York City. Secretary F. A. Mollitor, 35 Nassau St., New York City.

New England Wholesale Coal Association will hold its annual meeting Jan. 10, 1922, at Boston, Mass. Secretary, R. S. Townsend, 27 Kilby St., Boston, Mass.

Southern Appalachian Coal Operators' Association will hold its next meeting Jan. 27, 1922, at Knoxville, Tenn. Secretary, J. E. McCoy, Knoxville, Tenn.

Pike County Coal Operators will hold their annual meeting Jan. 6, 1922, at Pikeville, Ky. Secretary, F. E. Miller, Pikeville, Ky.

Pittsburgh Vein Operators' Association of Ohio will hold its annual meeting on Feb. 13, 1922, at Cleveland, Ohio; D. F. Hurd, secretary.



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(*) Now Chief of the Coal Section, Fuel Division Bureau of Foreign and Domestic Commerce, Washington, D. C.

Losing Coal

is losing a lot of development work which has sooner or later to be replaced. Perhaps the manager will contrive "to get by" with wasted coal and find some excuse to give for its loss, but what will he say when his cost goes up and he has to spend more money for development, for more rail, wire and pipe and he is faced with a longer distance over which to haul his coal? Lost coal usually is lost opportunity.

Consequently you will want to read what one of *Coal Age's* field editors says of the Indianola methods of obtaining a good recovery per acre. Headings driven around the area to be pillared are allowed to cut and get in bad condition so that when the long breakline—well, it will all appear in the issue of Jan. 5. The plan works well at Indianola and might work well elsewhere. The article has many more interesting points for those who have troublesome roof.

How Was Coal Formed?

You can't make us referee. The difference in point of view is so marked and the controversies so conflicting and yet convincing that a disposition exists to side with both parties. This coming week we will give an opportunity to Mr. Hixon to give his view of coal formation. He is an exponent of the drift theory. He makes a good case but it doesn't follow that the peat-bog theory is incorrect.

Advice to the Mine Electrician

An article on soldering armatures gives several practical methods of performing that important operation satisfactorily, cheaply and efficiently. Another describes the manner in which a substation at Drifton, Pa., has been made to run itself, safely and certainly.

Safety in Caging Cars

A device for use in the caging of cars also will be described. It has saved the users much in shaft accidents which are destructive to lives and property—especially the latter.

In next week's Coal Age

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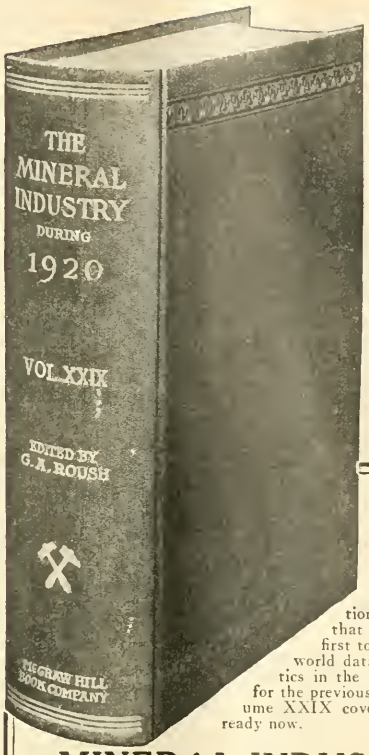

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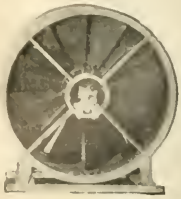

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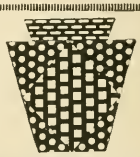

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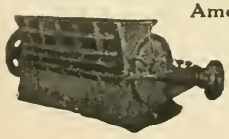

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ENGINEER or executive, 18 years' experience, expert on design, construction and systemization of colliery engineering work along modern and economical lines. Married, 38 years old, capable executive and man of excellent character. PW-15 Coal Age.

MINING engineer, draftsman or transitman; technical education; 11 years' experience; open for position. PW-24, Coal Age, Real Estate Trust Bldg., Phila., Pa.

MINING engineer, 9 years' experience, now employed, desires connection with large company, where good schools and living conditions can be had; I have had sufficient experience and training, and can furnish good reference. PW-27, Coal Age, Leader-News Bldg., Cleveland, Ohio.

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SUPERINTENDENT, mining engineer or manager. Anthracite, bituminous coal experience. Twenty years' expert modern practice. Prospecting, opening, mining, preparation, construction, power operations. Will go anywhere anytime. References. Satisfaction guaranteed. PW-21, Coal Age, Old Colony Bldg., Chicago, Ill.

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Will Buy or Lease Mine

in Kanawha or Logan field, producing a good steam coal. Terms must be right. Prefer dealing with owner. Give description and full particulars in first letter. BO-31, Coal Age, Leader-News Bldg., Cleveland, O.

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Hoisting at two shafts; daily capacity 50 to 75 tons; located in Jackson County, Ill., Big Muddy Vein. New shaft can be made to increase to large tonnage with small capital. All available coal lands adjoining property that you desire. Must sell. FS-12, Coal Age, Old Colony Bldg., Chicago, Ill.

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Fifty ton capacity shaft mine, with all necessary equipment; close to railroad, near Tulsa, Oklahoma. Albert Coal Mining Company, Tulsa, Oklahoma.

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6—8 and 10-ton, 250-v., D.C. Locomotives

Also, 250-v., D.C., Shortwall Mining Machines; must be modern equipment and in good condition.

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Electric Locomotive

24 in. gauge, 250 volts, D.C., 10 tons or heavier.

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300—36-inch Gauge 1½ Ton Pit Cars. Roller Bearing Wheels; *Good Condition; $25.00 each.*

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27—18 x 36 Heavy Duty, Allis-Chalmers Corliss Engines, both right hand and left hand, 350 H.P. at 125 r.p.m., 11 ft. by 32 inches. Band wheel. Operated on 140 lb. steam pressure, 1½ inch gauge back pressure, double eccentric.

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Heavy Type

Ingersoll-Sergeant, Straight Line, Class A Compressor, size 18 x 18¼ x 24, in good overhauled condition. Complete with air receiver. For immediate shipment. Price right.

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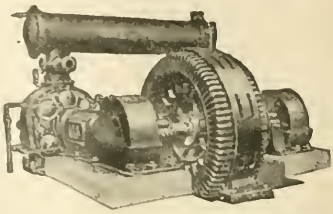
66 ft. Ingersoll-Rand 7 x 6 x 3¾ x 6 type F.R.2., steam driven, high pressure.
150 ft Ingersoll-Rand 9 x 8 E.R.1. belt driven compressor, complete with tank, unloader and fittings. Motor to suit.
210 ft. Chicago-Pneumatic, oil driven, on skids.
210 ft Chicago-Pneumatic, gasoline driven, on wheels.
230 ft. Chicago-Pneumatic, 12 x 10, steam driven
2—355 ft. Ingersoll-Rand, 12 x 10 x 12 x 10, F.R.1., steam driven. Complete with fittings.
700 ft. Ingersoll-Rand, 17 x 12, E.R.1., complete with unloader, idler, all fittings. Motor to suit.
1—549 ft Chicago-Pneumatic class NSB, belt driven Compressor. Motor to suit



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1190 ft. Ingersoll-Rand, Imperial type X-3, high duty, steam driven, duplex air comp.
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PITTSBURGH, PENNA.

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New and Renewed

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1—27-A Jeffrey Breast Mining Machine; 36 in. gauge, 5 ft. undercut, with extra parts.

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1—65 kw., 250 v., 860 r.p.m., cp. wd. General Electric Generator, direct connected and mounted on common bedplate with 1 220/440 v., 3 ph., 60 cy. new Allis-Chalmers induction motor; complete.
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From Old Hickory Powder Plant

Motor Driven Centrifugal

8—14-in. Worthington, Class B double suction, 8,500 G.P.M. at 152 feet head, at 1,170 R.P.M. direct connected to 300 hp. G. E., 3 phase, 60 cycle 2,200 volt motors.
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6—16-in. Allis-Chalmers, Type S, 8,500 G.P.M. at 90 feet head, direct connected to Type L, 300 hp 2,000 R.P.M., G. E. Curtis Steam Turbine.
6—14-in. Allis-Chalmers, Type S, 6,500 G.P.M. at 150 feet head, 8,100 G.P.M. at 90 feet head, direct connected to 300 hp., 2,000 R.P.M., G. E. Curtis Steam Turbine.

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5—14-in. and 20 x 7 x 18 Worthington Compound Duplex outside packed plunger pot valve, 400-g.p.m. at 300-lb pressure.
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200—New and used Simplex and Duplex, steam driven Worthington Pumps, 4½ x 3¾ x 4, 6½ x 4¾ x 5, 6 x 4 x 6, 7½ x 4½ x 10, 6 x 2½ x 6.
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Repair Parts for Jeffrey 28A Mining Machine.

All parts new, never used. These are offered in whole or by the piece at a marked reduction from factory price. For full information, write

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1—125 K.w. used Westinghouse, 250 volts, 250 R.P.M., compound wound, interpole, D.C. generator direct connected to a 16 x 15 Skinner Automatic engine on sub-base with Skinner automatic lubricating system and switchboard for generator.
2—100 H.P. each, used 66 x 16 high pressure, horizontal, returned tubular boilers with 4 in. tubes built and constructed for 125 lb. pressure. Complete including stacks.
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1—6 x 4 x 6 Fairbanks-Morse brass fitted boiler feed pump. All good condition and available for prompt shipment. A decided bargain for any one needing a complete Power Plant for mining operation

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Self contained. Give grade and length, weight of coal and wagons.

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230-250-VOLT, D.C. UNITS

Kw.	Generator	Engine
300	C.-W.	Watts-Campbell-Cor.
200	Wghse.	Erie Ball
100	Wghse.	Erie Ball
85	C.-W.	Erie Ball
75	G. E.	Skinner
75	Allis-Chal.	Erie Ball
60	G. E., 3-wire	Skinner, Uniflow
50	Wghse.	Ideal
50	Wghse., 3-wire	Ames
40	G. E., 3-wire	Skinner, Uniflow
35	G. E., 3-wire	Harrisburg
25	G. E., 3-wire	Troy, vert.
25	Ridgway	Ridgway
10	G. E.	G. E. Marine

A.C., 60-CYCLE UNITS

Kw.	Generator	Engine
250	Allis-Chal.	Hamilton non-releas.
200	Wghse.	Ridgway
150	Wghse.	Rice-Sargeant-Corliss
150	Allis-Chal.	Ideal Tandem
125	G. E.	Harrisburg
120	G. E.	Hamilton, 12 x 24
100	C.-W.	Harrisburg
75	G. E.	Harrisburg
50	G. E.	Erie Ball

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2—McEwen, 12 x 12, automatic steam engines, direct-connected to 50 K.W., D.C., 220-250 volts, Crocker-Wheeler generators, complete with switchboard and cable connections. These units have recently been overhauled and are in first class condition.

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1—75 kw., 110/220 v., 285 r.p.m. Westinghouse direct connected to Ideal steam engine.
1—75 kw., 220 v., 600 r.p.m. Norrthern, complete.
1—80 kw., 220 v., 600 r.p.m. Thompson-Ryan, complete.
1—80 kw., 220 volt, 650 r.p.m. Milwaukee, complete.
1—100 kw., 220 volt, 255 r.p.m. Western Elect. generator direct connected to Fitchburg compound automatic engine.
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2—150 kw., 220 volt, 255 r.p.m. Western Elect. generator direct connected to Fitchburg compound automatic engine.
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OUTFIT—240 VOLTS D.C.

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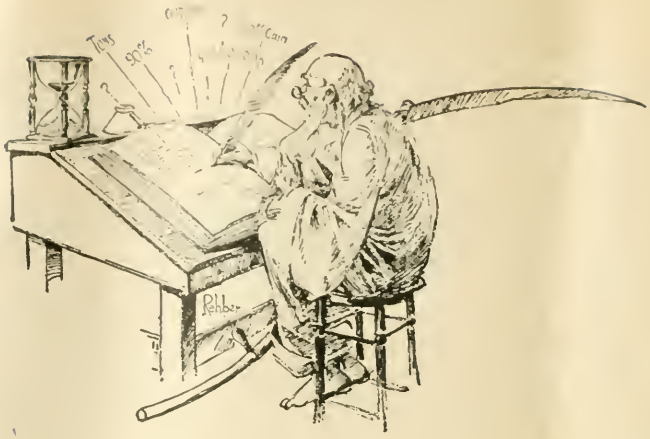

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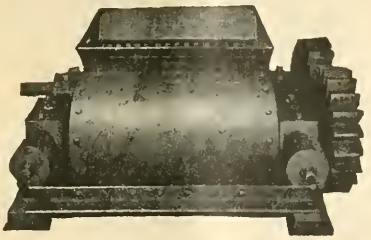

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Whether your crushing requirements be for stoker, plant or yard purposes, there is a Scottdale Crusher especially made to meet your requirements. A crusher of wide ability and capacity, sturdy construction, simplicity and economy of operation—dependable. Capacities range from 20 to 240 tons per hour.

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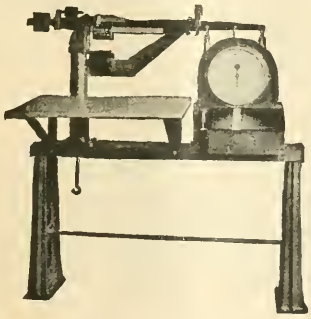

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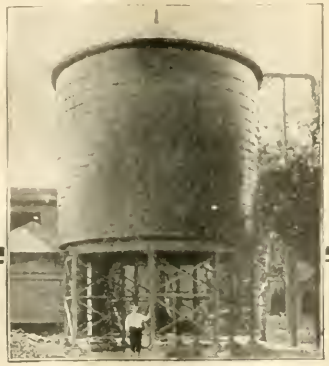

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Shovels as much material as 15 or 20 men— Loads 200 to 300 tons per shift—In use now in all kinds of mines—Applicable in coal seams over 5 ft. thick.

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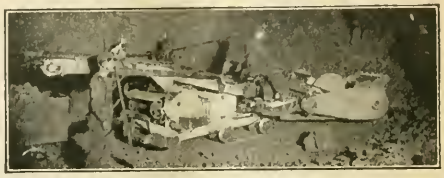

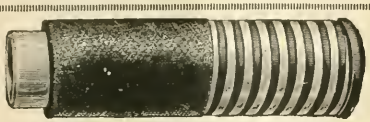

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Its faculty for resisting the action of sulphurous water is the reason for this—

Incidentally, it's the reason why Wyckoff Wood Pipe is in service in 90% of the Anthracite Mines and at least 60% of the Bituminous in the country.

As our engineers will prove to your satisfaction if you will take advantage of their cooperation.

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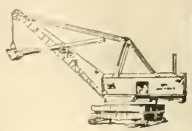

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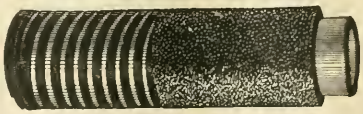

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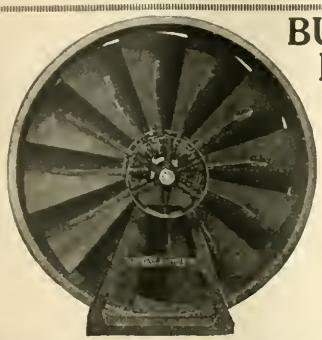

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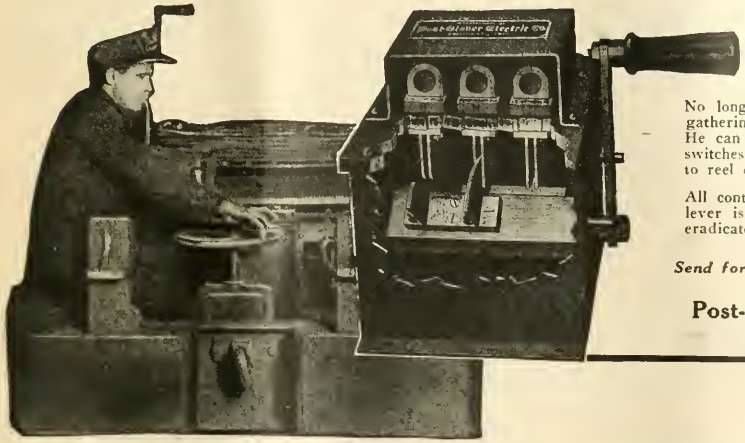

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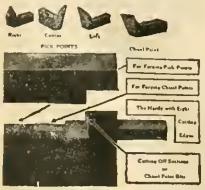

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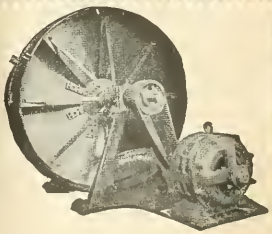

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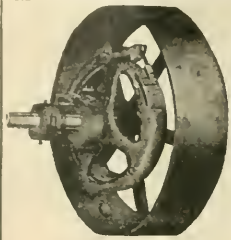

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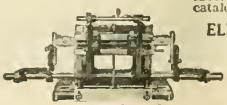

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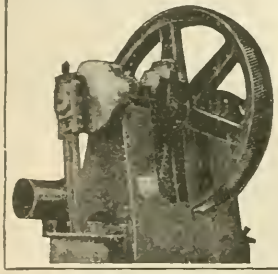

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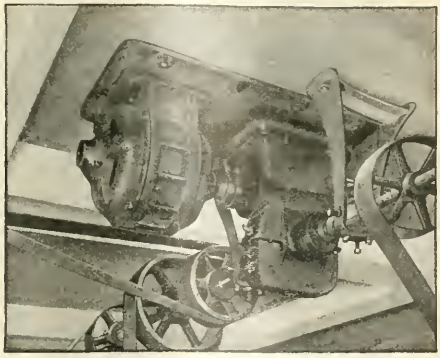

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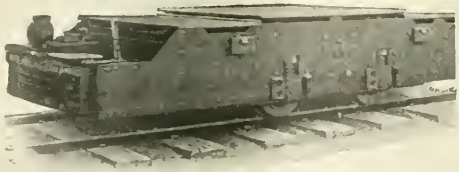

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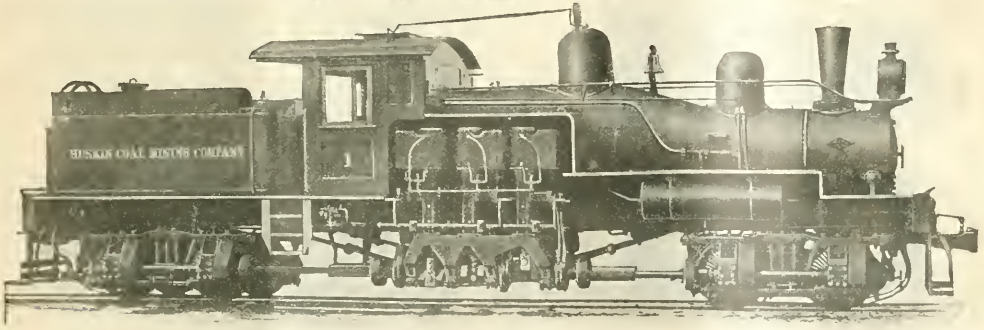

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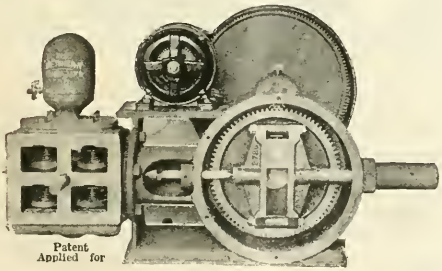

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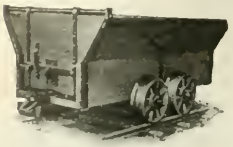

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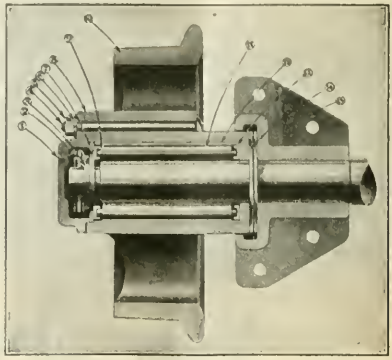

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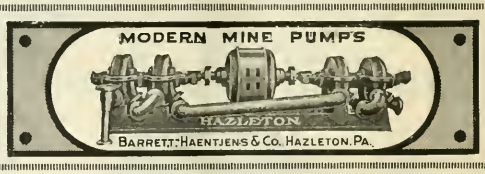

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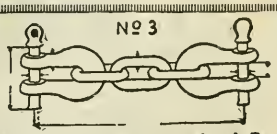

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UNIFRAME MOTORS are especially adapted to direct motor-driven apparatus. No changes in mounting required, as dimensions of both A.C. and D.C. motors of same hp. rating are identical.

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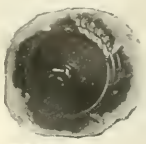
1622-28 Vine Street, Cincinnati, Ohio
Eastern Sales Office, 110 West 40th St., New York, N. Y.

PPC

AIR COMPRESSORS CENTRIFUGAL PUMPS

Literature on request

Pennsylvania Pump and Compressor Company
Easton, Pennsylvania



THE TERRY TURBINE

is ideal for driving generators, pumps and fans for all service, because of its simplicity, efficiency and reliability. There are more than 4000 in operation.

THE TERRY STEAM TURBINE CO.
HARTFORD, CONN. T-434

FAIRBANKS-MORSE

MANUFACTURERS—CHICAGO

Oil Engines—1½ H.P. to 300 H.P.
Pumps—Steam-Power-Centrifugal
Electric Motors and Dynamos
Light Plants Fairbanks Scales

FAIRBANKS-MORSE QUALITY F M 100%

PHILLIPS

Patent Open Cap Wheel Truck

IS seldon shopped on account of truck trouble. Holds lubricant for long periods. Is easily applied with a few large bolts. Is guaranteed for a year against hub wear.

Has full-floating axles with visible linch pins.

This Truck is the ideal running-gear for large or small mines, light or heavy cars, animal or mechanical haulage. It will solve that problem of hard-running cars—on level track it runs 25 per cent easier than other improved trucks selling at the same price.

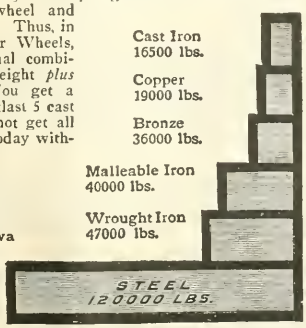
Write us today

Phillips Mine and Mill Supply Co.
So. 23rd & Jane Sts., Pittsburgh, Pa

Hercules Steel Car Wheels

40% Lighter— 400% Stronger— Than Cast Iron

Steel is the ideal—the logical metal for mine car wheels. It is ductile, it cannot break, it is approximately 8 times stronger than cast iron. Hercules Mine Car Wheels are made of steel. They are 40% lighter than the old fashioned cast iron wheel and yet 400% *stronger*. Thus, in Hercules Steel Car Wheels, you get the unusual combination of light weight *plus great strength*. You get a wheel that will outlast 5 cast iron ones. Why not get all the facts? Write today without obligation.



Hercules Mfg. Co.
Centerville, Iowa

Lubricate Your MINE CARS *with* Superla Greases

Public approval comes, naturally, to the products of an organization pervaded with a determination to stop at nothing short of perfection.

That's why **Superla Mine Car Greases** have attracted such widespread attention among mine owners and operators.

Superla Mine Car Greases have been especially designed to stand up under the enormous pressure occurring between shaft and wheel. They have the correct fluidity to thoroughly bathe the bearings with a friction reducing film of oil, and reach every point which requires lubrication. **Superla Mine Car Greases** will not run out of the wheels and waste, as will black oils and cheap fluid lubricants.

Any user of **Superla Mine Car Greases** will substantiate these statements, but only by actual usage will you realize fully these and other advantages.

Send for our book, "Mine Car Lubrication," prepared by our engineering department.

It Is Free

STANDARD OIL COMPANY
(INDIANA)
CHICAGO ILLINOIS

HI Mine Car Grease

The economy of this CAR GREASE is evident when you know that its constituent parts are so compounded it will not be affected by temperature variations and will not decompose in mineralized Mine Water.

OHIO
Mine Car Grease

should appear on your next requisition—It will appear on all following.

OHIO GREASE CO.
Loudonville, Ohio

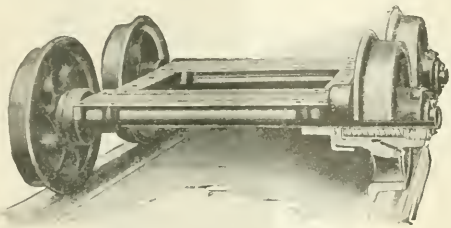
THE S&O GRIFFITH
DROP-BOTTOM CAR
I MAKE
THE WONDERFUL AUTOMATIC DROP-BOTTOM MINE CAR.
ALSO OTHER MINE CARS AND THE "WHITNEY WONDER" ROLLER BEARING TRUCKS
S-D WHITNEY WONDER WHEEL
TRY MR. SANFORD-DAY
KNOXVILLE TENNESSEE
S-D MOGUL WHEEL

KEYSTONE GREASE

There's a special Keystone Density, scientifically suited for every type of mine car wheel. Keystone Grease No. 119 Medium for Hyatt Roller Bearing Wheels. Keystone Grease No. 119 for wheels of all other types.

Write for Bulletin No. 26

The Keystone Lubricating Company
Executive Offices and Works, Philadelphia, Pa.
Established 1884
Bronches throughout the World



HELMICK

Mine Cars, Wheels and Trucks

Illustration shows sturdy truck design and detail in cross section of Helmick-Hyatt Roller Bearing Wheel.

We furnish wheels and trucks for your present mine cars, or will build cars complete to your specification.

If you need coal-handling equipment of any kind—get our quotations.

Helmick Foundry Machine Co.
Fairmont, W. Va.

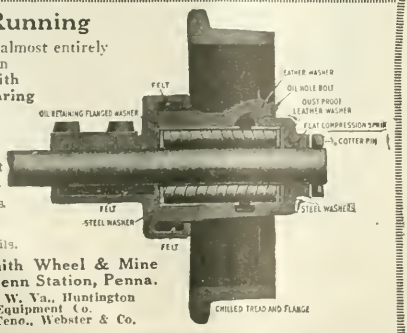
Light Running

Friction is almost entirely overcome in Hockensmith Roller Bearing Wheels

Completely protected against dust and water.

Big oil savers. Unsurpassed Durability

Ask for details.



Hockensmith Wheel & Mine Car Co., Penn Station, Penna.
Huntington, W. Va., Huntington Supply & Equipment Co.
Knoxville, Tenn., Webster & Co.

ROTARY CAR-DUMPERS FOR MINE CARS (GRAVITY, ELECTRICAL OR PNEUMATIC DRIVE)
"SOLIOCAR" SELF-DUMPING CAGES CAR CONTROL AND CAGING EQUIPMENT
CHICAGO CROSSING ILL.
CAR-DUMPER & EQUIPMENT CO.
UNION DEPOT PITTSBURGH PA.
THE MECHANICAL SPRAGGER AUTOMATIC TRIP CONTROL EQUIPMENT
ROTARY CAR-DUMPERS FOR STANDARD GAUGE RAILROAD CARS

cars · track · switches

New York · Pittsburgh
Chicago · Detroit
Philadelphia · San Francisco

KOPPEL
TRADE MARK REGISTERED U.S. PATENT OFFICE

Koppel Industrial Car & Equipment Co.
Koppel, Pa.

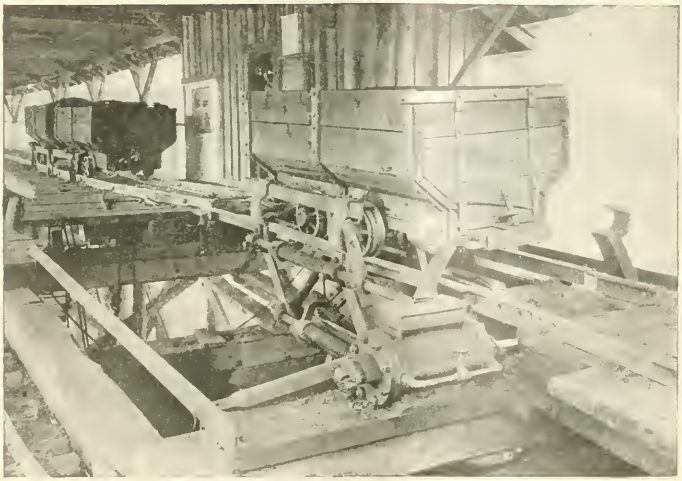
The Twin-Boy Automatic Dump

Operates on the Shock-Proof Principle Like a Door Check.

The car is tilted first to the right, then to the left—gently as a mother rocks a cradle. No shock or jar. Less wear and tear to cars. Minimum coal breakage. Tremendous dumping capacity. Dumping speed can be regulated. Cars self-spotting, self-discharging. Twin Boy operates without power. Fully automatic.

The oil compression cylinder is responsible for its shockless operation. Twin Boy is different.

Let us explain how in detail.



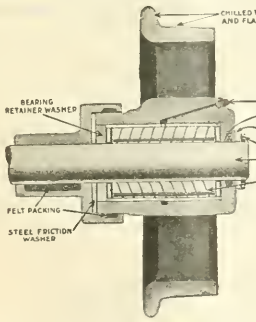
ANNISTON ELECTRIC STEEL CORPORATION

Works and General Offices: **ANNISTON, ALA., U. S. A.**

Coal Mine Equipment, Steel Wheel Mine Cars, Electric Steel Castings, Grey Iron Castings, Structural and Sheet Work, Machine Work

THE EGYPTIAN

Roller Bearing Mine Car Trucks



Hyatt roller bearings in mine car wheel service are so well known that it is hardly necessary to elaborate upon their economy. Egyptian mine car truck construction, strong and safe, gives roller bearing advantages in a design as simple and accessible as the ordinary plain hub wheel.

Egyptian Iron Works

"Dept. C. A." **Murphysboro, Ill.**

Guaranteed Against Breakage

The Weir "Titan" Frog

is guaranteed against breakage—no matter how heavy your locomotives are or how fast they run. Furthermore it is guaranteed to outlast any cast iron frog a dozen times over.

Cast in one solid piece from Titanium treated steel—made for any track radius and any rail section.

Remember: **One wreck costs more than a dozen "Titans."**

Write today for details and prices.

Weir Frog Company

Cincinnati, Ohio

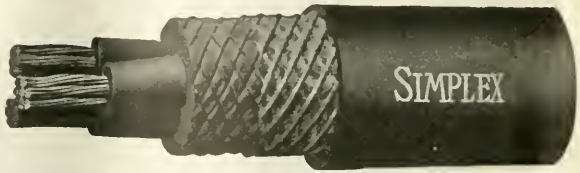
Largest and oldest company in the United States making a specialty of track work for mines. Complete turnouts for rooms, tram roads and tipples. Prompt shipments, durable work and reasonable prices. Our Engineering Force is at your service.

Established 1882

TRADE **TIREX** MARK

Machine Cables for Coal Mines

TIREX NEVER KINKS



SEND FOR SAMPLE

TIREX conductors are insulated with a thirty per cent Para rubber compound. The insulated conductors are enveloped with a forty per cent Para rubber sheath applied under pressure so that the interstices between conductors are completely filled.

A double serving of hard seine twine is placed around the cable before the outer rubber jacket, containing sixty per cent of Para rubber, is applied. TIREX CABLES stand up under hard usage.

TIREX CABLES are built like high grade cord tires. Under the severe conditions incident to coal mine service they last more than four times as long as fibrous-covered cables. They are clean and flexible and cannot absorb moisture. TIREX CABLES NEVER KINK. The outer rubber jacket is securely locked to the cable and will not peel off, and oils and acids, under ordinary industrial conditions have no appreciable effect upon it.

SIMPLEX WIRE & CABLE Co

MANUFACTURERS

201 DEVONSHIRE ST. BOSTON 9

CHICAGO SAN FRANCISCO

LIGHT STEEL RAILS

8, 12, 16, 20, 25, 30, 35, 40 lb. per yard
Splices, Spikes, Frogs and Switches

UNITED STATES RAIL CO.
CUMBERLAND, MARYLAND

TRACK EQUIPMENT MINE FROGS
SPECIAL WORK FOR MINES STEEL TIES
SWITCHES RAILS CROSSINGS
LIGHT RAILWAY EQUIPMENT CO.
COMMERCIAL TRUST BLDG. PHILA. PA.

The
West Virginia Rail Co.
Manufacturers
Light Steel Rails
and Accessories
8-12-16-20-25-30-35-40-45-lbs. per yd.
Huntington, W. Va.

Who Looks into the Earth
We test Coal and Ore land in any part of North or South America
Pennsylvania Drilling Co.
Diamond Drill Contractors
1812 W. Carson St. Pittsburgh, Pa. 2623 Whitehall Bldg. New York.

Important Notice to Advertisers

To secure first-class typographical set up and enable us to submit proof in sufficient time to make any necessary corrections before going to press, it is essential, that we get copy in our hands together with all necessary cuts at least three weeks prior to date of publication.

Coal Age

ERICO

ARC WELD BONDS

The Electric Railway Improvement Co.
Cleveland, Ohio

Cambria Slick Steel Mine Ties

MIDVALE STEEL AND ORDNANCE COMPANY
CAMBRIA STEEL COMPANY

General Sales Office:
WIDENER BUILDING, PHILADELPHIA, PA.

DISTRICT SALES OFFICES:
Atlanta, Boston, Chicago, Cincinnati, Cleveland, Detroit, New York, Philadelphia, Pittsburgh, San Francisco, Salt Lake City, Seattle, St. Louis, Washington, D. C.

Consolidated Steel Corporation, 25 Broadway, New York, is the sole exporter of our commercial products

ECONOMICAL transportation of coal and mine waste is accomplished with a

Leschen Aerial Tramway

The performance of numerous installations prove their practical efficiency.

Established 1857

A. Leschen & Sons Rope Co.
St. Louis, Mo.

New York Chicago Denver San Francisco

"Super Service"

CORDS and CABLES for MINES

ROME WIRE CO.

Rome, N. Y. R Buffalo, N. Y.

AUTOMATIC AERIAL TRAMWAY

The system that gives results at Low Cost per ton for haulage.

INTERSTATE EQUIPMENT CORP.
25 Church Street, New York City

A Common Sense Haulage System

B & B Aerial Tramways take the bee-line from mine to tipple and dump your coal automatically. Keep your output moving, regardless of rain, sleet, snow or mud. Can't spill.

Save wages. Seldom require more than one or two *unskilled* attendants.

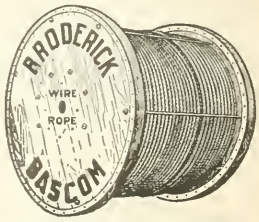
Operate by gravity in typical hilly coal country. When fall is insufficient, steam, gasoline or electricity may be used.

Friction Grip or Two-Bucket Types designed for your exact requirements. Built to last. Capacity guaranteed.

Full details in our interesting Aerial Tramway Book No. 9. Write for it.

BRODERICK & BASCOM ROPE CO.
New York ST. LOUIS Seattle

Manufacturers of famous Yellow Strand Powersteel and all standard grades of wire rope.



B31C

"CINCINNATI"

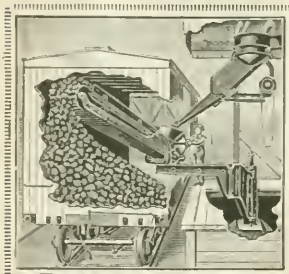
TRACK EQUIPMENT

"Depend Upon It"

Other track equipment may cost less, but the price of "Cincinnati" Equipment is as low as consistent with the best of materials and first-class workmanship. This means satisfaction to our customers long after the payment is forgotten.

"Cincinnati" Frog & Switch Co.
Cincinnati, Ohio
Established 1906

FROGS - CROSSINGS - SWITCH STANDS - SWITCHES - ROOM TURNOUTS - ETC.

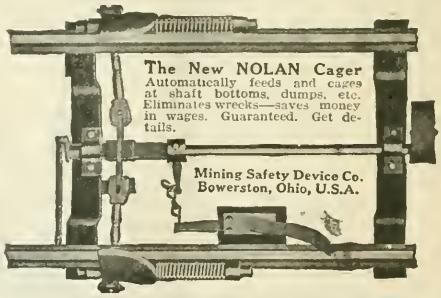


THE MANIERRE
BOX CAR LOADER

Loads All Kinds of Coal and Coke

REPRESENTED BY
The Lea Fels Co. Chicago Philadelphia, Pittsburgh Pa. Portland Oregon Seattle; British Columbia Lindsmith Shubert & Co.; Denver Calgary Machinery & Mfg. Co. Alberta Yeurovna Home & Foreign Trade Co., Inc., New York.

MANIERRE
ENGINEERING & MACHINERY CO.
MILWAUKEE, WIS.

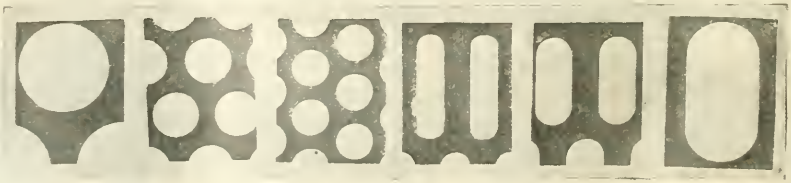


The New NOLAN Cager
Automatically feeds and cages at shaft bottoms, dumps, etc. Eliminates wrecks—saves money in wages. Guaranteed. Get details.

Mining Safety Device Co.
Bowerston, Ohio, U.S.A.

PERFORATED METAL

All sizes and shapes of Holes



All kinds and thicknesses of Metal

FOR SCREENING, SIZING and WASHING COAL

The Harrington & King Perforating Company

628 No. Union Avenue, Chicago, Ill., U. S. A.

New York Office: 114 Liberty Street

WHAT AND WHERE TO BUY

A Classified Index of Advertisers in This Issue

For Alphabetical Index See Last Page

Aerial Tramways
Broderick & Bascom Rope Co.
Interstate Equipment Corp.

Air Aftercoolers
Chicago Pneumatic Tool Co.

Air Receivers
Chicago Pneumatic Tool Co.

Armature Repair Machinery
Electric Service Supplies Co.

Armatures and Field Coils
Chattanooga Armature Works
Electrical Material Co.
Nelson Co., I R

Ash Handling Machinery
Link-Belt Co.

Augers, Coal (See Drills)

Axes, Steel
Cambria Steel Co.

Battery Boxes
Paragon Electric Co.

Battery Charging Equipment
Cutler-Hammer Mfg. Co.

Bearings, Ball and Roller
Hyatt Roller Bearing Co.
Railway & Mine Supply Co.
Timken Roller Bearing Co.

Belt Dressing
Keystone Lubricating Co.

Belts, Conveyor
Link-Belt Co.

Belts, Transmission
Link-Belt Co.

Bits and Bit Steel
Electrical Material Co.

Bit Sharpeners
Little Giant Co.
Sullivan Machinery Co.

Blasting Supplies
Atlas Powder Co.
Du Pont de Nemours & Co., Inc
E. I.

Blowers
Buckeye Blower Co.
Eynon-Evans Corp.
Stine, S B.

Boilers, Water Tube
Babcock & Wilcox Co.

Books, Coupon
Allison Coupon Co.

Books, Technical
McGraw-Hill Book Co., Inc.
National Coal Mining News

Bonding Machines
Electric Railway Improvement Co.

Box Car Loaders
Fairmont Mining Machinery Co.
Link-Belt Co.
Manierre Engineering & Mchry Co.
Webster Mfg. Co.

Brakes, Electrically Operated
Cutler-Hammer Mfg. Co.

Breaker Machinery
Vulcan Iron Works
Wilmot Engineering Co.

Breakers, Circuit, Electric (See Circuit Breakers, Electric)

Briquetting Machinery
Malcolmson Engineering & Machine Corp.

Buckets, Clamshell
Blaw-Knox Co.
Link-Belt Co.
Orton & Steinbrenner Co.

Buckets, Coal Handling
Fairmont Mining Machinery Co.
Link-Belt Co

Buckets, Elevator
Bartlett & Snow Co., The C. O.
Fairmont Mining Machinery Co.
Hendrick Mfg. Co.
Link-Belt Co.

Cableways
Blaw-Knox Co.
Flory Mfg. Co., S.
Interstate Equipment Corp.

Cagers
Mining Safety Device Co.

Cagers, Automatic
Car-Dumper & Equipment Co.
Holmes & Bros. Inc., Robt.
Mining Safety Device Co.

Cages
Fairmont Mining Machinery Co.
Helmick Foundry Machine Co.
Morrow Mfg. Co
Railway & Mine Supply Co.

Cages, Self-Dumping
Car-Dumper & Equipment Co.

Car Hauls
Jeffrey Mfg. Co.
Link-Belt Co
Webster Mfg. Co.

Car Loaders (See Box Car Loaders)

Car Hitchings
Pittsburgh Knife & Forge Co.
Railway & Mine Supply Co.

Car Stops, Automatic
Car-Dumper & Equipment Co.
Fairmont Mining Machinery Co.
Hyatt Roller Bearing Co.
Mining Safety Device Co
Phillips Mine & Mill Supply Co.

Cars and Car Wheels
Anniston Electric Steel Corp.
Atlas Car & Mfg. Co.
Fairmont Mining Machinery Co.
Helmick Foundry Machine Co.
Hercules Mfg. Co.
Hockensmith Wheel & Mine Car Co.
Irwin Foundry & Mine Car Co
Koppel Industrial Car & Equip Co
Lobdell Car Wheel Co
Phillips Mine & Mill Supply Co
Railway & Mine Supply Co.
Sanford-Day Iron Works
Stine, S B
Watt Mining Car Wheel Co.

Cars, Mine Air Compressor
Chicago Pneumatic Tool Co.

Cars, Steel Mining
Hendrick Mfg. Co.
Railway & Mine Supply Co.

Castings
Eynon-Evans Corp.
Falk Corp.
Hockensmith Wheel & Mine Car Co.
Lobdell Car Wheel Co.
Nuttall Co., R. D.
Railway & Mine Supply Co
Sanford-Day Iron Works

Castings, Iron, Brass or Bronze
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Fairmont Mining Machinery Co.

Castings, Steel
Anniston Electrical Steel Corp.

Chain Flight Conveyors
Jeffrey Mfg. Co.

Chains
Fairmont Mining Machinery Co.
Link-Belt Co.

Chemicals
Du Pont de Nemours & Co., Inc., E. I.

Chutes
Helmick Foundry-Machine Co.
Sanford-Day Iron Works
Sykes Co., The
Webster Mfg. Co.

Circuit Breakers, Electric
Bartlett & Snow Co., The C. O

Clamps, Trolley Wire
Electrical Material Co.
Ohio Brass Co.
Post-Glover Electric Co.

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Coal and Ash Handling Machinery
Holmes & Bros., Inc., Robt.
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Coal Buyers
Cory-Mann George Corp.

Coal Drills, Electric & Pneumatic
Chicago Pneumatic Tool Co.

Coal Exporters
Cory-Mann George Corp.

Coal Loaders
Manierre Engineering & Mchry Co.

Coal Mining Equipment
Pittsburgh Mining Machinery Co.
Roberts & Schaefer Co.

Coal Mining Plants
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Link-Belt Co
Roberts & Schaefer Co.

Coal Storage and Rehandling Machinery
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Link-Belt Co
Webster Mfg. Co.

Coke Loaders
Manierre Engineering & Mchry Co.

Coke Oven Drawing and Leveling Machines
Atlas Car & Mfg. Co.

Commissary Equipment
Automatic Refrigerating Co., The

Commutators
Chattanooga Armature Works.

Compressors, Air
Allis-Chalmers Mfg. Co.
Chicago Pneumatic Tool Co
Denver Rock Drill Mfg. Co
Penn Pump & Compressor Co.
Sullivan Machinery Co.

Compressors, Gas
Ingersoll-Rand Co
Penn Pump & Compressor Co.

Concentrators
Deister Machine Co.

Concrete Construction
Cement-Gun Co., Inc.

Concrete Finishing Tools
Cement-Gun Co., Inc.

Connectors, Trolley Wire
Electrical Material Co.

Consulting Engineers (See Alphabetical Index)

Controllers
Cutler-Hammer Mfg. Co.
Goodman Mfg. Co.

Conveyors, Cable Flight Retarding
Fairmont Mining Machinery Co.

Conveyors, Chain Flight
Cross Engineering Co.
Link-Belt Co.
Bartlett & Snow Co., The C. O.

Conveyors, Coal
Fairmont Mining Machinery Co.
Hendrick Mfg. Co.
Jeffrey Mfg. Co.
Link-Belt Co.
Marion Mch. Fdry. & Supply Co
Robins Conveying Belt Co.
Webster Mfg. Co.

Corrugated Wire Glass
Sykes Co., The

Couplings Mine Car
Hockensmith Wheel & Mine Car Co.
Railway & Mine Supply Co.

Cranes
Ball Engine Co.
Bucyrus Co
Link-Belt Co.

Cranes, Locomotive
Ball Engine Co.
Orton & Steinbrenner Co.

Cranes, Traveling
Niles-Bement-Pond Co.

Crossings (See Switches, Frogs and Crossings)

Crushers, Coal
American Pulverizer Co.
Bartlett & Snow Co., The C. O.
Link-Belt Co.
Marion Mch. Fdry. & Supply Co
Orton & Steinbrenner Co.
Pennsylvania Crusher Co.
Traylor Engineering & Mfg. Co.
Vulcan Iron Works
Webster Mfg. Co.

Crushing Plants, Coke
Webster Mfg. Co.

Dealers' Machinery
(Rail, Pipe and Miscellaneous Equipment)
Archer Armstrong & Co.
Carlin Mach. Co., John H.
Cohen & Son, Louis
Duquesne Elec. Mfg. Co.
Foster, H.
Gregory Elect. Co.
Harris Bros.
Independent Elect. & Machy Co.
Luria Bros.
Merchants Steel & Supply Co.
Miller-Owen Electric Co.
Moore, J. W.
Morrison & Risman Co.
Nashville Industrial Corp.
Operators Supply Co.
Pittsburgh Boiler Mach. Co.
Power Machinery Exchange Inc.
Randle Machinery Co.
Sherwood, E. C.
Standard Rail & Steel Co.

Diamond Core Drill, Contracting
Ameling Prospecting Co., H. R.
Diamond Drilling & Exploration Co
Hoffman Bros.
Punxsutawney Drill & Cont Co
Sullivan Machinery Co.
West Virginia Drilling Co.

Drafting Materials (See Eng. Instruments and Supplies)

Dredges
Bucyrus Co.

Driers, Sand
Electric Service Supplies Co.

Drills, Air
Sullivan Machinery Co.
Whitcomb Co., Geo. D.

Drills, Air (Portable)
Chicago Pneumatic Tool Co.
Denver Rock Drill Mfg. Co.

Drills, Core
Chicago Pneumatic Tool Co.
Sullivan Machinery Co.

Drills, Electric
Chicago Pneumatic Tool Co.
Fairmont Mining Machinery Co.
Jeffrey Mfg. Co.
Pittsburgh Mining Machinery Co.
Sullivan Machinery Co.

Drills, Power
Chicago Pneumatic Tool Co.
Denver Rock Drill Mfg. Co.

Drills, Rock
Chicago Pneumatic Tool Co.
Denver Rock Drill Mfg. Co.

Drills, Sharpeners
Denver Rock Drill Mfg. Co.

Drives, Silent Chain
Link-Belt Co

Dump Protectors
Mining Safety Device Co.

Dumps, Cross-Over
Fairmont Mining Machinery Co.
Helmick Foundry-Machine Co.
Phillips Mine & Mill Supply Co
Sanford-Day Iron Works

Dumps, Rotary
Anniston Electric Steel Corp.
Car-Dumper & Equipment Co.

Dynamite & High Explosives (See Explosives)

Dynamos (See Generators)

Electric Haulage Supplies
Electric Service Supplies Co.

WHAT AND WHERE TO BUY

Electrical Apparatus & Supplies
Post-Glover Electric Co.

Elevators and Conveyors
Fairmont Mining Machinery Co.
Jeffrey Mfg. Co
Link-Belt Co.
Webster Mfg. Co.

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National Coal Mining News

Engines, Hoist and Haulage
Holmes & Bros., Inc., Robt
Vulcan Iron Works

Engines, Oil
Chicago Pneumatic Tool Co.
Fairbanks, Morse & Co.

Engines, Steam
Chicago Pneumatic Tool Co.

Explosives
Atlas Powder Co.
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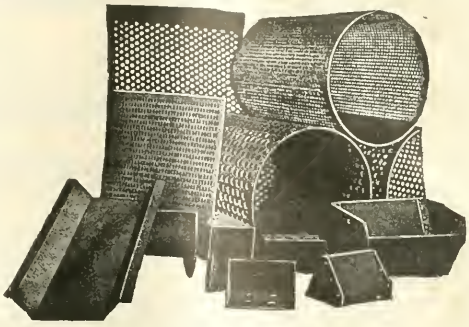

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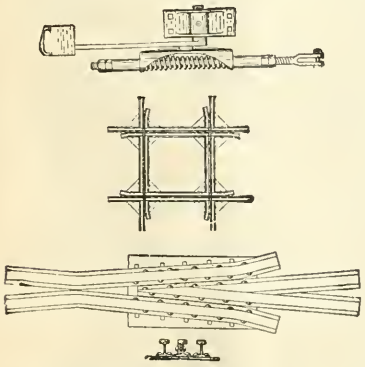

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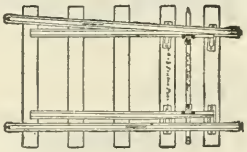

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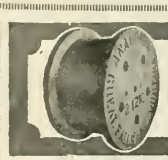

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